

**TENDER NO: WAP/NK/DAM/JHARKHAND/2026**

**TENDER DOCUMENT**

**FOR**

**Execution of balance Civil, Electrical and Hydro Mechanical works of  
Mandal Dam under North Koel Reservoir Project, Jharkhand and Bihar**

**Estimated Cost (Rs. 26.60 Crores)**

**TENDER NO: WAP/NK/DAM/JHARKHAND/2026**

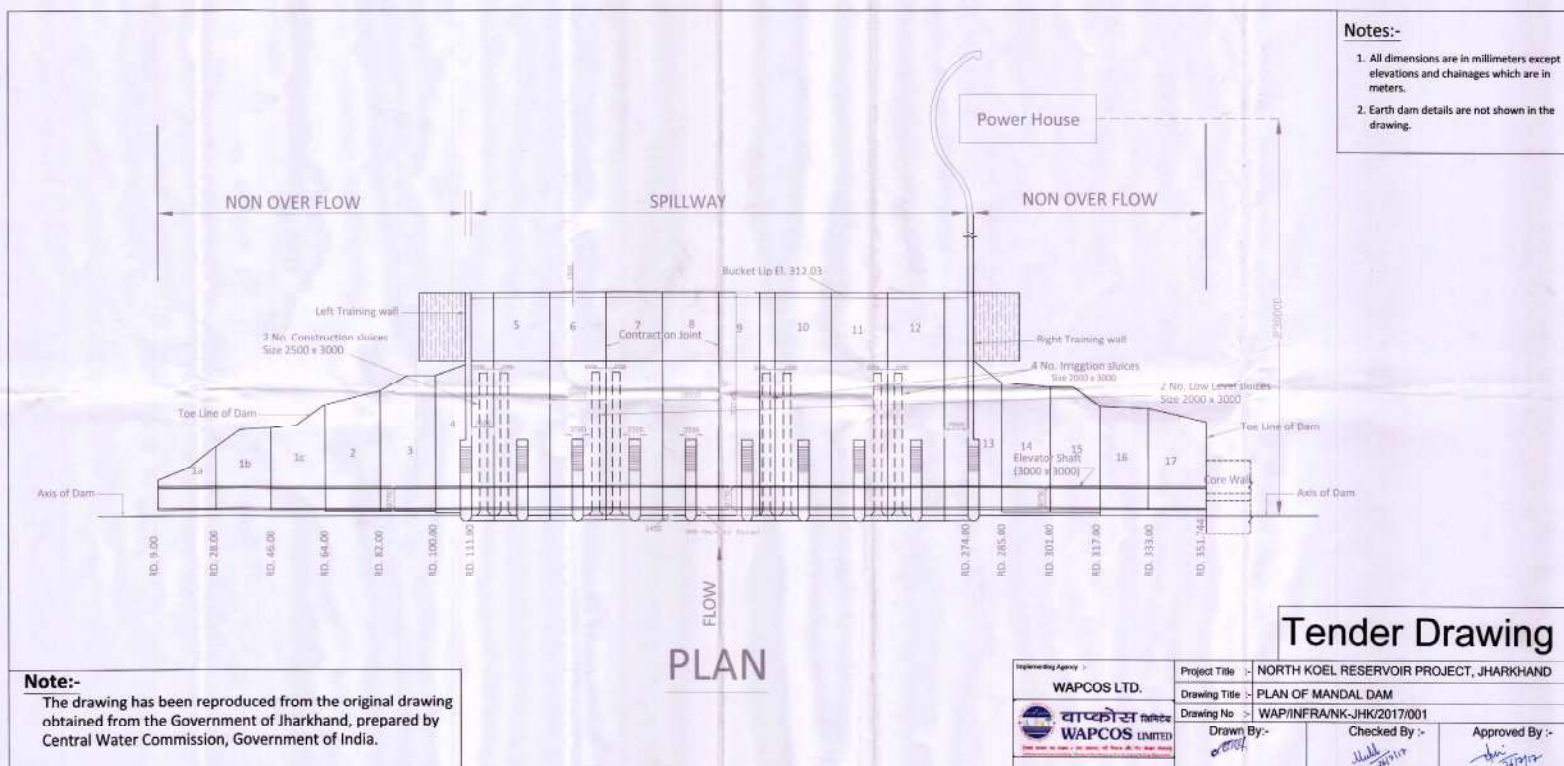
**TENDER DRAWINGS**

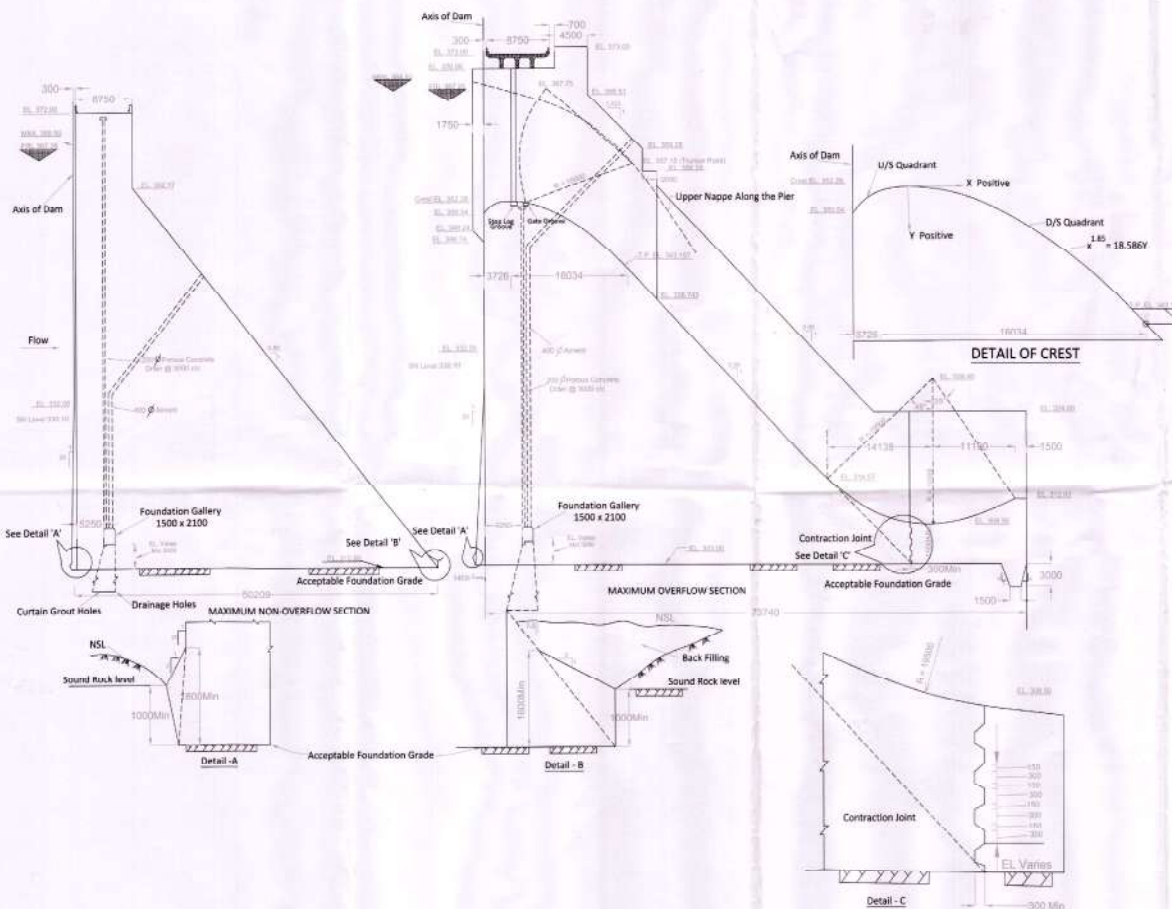


**(भारत सरकार का उपक्रम-जल शक्ति मंत्रालय)**  
**(A Government of India Undertaking-Ministry of Jal Shakti)**

### LIST OF TENDER DRAWINGS

| S. No. | Drawing Description                              | Drawing No.                             |
|--------|--------------------------------------------------|-----------------------------------------|
| 1      | Plan of Mandal Dam                               | WAP/INFRA/NK-JHK/2017/001               |
| 2      | Maximum Sections                                 | WAP/INFRA/NK-JHK/2017/002 (R-1)         |
| 3      | Construction Sluice (Plugging details)           | WAP/INFRA/NK-JHK/2017/003               |
| 4      | Layout details of Elevator Shaft                 | WAP/INFRA/NK-JHK/2017/004               |
| 5      | Details of Protective Apron on D/S of Bucket Lip | WAP/INFRA/NK-JHK/2017/005 (R-1)         |
| 6      | Spillway Bridge                                  |                                         |
| i      | General Arrangement (Plan & Section)             | OMIL/NKRP/SPB/501 (R-0)<br>Sheet 1 of 2 |
| ii     | General Arrangement (Plan & Section)             | OMIL/NKRP/SPB/501 (R-0)<br>Sheet 2 of 2 |
| iii    | Slab Reinforcement detail                        | OMIL/NKRP/SPB/502 (R-0)                 |
| iv     | Removable Slab Reinforcement detail              | OMIL/NKRP/SPB/503 (R-0)                 |
| v      | Cross Girder Reinforcement detail                | OMIL/NKRP/SPB/504 (R-0)<br>Sheet 1 of 3 |
| vi     | Cross Girder Reinforcement detail                | OMIL/NKRP/SPB/504 (R-0)<br>Sheet 2 of 3 |
| vii    | Cross Girder Reinforcement detail                | OMIL/NKRP/SPB/504 (R-0)<br>Sheet 3 of 3 |





#### Notes:-

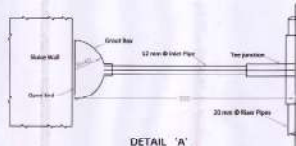
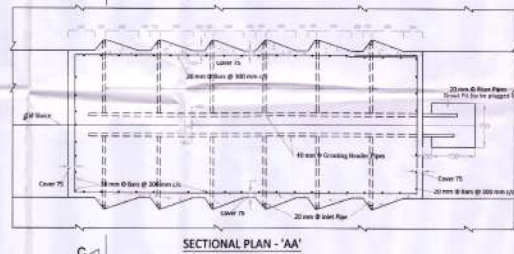
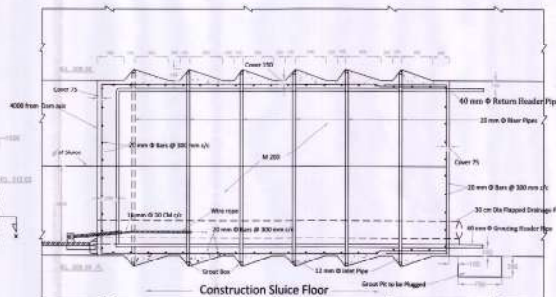
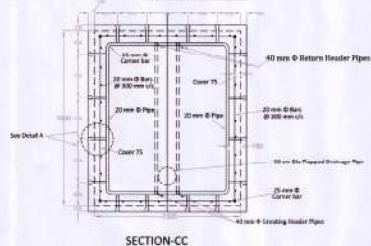
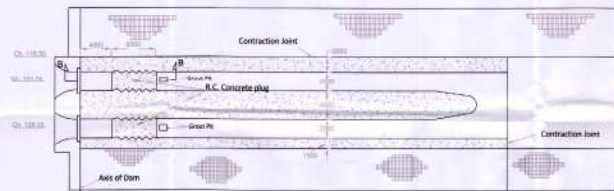
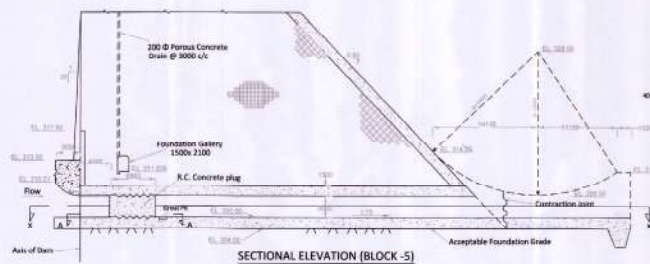
1. All dimensions are in millimeters except elevations which are in metres
2. The acceptable foundation shall be taken one metre below the sound rock level
3. The design horizontal seismic coefficient of 0.070 is adopted in the design
4. Gate arrangements and location of stop log grooves are tentative and are subject to confirmation by Gate design etc.
5. The maximum overflow and 'non-overflow' sections are based on acceptable foundation grade at EL 303.00 and EL 310.50 as revealed by boreholes. In case acceptable foundations is appreciably lower (say by more than two metres) the section will need revision
6. A minimum 1500 thickness of concrete shall be provided at the bucket invert

| Coordinates of U/S Profile |        |         |        | Coordinates of D/S Profile |         |       |        |
|----------------------------|--------|---------|--------|----------------------------|---------|-------|--------|
| X                          | Y      | X       | Y      | X                          | Y       | X     | Y      |
| -0.00                      | 0.00   | -2.7174 | 0.8811 | 0.10                       | 0.00076 | 2.80  | 0.2828 |
| -0.2717                    | 0.0005 | -2.8803 | 0.7960 | 0.15                       | 0.00131 | 3.00  | 0.4154 |
| -0.5515                    | 0.0021 | -3.0331 | 0.6803 | 0.20                       | 0.00174 | 3.80  | 0.5437 |
| -0.8272                    | 0.0024 | -3.1715 | 0.5665 | 0.25                       | 0.00413 | 4.00  | 0.6887 |
| -1.1030                    | 0.0037 | -3.3089 | 0.4586 | 0.30                       | 0.00579 | 4.40  | 0.8488 |
| -1.3787                    | 0.0049 | -3.3776 | 0.3524 | 0.35                       | 0.00771 | 5.00  | 1.0258 |
| -1.6544                    | 0.0178 | -3.4437 | 0.2507 | 0.40                       | 0.00987 | 6.00  | 1.4793 |
| -1.9302                    | 0.0347 | -3.5157 | 0.1570 | 0.45                       | 0.0121  | 7.00  | 1.9575 |
| -2.2058                    | 0.4391 | -3.5848 | 0.4007 | 0.50                       | 0.0149  | 8.00  | 2.5189 |
| -2.4816                    | 0.4474 | -3.6575 | 0.5145 | 0.60                       | 0.0206  | 9.00  | 3.1241 |
| -2.7573                    | 0.5322 | -3.6943 | 0.6062 | 0.70                       | 0.0276  | 10.00 | 3.8062 |
| -3.0331                    | 0.6028 | -3.7285 | 0.7368 | 0.80                       | 0.0342  | 12.00 | 5.3330 |
|                            |        |         |        | 1.00                       | 0.0588  | 13.00 | 6.1842 |
|                            |        |         |        | 1.20                       | 0.0763  | 14.00 | 7.2629 |
|                            |        |         |        | 1.40                       | 0.1002  | 15.00 | 8.5846 |
|                            |        |         |        | 1.60                       | 0.1282  | 16.04 | 9.1284 |
|                            |        |         |        | 1.80                       | 0.1585  |       |        |
|                            |        |         |        | 2.00                       | 0.1858  |       |        |

## Tender Drawing

**Note:-**  
The drawing has been reproduced from the original drawing obtained from the Government of Jharkhand, prepared by Central Water Commission, Government of India.

|                                   |                  |                                         |                |
|-----------------------------------|------------------|-----------------------------------------|----------------|
| Implementing Agency :-            | Project Title :- | NORTH KOEL RESERVOIR PROJECT, JHARKHAND |                |
| WAPCOS LTD.                       | Drawing Title :- | MAXIMUM SECTIONS                        |                |
| वाप्कोस लिमिटेड<br>WAPCOS LIMITED | Drawing No :-    | WAP/INFRA/NK-JHK/2017/002 (R-1)         |                |
|                                   | Drawn By :-      | Checked By :-                           | Approved By :- |
|                                   |                  |                                         |                |



#### Notes:-

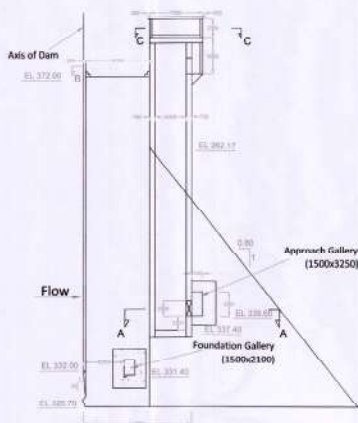
1. All dimensions are in millimeters except elevations and chainage which are in meters.
2. The grouts box should be held clean during construction of concrete plug by flushing water.
3. Piping system should be kept clean during construction of concrete plug by flushing water.
4. The concrete shall conform to M200 grade as per IS:456-1964
5. All laps in reinforcement to be staggered.
6. Headers shall be used in both ways i.e. as per return headers and grout headers.
7. Reinforcement shall be of cold twisted deformed bars conforming to IS:1786-1966
8. Anchorage and bond length for reinforcement shall be as per IS:456-1964
9. Proper bond between the plug concrete and the concrete of the sluice is to be ensure by means of contact grouting.

#### Note:-

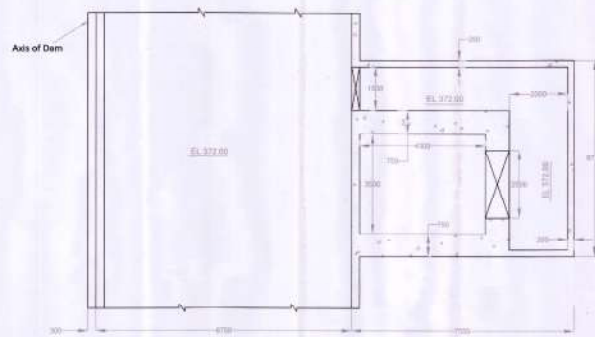
The drawing has been reproduced from the original drawing obtained from the Government of Jharkhand, prepared by Central Water Commission, Government of India.

## Tender Drawing

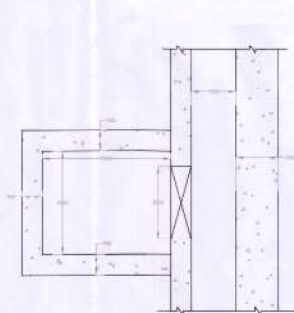
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|----------------------------------|------------------|-----------------------------------------|----------------|
| Implementing Agency :-           | Project Title :- | NORTH KOEL RESERVOIR PROJECT, JHARKHAND |                |
| WAPCOS LTD.                      | Drawing Title :- | CONSTRUCTION SLUICE (PLUGGING DETAILS)  |                |
| वापकोस लिमिटेड<br>WAPCOS LIMITED | Drawing No :-    | WAP/INFRA/NK-JHK/2017/003               |                |
|                                  | Drawn By:-       | Checked By :-                           | Approved By :- |
|                                  |                  |                                         |                |



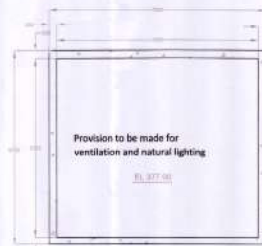
SECTIONAL ELEVATION THROUGH C OF ELEVATOR SHAFT



SECTION - B B



SECTION - A A



SECTION - C C



KEY PLAN

#### Notes:-

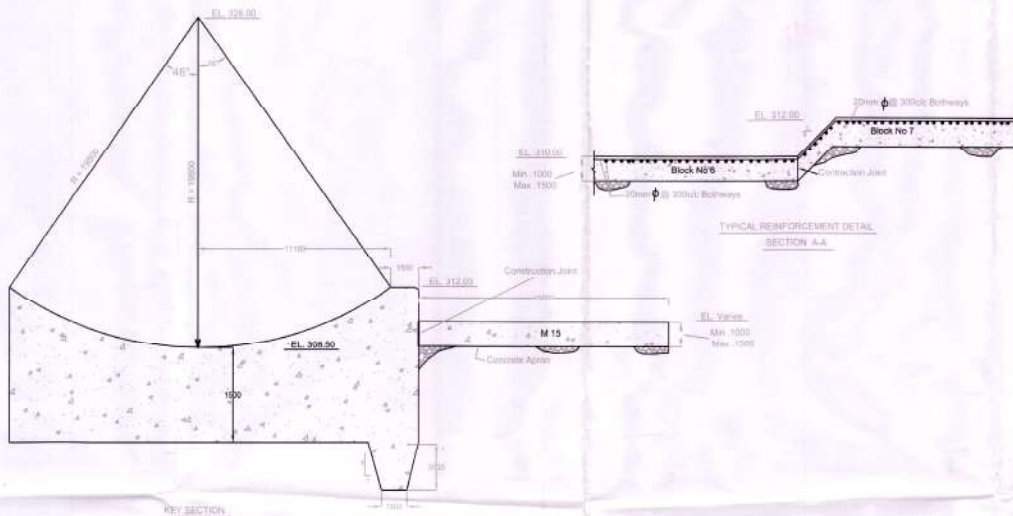
1. All dimensions are in millimeters unless otherwise specified.
2. Minimum concrete thickness around opening of Elevator shaft shall be 750 mm.
3. The size of machine room and depth of pit for the lift are tentative and shall be finalized in consultation with the lift manufacturer.
4. For reinforcement detail around Elevator shaft refer separate drawing.
5. The block out and embedded parts shall be provided in consultation with the lift manufacturer.

#### Note:-

The drawing has been reproduced from the original drawing obtained from the Government of Jharkhand, prepared by Central Water Commission, Government of India.

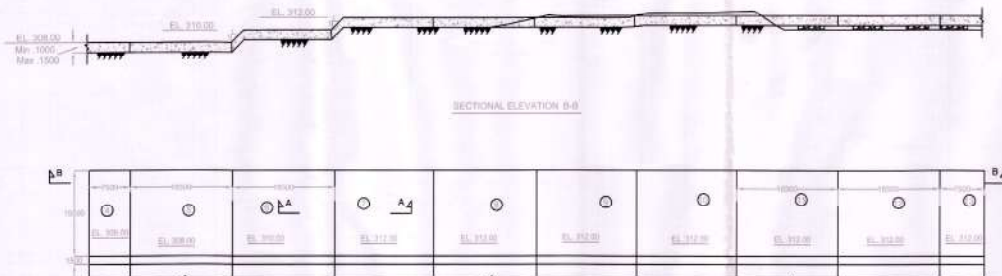
## Tender Drawing

|                        |                                         |                |  |
|------------------------|-----------------------------------------|----------------|--|
| Implementing Agency :- | WAPCOS LTD.                             |                |  |
| Project Title :-       | NORTH KOEL RESERVOIR PROJECT, JHARKHAND |                |  |
| Drawing Title :-       | LAYOUT DETAILS OF ELEVATOR SHAFT        |                |  |
| Drawing No. :-         | WAP/INFRA/NK-JH/2017/004                |                |  |
| Drawn By:-             | Checked By :-                           | Approved By :- |  |
|                        |                                         |                |  |



#### Notes:-

1. All dimensions are in millimeters except elevations which are in metres
2. The concrete used in the apron shall be of grade M15
3. The rock surface shall be cleared of all loose and weak materials before concreting
4. The rock surface shall be dry roughened and shall be spread with cement slurry prior to the placing of concrete
5. The concrete apron shall be properly anchored to the foundation rock
6. After removing all loose materials rock bed downstream of the spillway bucket shall be filled with masonry so that maximum depth of concrete apron is 1500 mm
7. It is presumed that spot levels of block 13 to 14 are in accordance with those of Block 11. In case there is appreciable variation in spot levels the level of concrete apron in these blocks can be suitable modified



PLAN SHOWING APRON DETAILS

## Tender Drawing

#### Note:-

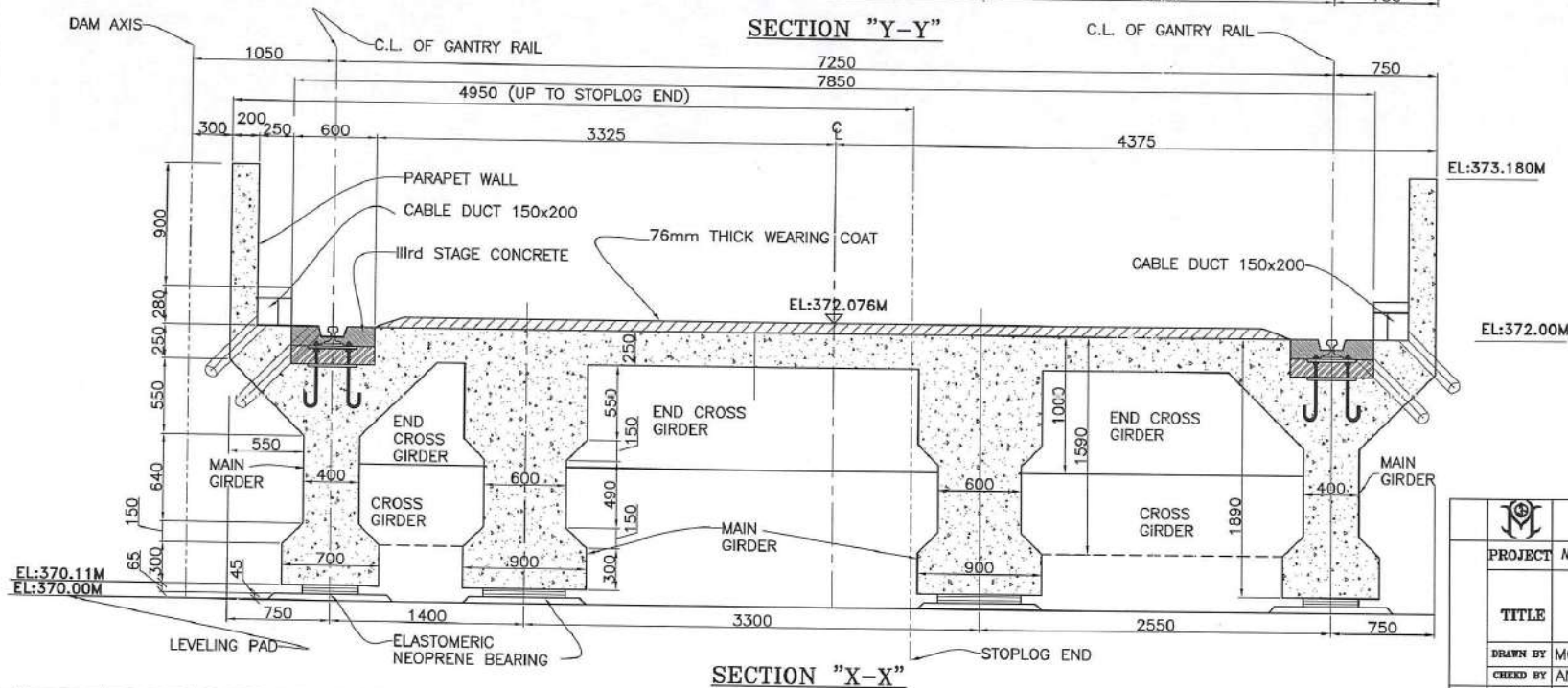
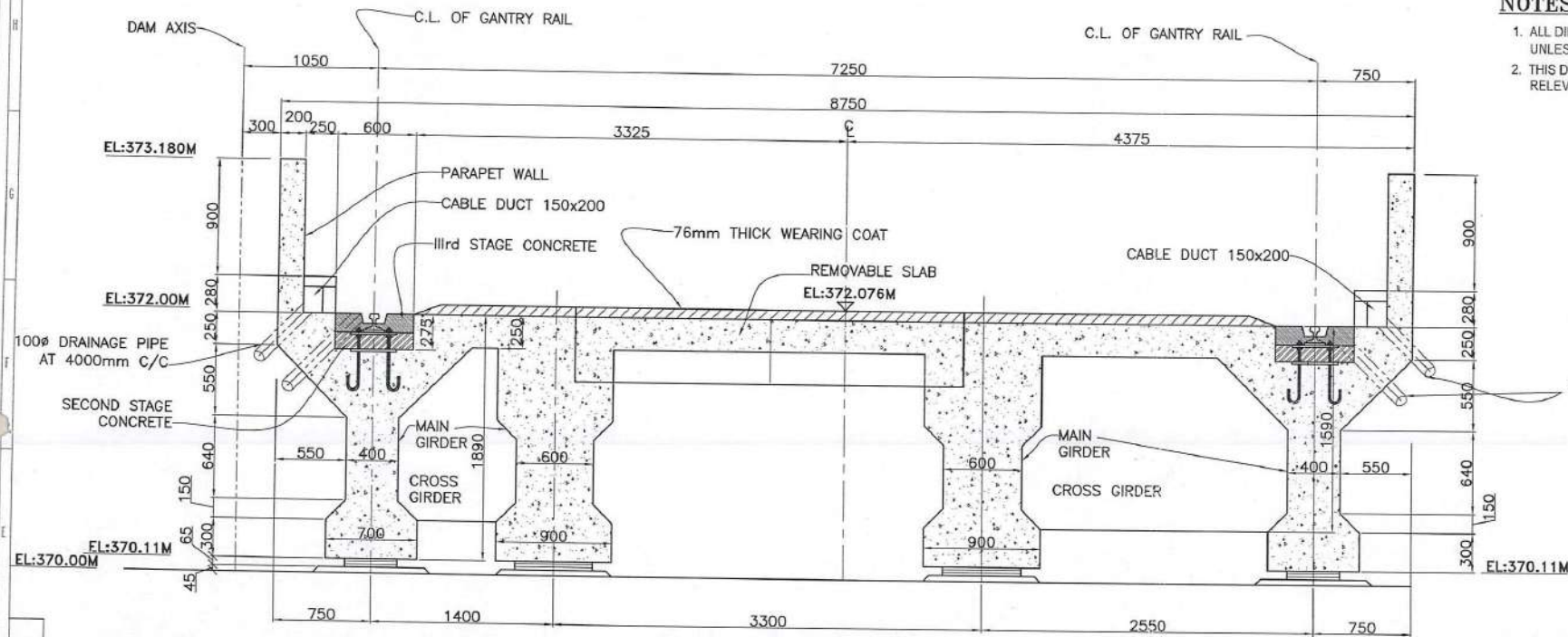
The drawing has been reproduced from the original drawing obtained from the Government of Jharkhand, prepared by Central Water Commission, Government of India.

|                                  |                  |                                                  |               |  |
|----------------------------------|------------------|--------------------------------------------------|---------------|--|
| Implementing Agency :-           | Project Title :- | NORTH KOEL RESERVOIR PROJECT, JHARKHAND          |               |  |
| WAPCOS LTD.                      | Drawing Title :- | DETAILS OF PROTECTIVE APRON ON D/S OF BUCKET LIP |               |  |
| वापकोस लिमिटेड<br>WAPCOS LIMITED | Drawing No :-    | WAP/INFRA/NK-JHK/2017/005 (R-1)                  |               |  |
|                                  | Drawn By:-       | Checked By:-                                     | Approved By:- |  |
|                                  |                  |                                                  |               |  |



# NOTES:-

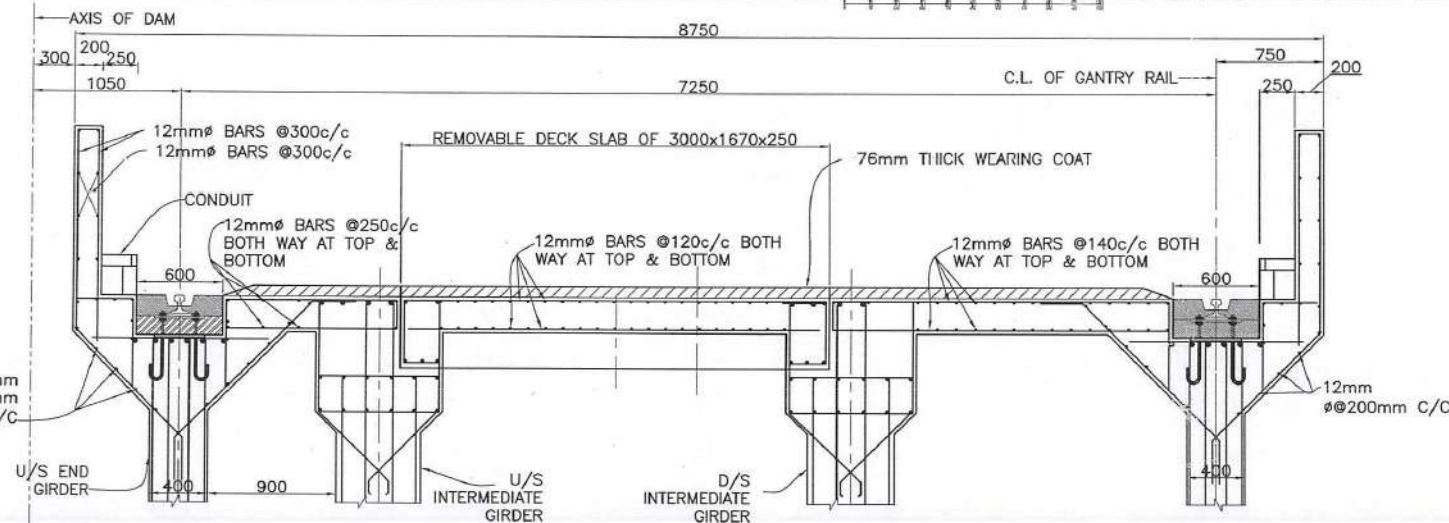
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2. THIS DRAWINGS SHOULD BE READ ALONG WITH ALL RELEVANT DRAWING



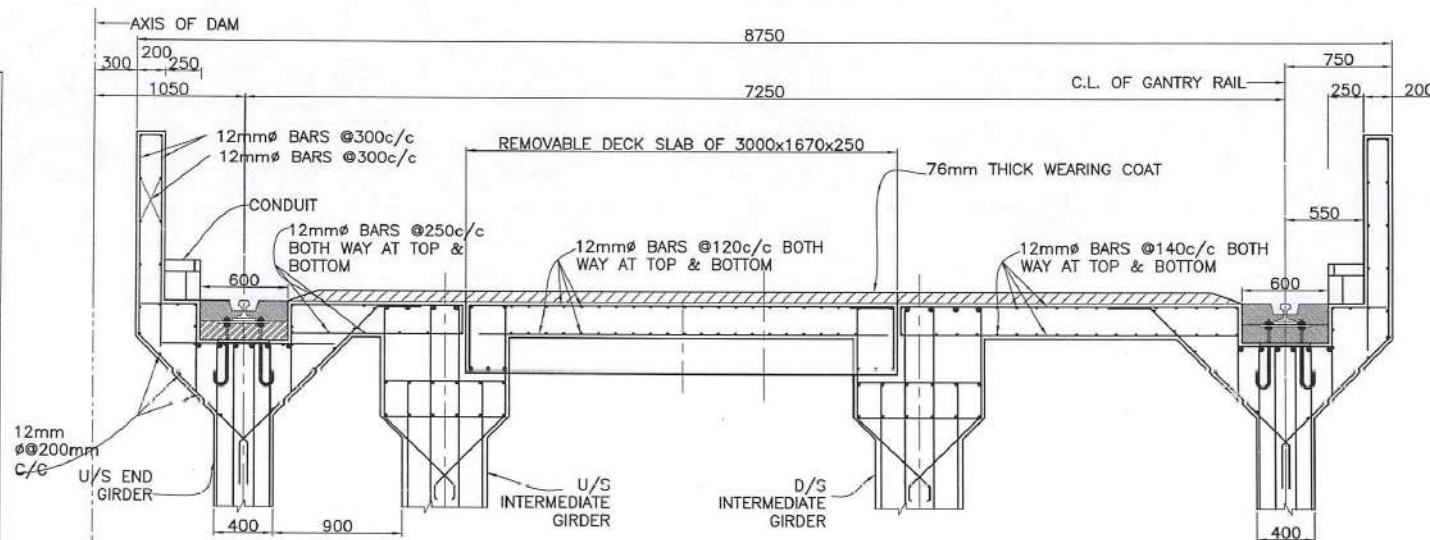
|            |                                                                                       |                              |                            |  |
|------------|---------------------------------------------------------------------------------------|------------------------------|----------------------------|--|
|            |  | OM METALS INFRAPROJECTS LTD. |                            |  |
| PROJECT    | NORTH KOEL RESERVOIR PROJECT JHARKHAND                                                |                              |                            |  |
| TITLE      | SPILLWAY BRIDGE<br>GENERAL ARRANGEMENT DRAWING<br>(PLAN & SECTION) (SHEET 02 OF 02)   |                              |                            |  |
| DRAWN BY   | MOHAN SANGWAN                                                                         |                              | SUBMITTED BY:              |  |
| CHECKED BY | ANURAG                                                                                |                              | DRG NO : OMIL/NKRP/SPB/501 |  |
| SIZE       | A1                                                                                    | SCALE                        | REV-0                      |  |

# **NOTES:-**

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS UNLESS NOTED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT IS 40mm.
4. MINIMUM LAP LENGTH FOR FAVOURABLE CONDITION SHALL BE  $50\phi$ , WHERE  $\phi$  IS THE DIA. OF BAR LAPPED. FOR UNFAVOURABLE CASES THE LAP LENGTH SHALL BE INCREASED BY A FACTOR 1.43 (AS PER IRC: 112-2011 CLAUSE NO. 15.2.5.(2)).
5. NO MORE THAN 50% OF TOTAL BARS SHALL BE LAPPED AT ANY SECTION.
6. GRADE OF CONCRETE FOR GIRDER AND DECK SLAB SHALL BE M35.
7. WELDING OF REINFORCEMENT BAR SHALL NOT BE PERMITTED.
8. THIS DRAWINGS SHOULD BE READ ALONG WITH ALL RELEVANT DRAWING

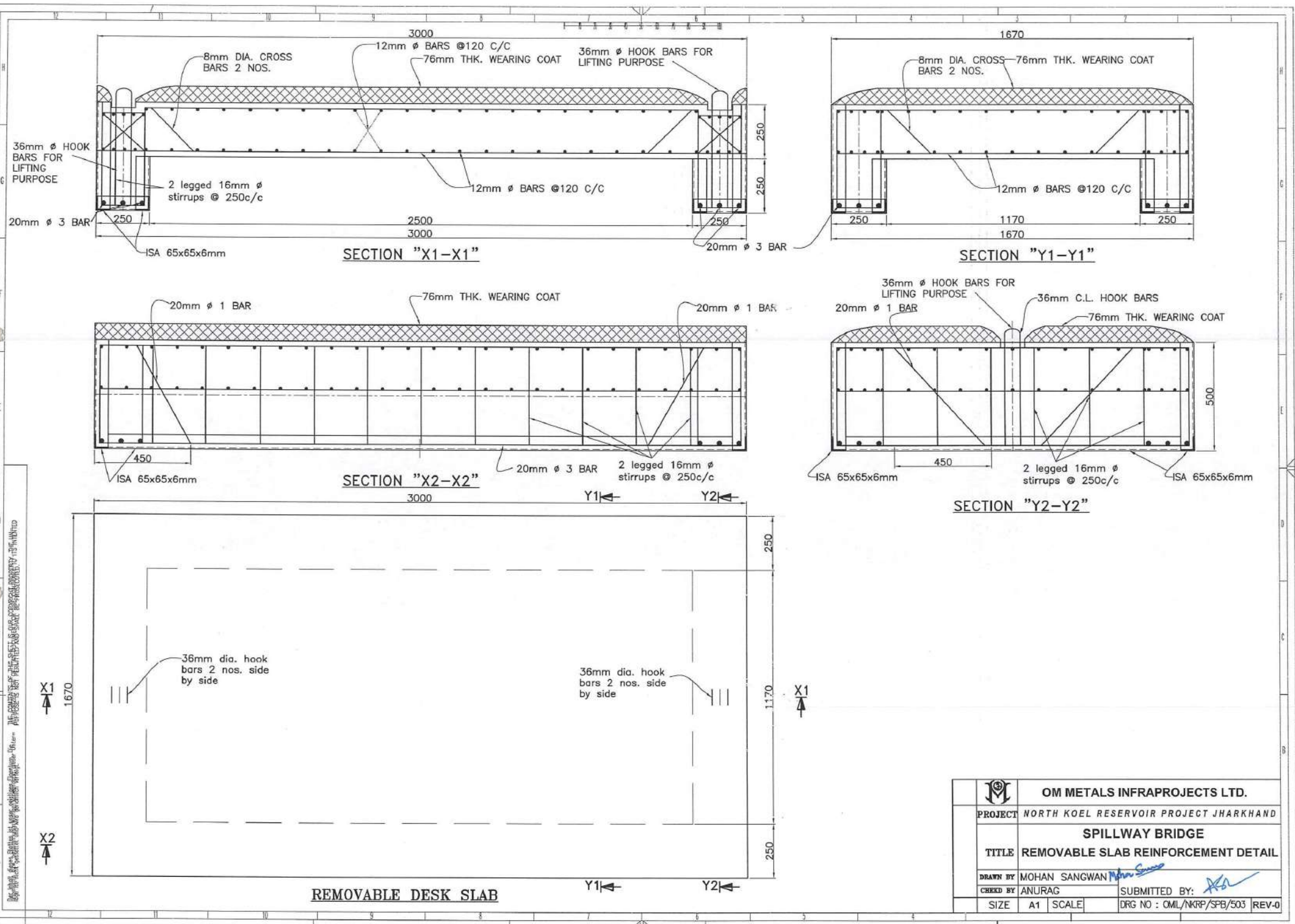


**CROSS SECTION OF DECK SLAB IN NON PIER PORTION**  
(STIRRUPS IN SLAB NOT SHOWN FOR CLARITY , FOR DETAIL REFER REMOVABLE SLAB DRG. )  
(FOR GIRDER REINF.DETAIL REFER RELEVANT DRG.)



**CROSS SECTION OF DECK SLAB IN NON PIER PORTION**  
(FOR GIRDER REINF.DETAIL REFER RELEVANT DRG.)

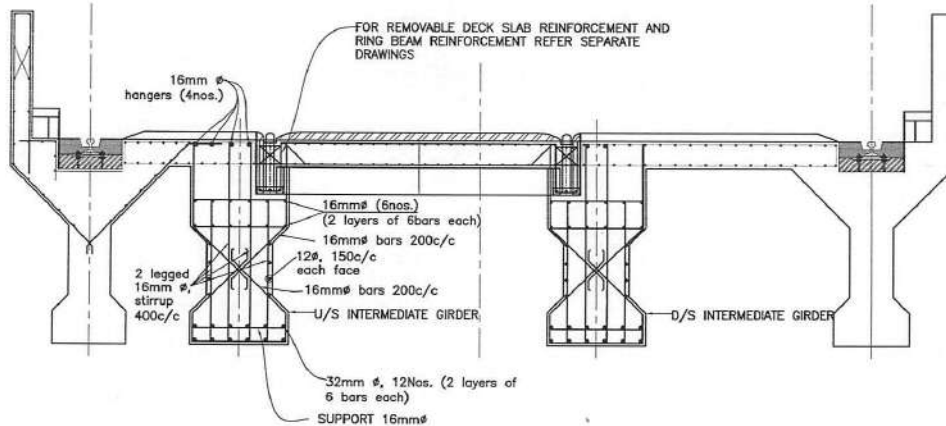
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|-------------------|---------------|------------------------------------------------------|--------------------------------|
|                   |               | <b>OM METALS INFRAPROJECTS LTD.</b>                  |                                |
| <b>PROJECT</b>    |               | NORTH KOEL RESERVOIR PROJECT JHARKHAND               |                                |
| <b>TITLE</b>      |               | <b>SPILLWAY BRIDGE<br/>SLAB REINFORCEMENT DETAIL</b> |                                |
| <b>DRAWN BY</b>   | MOHAN SANGWAN | <b>SUBMITTED BY:</b>                                 |                                |
| <b>CHECKED BY</b> | ANURAG        |                                                      |                                |
| <b>SIZE</b>       | A1            | <b>SCALE</b>                                         | DRG NO : OML/NRP/SPB/502 REV-0 |



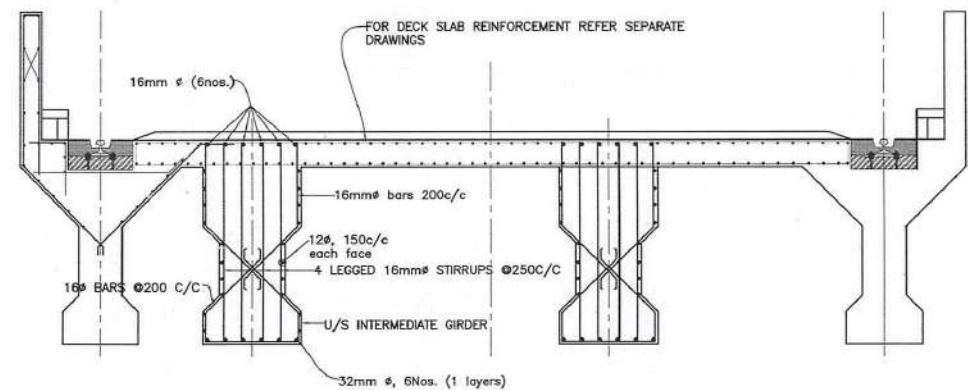
|                                                                                       |                                        |                              |                                                                                                     |       |
|---------------------------------------------------------------------------------------|----------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------|-------|
|  |                                        | OM METALS INFRAPROJECTS LTD. |                                                                                                     |       |
| PROJECT                                                                               | NORTH KOEL RESERVOIR PROJECT JHARKHAND |                              |                                                                                                     |       |
| SPILLWAY BRIDGE                                                                       |                                        |                              |                                                                                                     |       |
| TITLE                                                                                 | REMOVABLE SLAB REINFORCEMENT DETAIL    |                              |                                                                                                     |       |
| DRAWN BY                                                                              | MOHAN SANGWAN                          |                              | SUBMITTED BY:  |       |
| CHECKED BY                                                                            | ANURAG                                 |                              |                                                                                                     |       |
| SIZE                                                                                  | A1                                     | SCALE                        | DRG NO : OML/NKRP/SPB/503                                                                           | REV-0 |

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS UNLESS NOTED OTHERWISE.

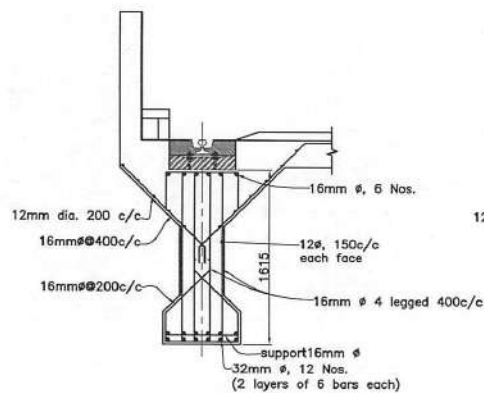
2. THIS DRAWINGS SHOULD BE READ ALONG WITH ALL RELEVANT DRAWING



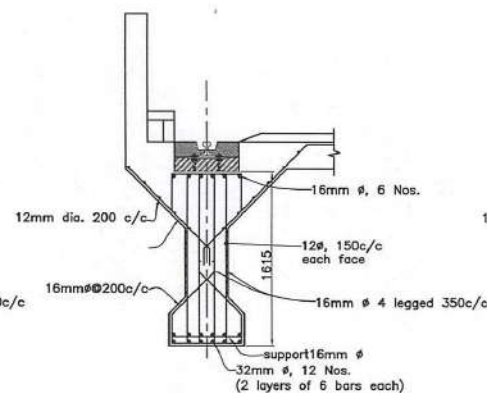
**CROSS-SECTION IN NON PIER PORTION AT CENTER OF GIRDER**  
(PIER AND CROSS GIRDER NOT SHOWN)



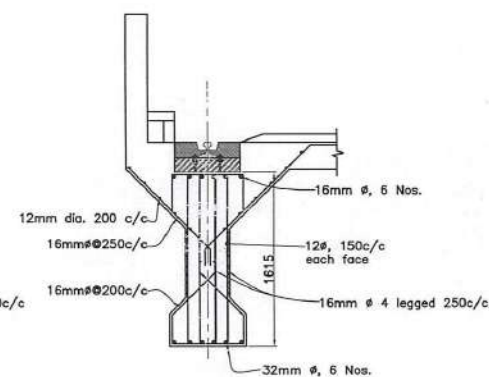
**CROSS-SECTION IN PIER PORTION ON BETWEEN BEARING**  
(PIER AND CROSS GIRDER NOT SHOWN)



**SECTION A-A**



**SECTION B-B**



**SECTION C-C**

75x5  
=375  
10#

**TYPE - M2**  
(AT JACK LOCATIONS)  
(IN TWO LAYERS)

LONG. DIRECTION OF BRIDGE  
850  
TRANSVERSE DIRECTION  
10#

**TYPE - M1**  
(BEARINGS LOCATIONS AT INTERMEDIATE GIRDER)

LONG. DIRECTION OF BRIDGE  
650  
TRANSVERSE DIRECTION  
10#

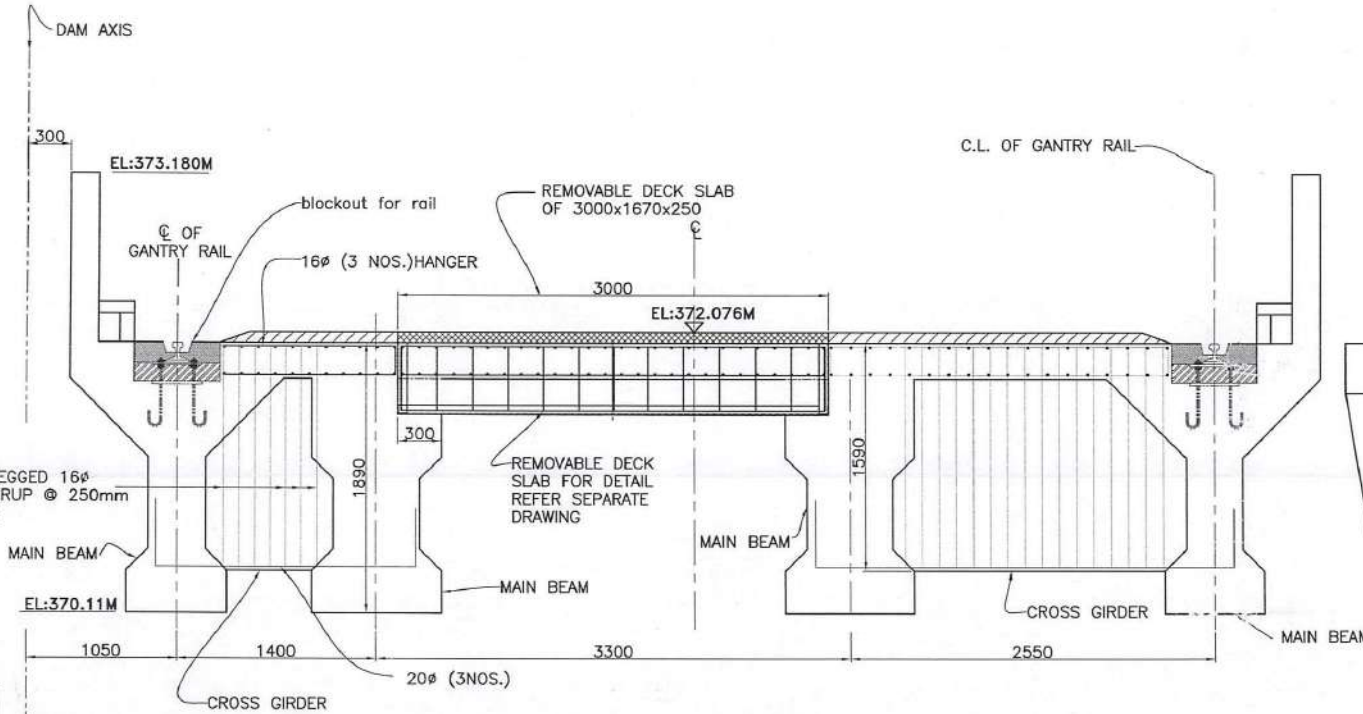
**TYPE - M1**  
(BEARINGS LOCATIONS AT END GIRDER)

**NOTES:-**

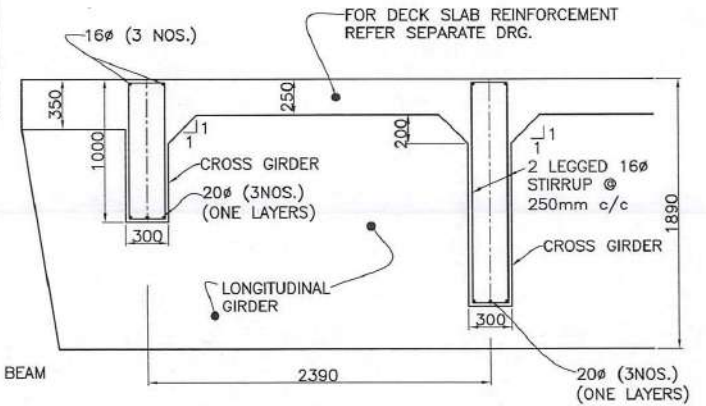
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS UNLESS NOTED OTHERWISE.
2. THIS DRAWINGS SHOULD BE READ ALONG WITH ALL RELEVANT DRAWING

|                   |                                                                                       |                                                                                   |                                     |                                |                                  |
|-------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|--------------------------------|----------------------------------|
|                   |  |                                                                                   | <b>OM METALS INFRAPROJECTS LTD.</b> |                                |                                  |
| <b>PROJECT</b>    |                                                                                       | <b>NORTH KOEL RESERVOIR PROJECT JHARKHAND</b>                                     |                                     |                                |                                  |
| <b>TITLE</b>      |                                                                                       | <b>SPILLWAY BRIDGE<br/>CROSS GIRDER REINFORCEMENT DETAIL<br/>(SHEET 02 OF 03)</b> |                                     |                                |                                  |
| <b>DRAWN BY</b>   |                                                                                       | MOHAN SANGWAN                                                                     |                                     | <i>Mohan Sangwan</i>           |                                  |
| <b>CHECKED BY</b> |                                                                                       | ANURAG                                                                            |                                     | <b>SUBMITTED BY:</b> <i>AA</i> |                                  |
| <b>SIZE</b>       |                                                                                       | A1                                                                                | <b>SCALE</b>                        | 1:21                           | <b>DRG NO : OML/NKRP/SPB/504</b> |
|                   |                                                                                       |                                                                                   |                                     |                                | <b>REV-0</b>                     |

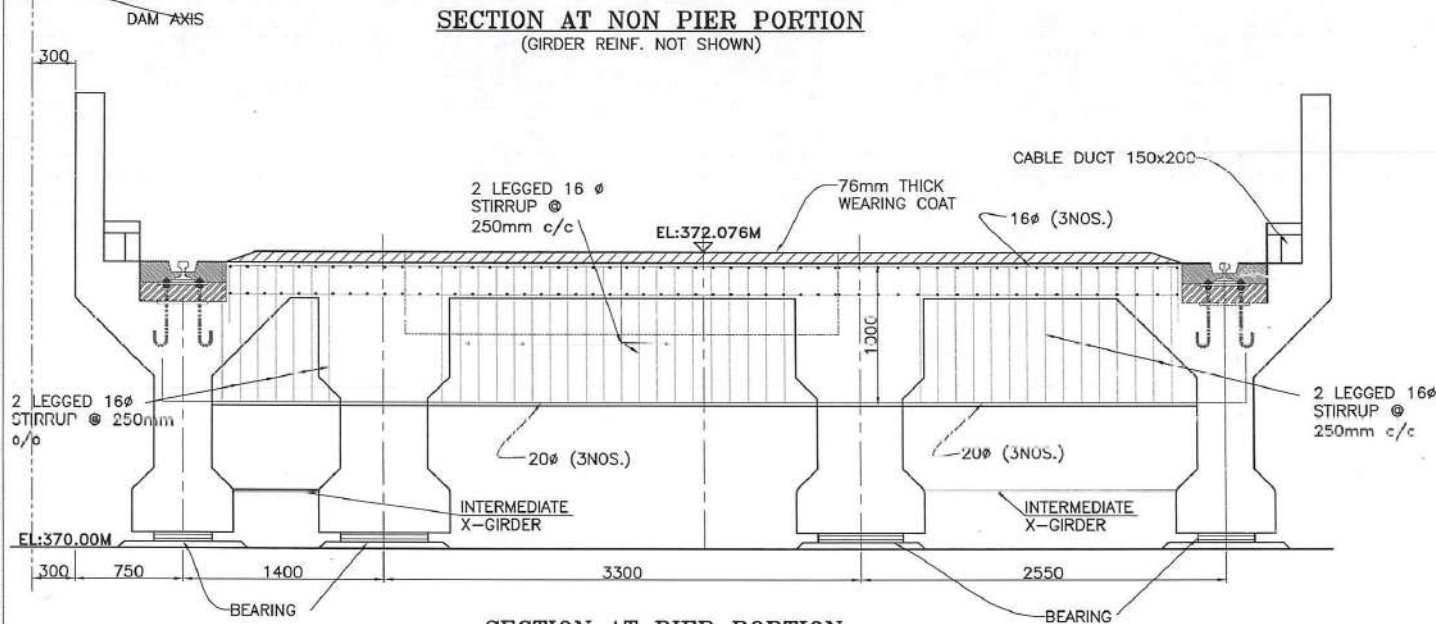
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**SECTION AT NON PIER PORTION**  
 (GIRDER REINF. NOT SHOWN)



**CROSS GIRDER DETAILS (END PORTION)**  
 (ONLY X-GIRDER REINF. SHOWN)



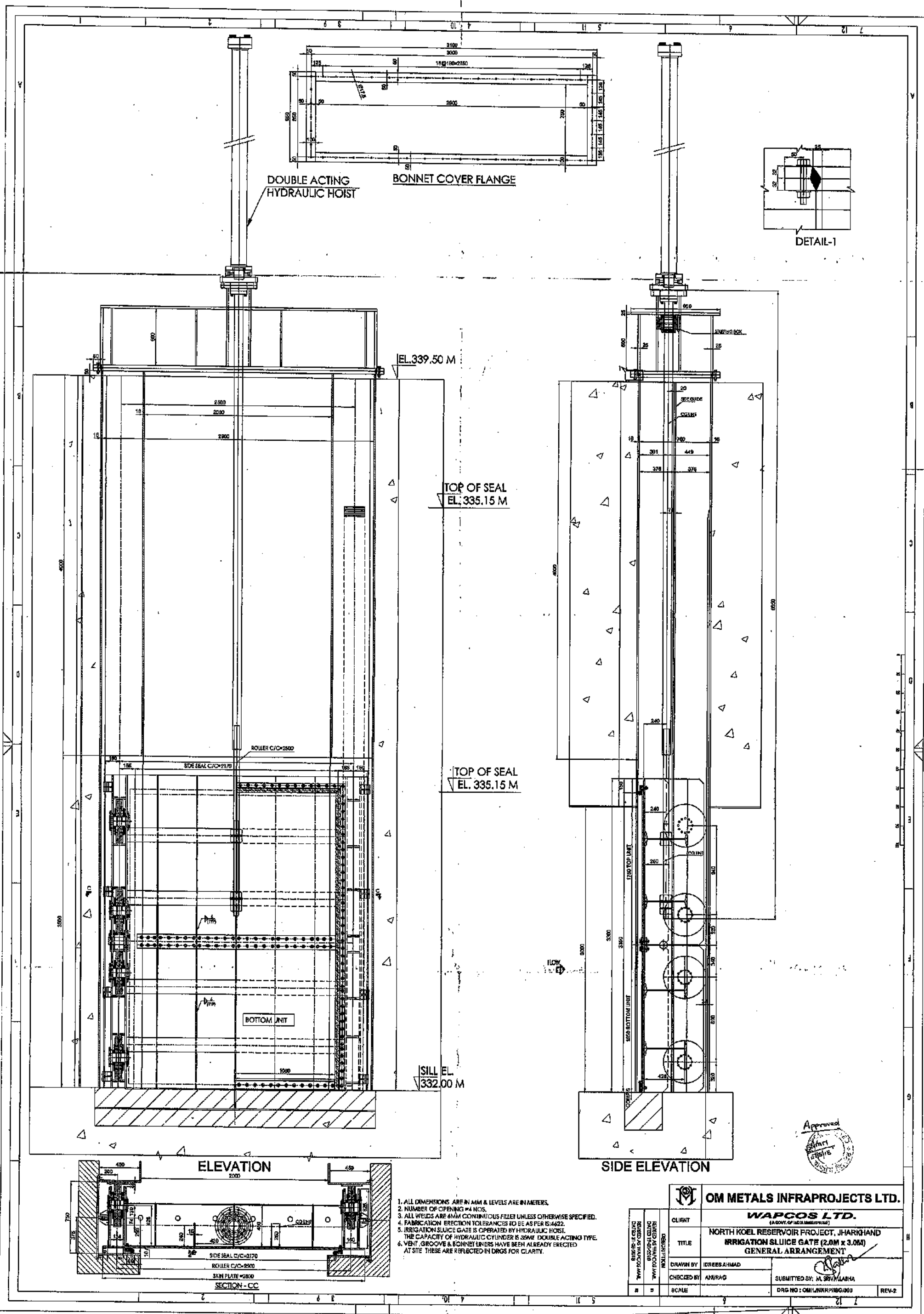
**SECTION AT PIER PORTION**  
 (GIRDER REINF. NOT SHOWN)

|                   |               |                                                                          |      |
|-------------------|---------------|--------------------------------------------------------------------------|------|
|                   |               | <b>OM MFTAI S INFRAPROJECTS LTD.</b>                                     |      |
| <b>PROJECT</b>    |               | NORTH KOEL RESERVOIR PROJECT JHARKHAND                                   |      |
| <b>TITLE</b>      |               | SPILLWAY BRIDGE<br>CROSS GIRDER REINFORCEMENT DETAIL<br>(SHEET 03 OF 03) |      |
| <b>DRAWN BY</b>   | MOHAN SANGWAN | <b>SUBMITTED BY:</b>                                                     |      |
| <b>CHECKED BY</b> | ANURAG        |                                                                          |      |
| <b>SIZE</b>       | A1            | <b>SCALE</b>                                                             | 1:21 |
| <b>DRG NO</b>     |               | OMIL/NKRP/SPB/504                                                        |      |
| <b>REV</b>        |               | 0                                                                        |      |

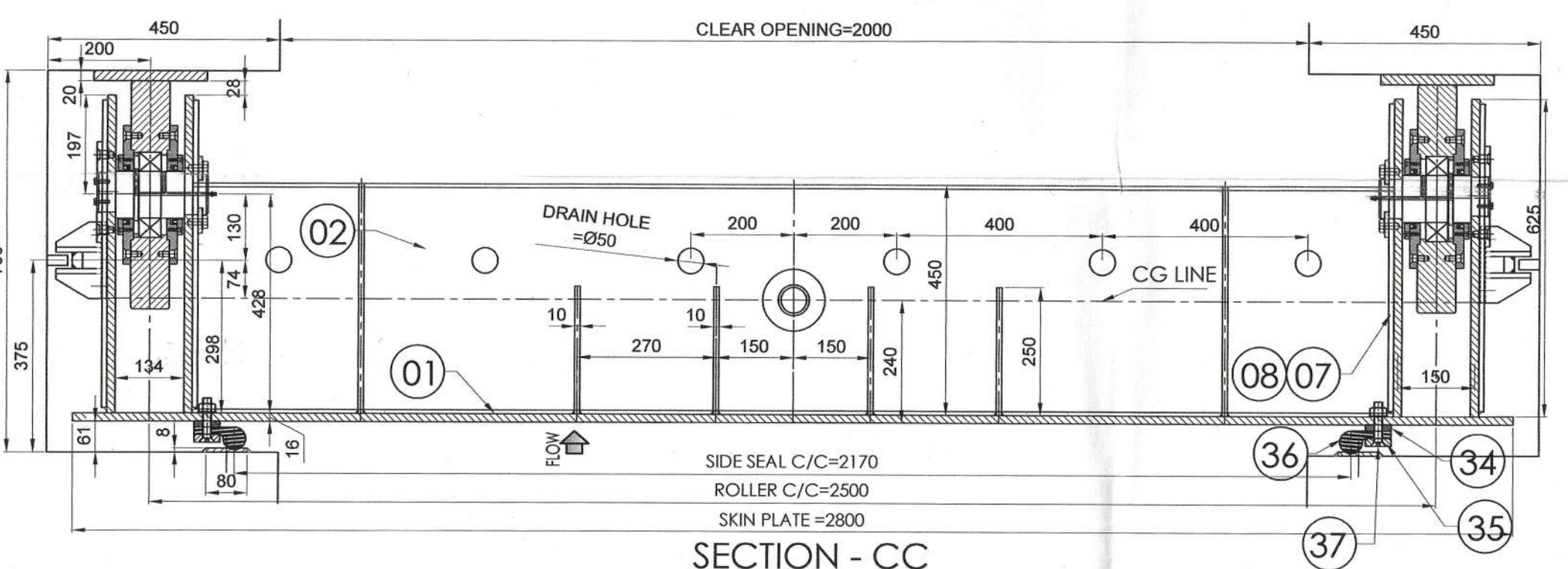
### LIST OF DRAWINGS FOR FABRICATED GATES

| S. No.   | Drawing Description                                                         | Drawing No.                            |
|----------|-----------------------------------------------------------------------------|----------------------------------------|
| <b>1</b> | <b>Irrigation Sluice Gate</b>                                               |                                        |
| i        | General Arrangement                                                         | OMIL/NKRP/ISG/300 (R2)                 |
| ii       | Gate Assembly                                                               | OMIL/NKRP/ISG/302 (R4)<br>Sheet 1 of 2 |
| iii      | Gate Details                                                                | OMIL/NKRP/ISG/302 (R3)<br>Sheet 2 of 2 |
| iv       | Wheel Assembly                                                              | OMIL/NKRP/ISG/303 (R3)                 |
| <b>2</b> | <b>Low Level Sluice Gate</b>                                                |                                        |
| i        | Gate Leaf Details                                                           | OMIL/NKRP/LLSG/02 (R3)<br>Sheet 1 of 2 |
| ii       | Details of Seal                                                             | OMIL/NKRP/LLSG/02 (R3)<br>Sheet 2 of 2 |
| iii      | Wheel Assembly & Guide Shoe Details                                         | OMIL/NKRP/LLSG/03 (R2)                 |
| <b>3</b> | <b>Intake Service Gate</b>                                                  |                                        |
| i        | General Arrangement                                                         | OMIL/NKL/ISG/200 (R0)                  |
| ii       | Gate Assembly                                                               | OMIL/NKL/ISG/202 (R1)<br>Sheet 1 of 2  |
| iii      | Gate Details                                                                | OMIL/NKL/ISG/202 (R1)<br>Sheet 2 of 2  |
| iv       | 2nd Stage Embedded Parts                                                    | OMIL/NKL/ISG/201 (R3)<br>Sheet 1 of 2  |
| v        | 2nd Stage Embedded Parts                                                    | OMIL/NKL/ISG/201 (R3)<br>Sheet 2 of 2  |
| vi       | Ballast Details                                                             | OMIL/NKL/ISG/202A (R1)                 |
| vii      | Details of connecting Beam, Pin & Spacer                                    | OMIL/NKL/ISG/203 (R1)                  |
| viii     | Wheel Assembly                                                              | OMIL/NKL/ISG/204 (R5)                  |
| ix       | Detail to Supporting Structure                                              | OMIL/NKL/ISG/205 (R0)                  |
| <b>4</b> | <b>Irrigation Emergency Sluice Gate</b>                                     |                                        |
| i        | Gate Leaf Details                                                           | OMIL/NKRP/ESG/505 (R2)                 |
| ii       | Gate Leaf Details                                                           | OMIL/NKRP/ESG/505A (R0)                |
| iii      | Filling Valve Details                                                       | OMIL/NKRP/ESG/506 (R1)                 |
| iv       | Seal assembly and Details                                                   | OMIL/NKRP/ESG/507 (R2)                 |
| v        | Rubber Part details                                                         | OMIL/NKRP/ESG/507A (R0)                |
| vi       | Gate Leaf Assembly and Guide Details                                        | OMIL/NKRP/ESG/508 (R3)                 |
| vii      | General Arrangement for Irrigation Sluice                                   | OMIL/NKRP/ESG/500 (R3)                 |
| viii     | Block-out Details for Irrigation Sluices                                    | OMIL/NKRP/ESG/501 (R2)                 |
| ix       | General Arrangement for Low Level Sluice                                    | OMIL/NKRP/ESG/500A (R2)                |
| x        | Block-out Details for Low Level Sluice                                      | OMIL/NKRP/ESG/501A (R1)                |
| xi       | General Installation of Embedded Parts for Low Level and Irrigation Sluices | OMIL/NKRP/ESG/504 (R1)                 |
| xii      | Embedded Details Side Seal Seat & Slide Track                               | OMIL/NKRP/ESG/502 (R2)                 |
| xiii     | Embedded Parts Detail of Bottom Sill Beam & Top Seal Seat                   | OMIL/NKRP/ESG/503 (R2)                 |
| <b>5</b> | <b>Intake Bulkhead Gate</b>                                                 |                                        |
| i        | Gate Assembly                                                               | OMIL/NKRP/IBG/600 (R2)                 |
| ii       | Gate Leaf Details                                                           | OMIL/NKRP/IBG/605 (R2)                 |
| iii      | Detail of CR. Steel Fixed Beam                                              | OMIL/NKRP/IBG/600A (R1)                |
| iv       | Blockout Details                                                            | OMIL/NKRP/IBG/601 (R1)                 |
| v        | E.P Installation Details                                                    | OMIL/NKRP/IBG/604 (R1)                 |
| vi       | Bottom & Top Seal Embedded Parts                                            | OMIL/NKRP/IBG/602 (R2)                 |
| vii      | Slide Track/Side Seal Seat & Guide                                          | OMIL/NKRP/IBG/603 (R0)                 |
| viii     | Seal Assembly & Details                                                     | OMIL/NKRP/IBG/605 (R1)                 |

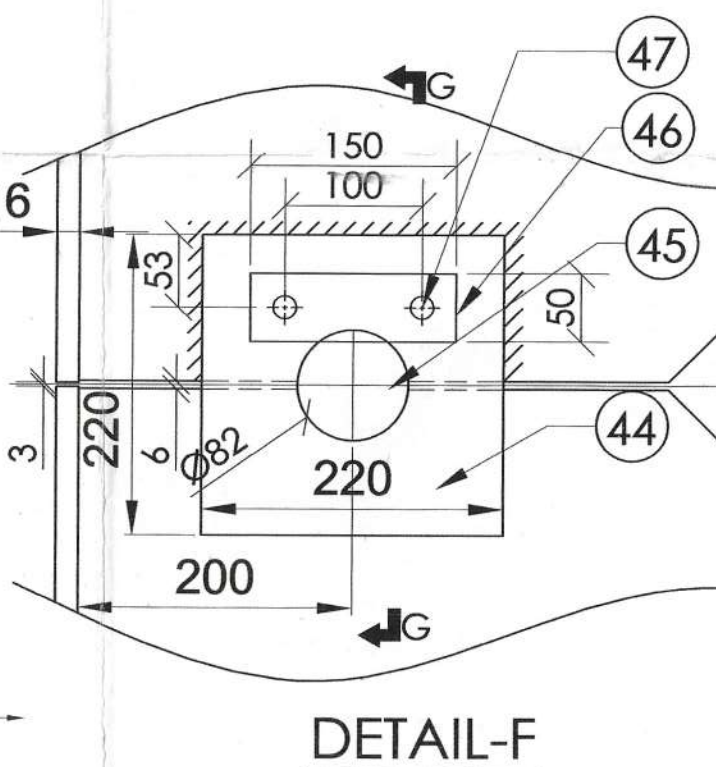
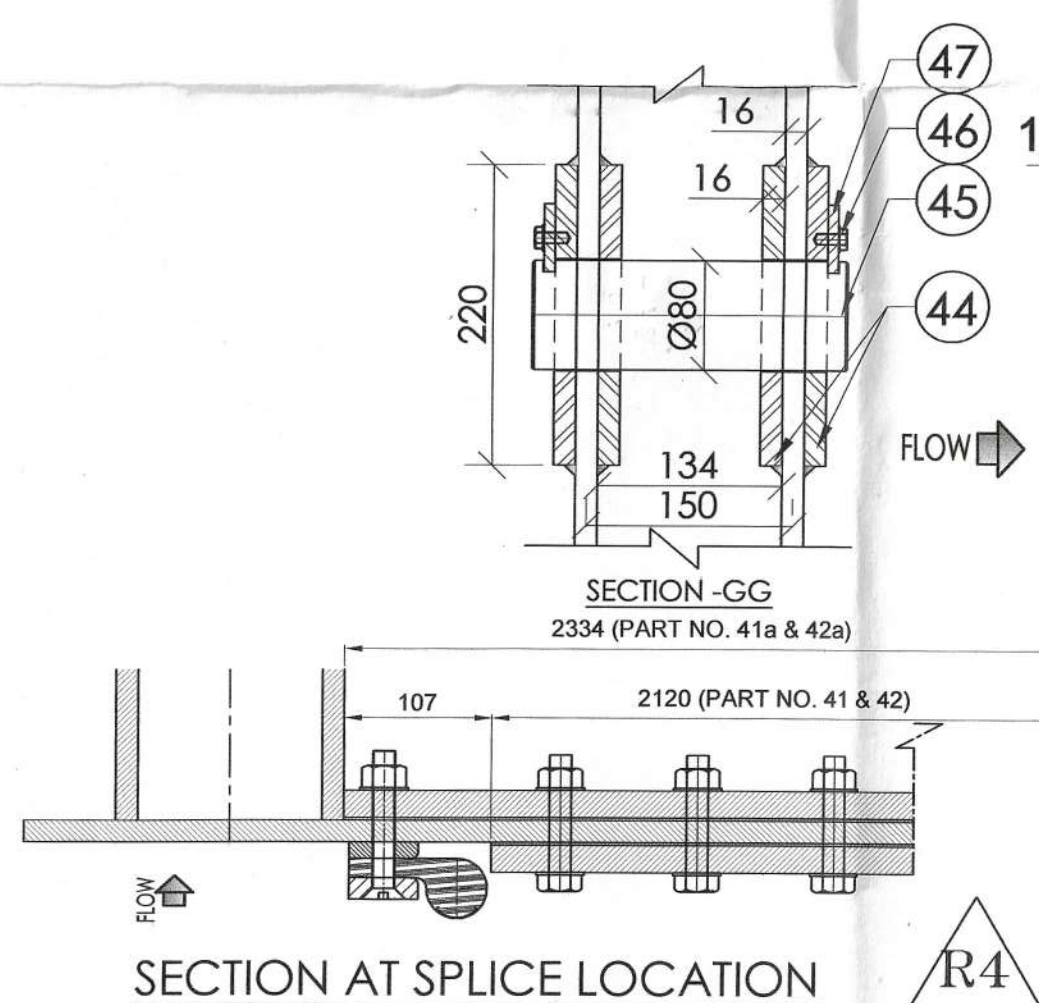
|    |                                    |                        |
|----|------------------------------------|------------------------|
| ix | Filling Valve Assembly and Details | OMIL/NKRP/IBG/607 (R1) |
| x  | Detail of Gate Groove Angle Frame  | OMIL/NKRP/IBG/608 (R2) |
| xi | Groove Cover Details               | OMIL/NKRP/IBG/609 (R1) |



|                                                                                                                             |                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
|  <b>OM METALS INFRAPROJECTS LTD.</b>   |                                                                   |
| <b>WAPCOS LTD.</b><br><small>(A GOVT. OF INDIA UNDERTAKING)</small>                                                         |                                                                   |
| <b>NORTH KOEL RESERVOIR PROJECT, JHARKHAND</b><br><b>IRRIGATION SLUICE GATE (2.0M x 3.0M)</b><br><b>GENERAL ARRANGEMENT</b> |                                                                   |
| CLIENT<br>WAPCOS LTD.                                                                                                       | TITLE<br>IRRIGATION SLUICE GATE (2.0M x 3.0M) GENERAL ARRANGEMENT |
| DRAWN BY<br>DINESH AHAD                                                                                                     | CHECKED BY<br>ANURAG                                              |
| SCALE<br>1:100                                                                                                              | SUBMITTED BY<br>M. S. K. JAIN                                     |
| DRG NO : OM/INFR/IRBG/003                                                                                                   | REV-2                                                             |



1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
2. NUMBER OF OPENING =4 NOS.
3. ALL WELDS ARE 6MM CONTINUOUS FILLET UNLESS OTHERWISE SPECIFIED
4. THE QUANTITY INDICATED FOR ONE GATE ONLY.TOTAL REQUIRED =4 NOS.
5. FABRICATION ERECTION TOLERANCES TO BE AS PER IS:4622.



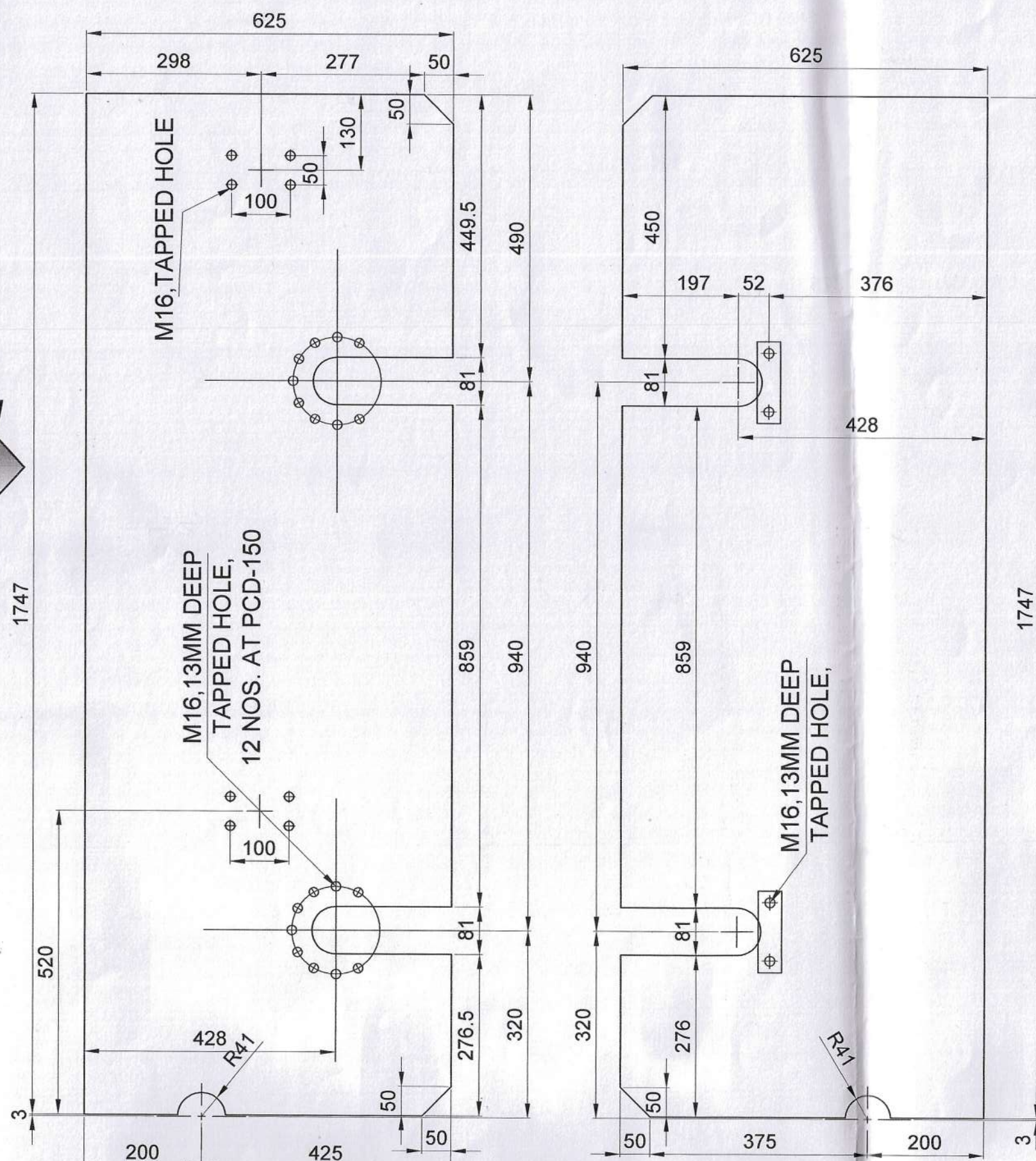
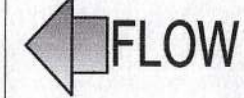
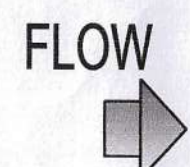
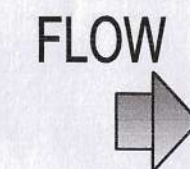
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|---------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------|
|  | <b>OM METALS INFRAPROJECTS LTD.</b>                 |                                                                                                                |                |
|                                                                                       | <b>WAPCOS LTD.</b><br>(A GOVT. OF INDIA ENTERPRISE) |                                                                                                                |                |
|                                                                                       | CLIENT                                              | NORTH KOEL RESERVOIR PROJECT, JHARKHAND<br><b>IRRIGATION SLUICE GATE (2.0M x 3.0M)</b><br><b>GATE ASSEMBLY</b> |                |
|                                                                                       | TITLE                                               |                                                                                                                |                |
|                                                                                       | DRAWN BY                                            | IDREES AHMAD <i>mdreesh</i>                                                                                    | (SHEET 1 OF 2) |
| CHECKED BY                                                                            | ANURAG                                              | SUBMITTED BY: M. SRIVALLABHA <i>MS</i>                                                                         |                |
| SCALE                                                                                 | DRG NO : OMIL/NKRP/ISG/302                          |                                                                                                                | REV-4          |

RECOMMENDED FOR APPROVAL

However, this approval does not relieve the contractor of any responsibility for accuracy and correctness of design, drawings, fabrications, erection, commissioning and satisfactory performance of the equipment at site and guarantee etc.

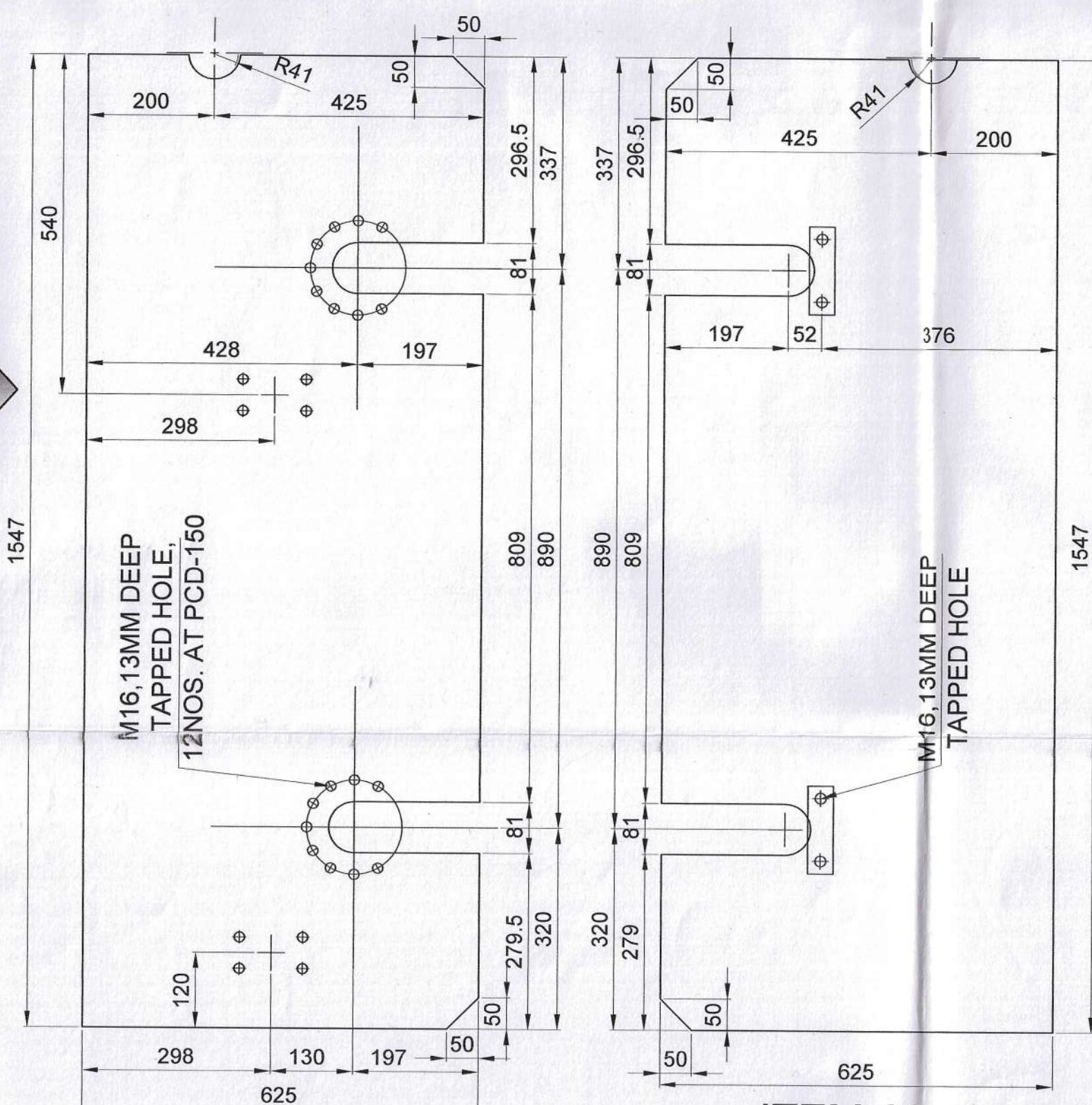
Amir  
20/6/20

20/8/2020  
निदेशक  
Director  
केन्द्रीय जल आयोग  
Central Water Commission  
नई दिल्ली/New Delhi



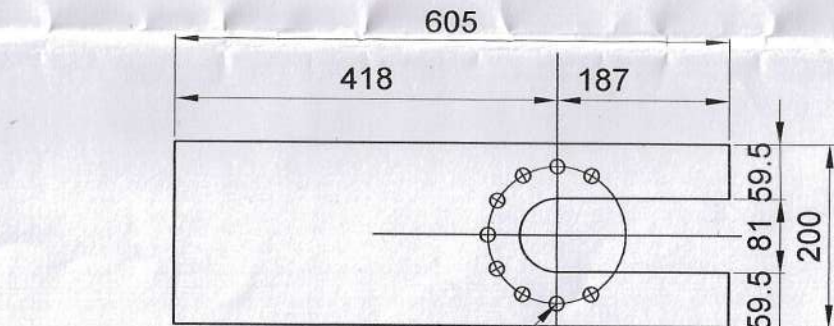
ITEM-20  
(OUTER SIDE)

ITEM-20  
(INNER SIDE)

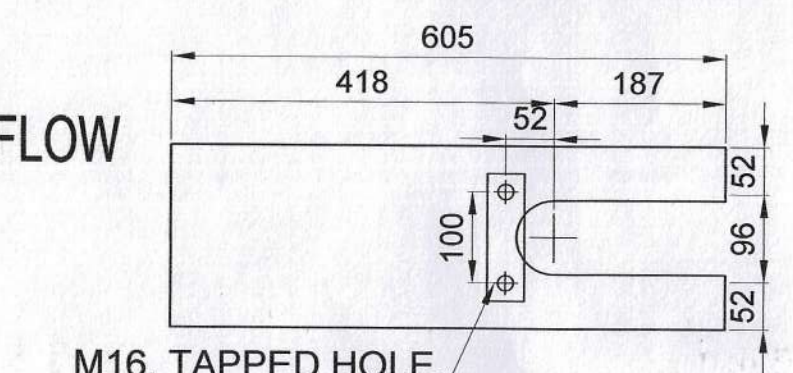


ITEM-03  
(OUTER SIDE)

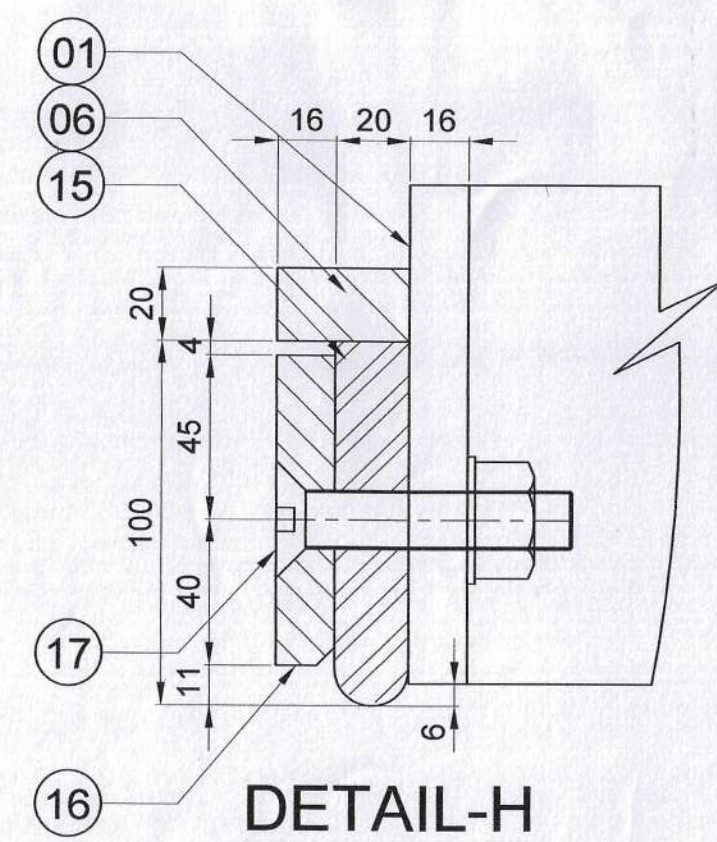
ITEM-03  
(INNER SIDE)



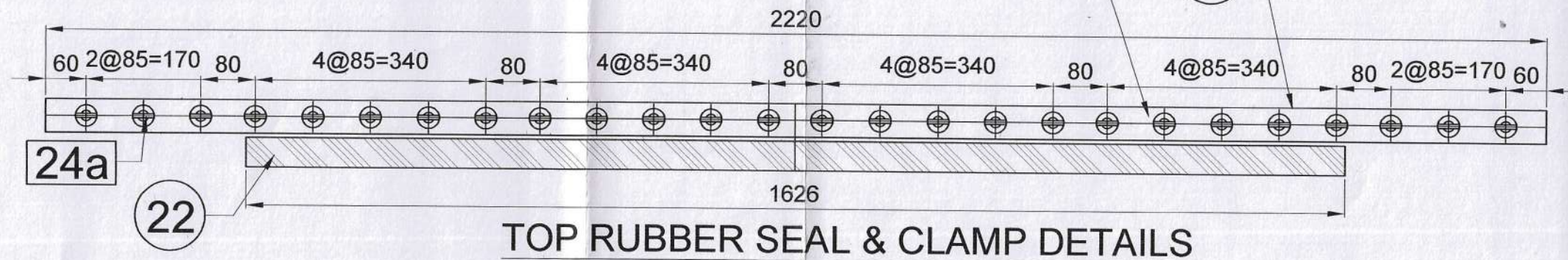
ITEM-7 & 25  
(OUTER SIDE)



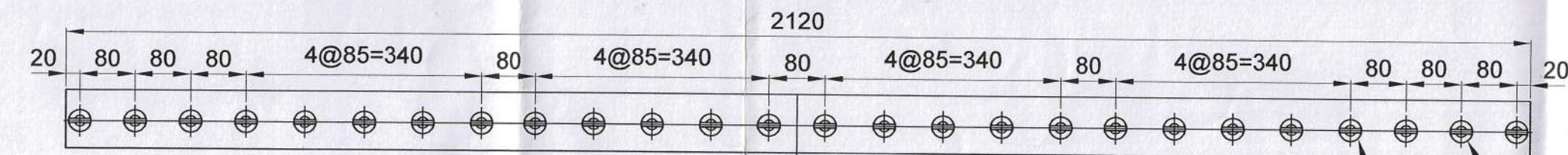
ITEM-8 & 26  
(INNER SIDE)



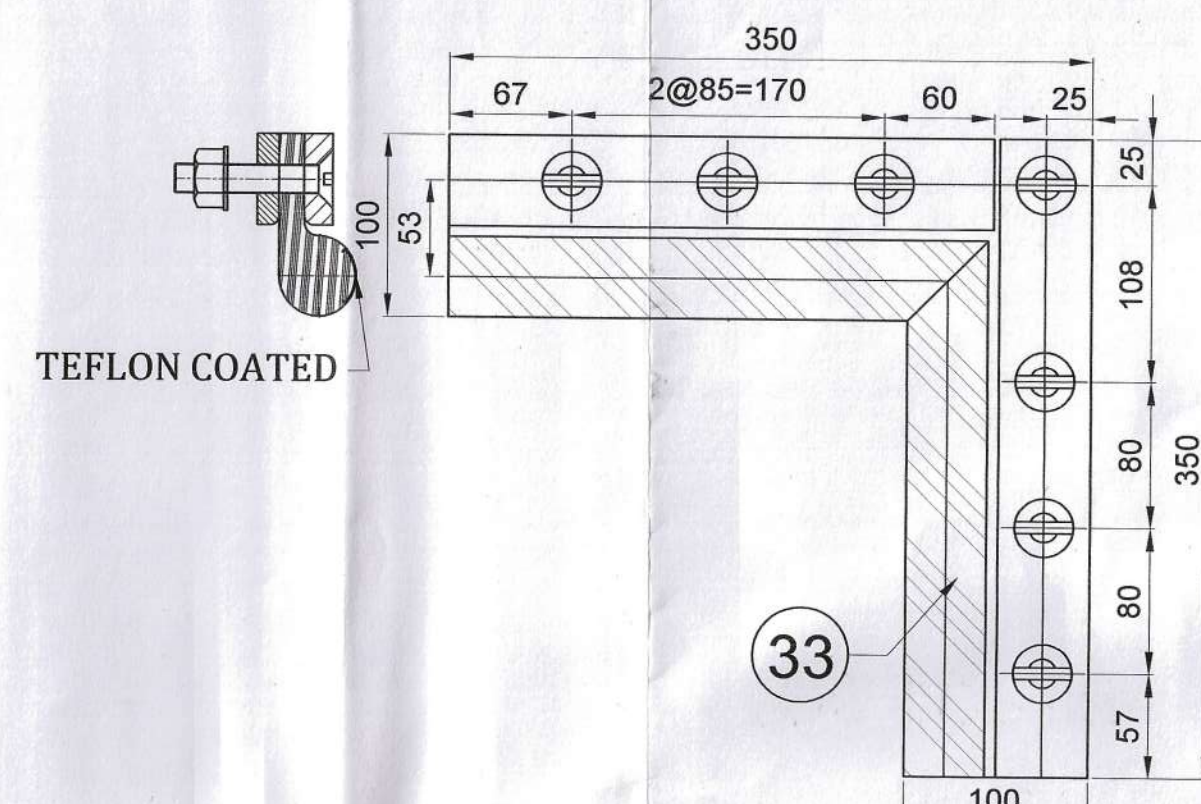
DETAIL-H



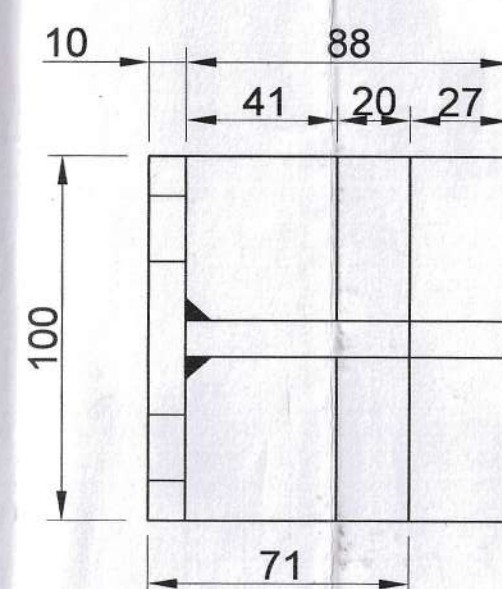
TOP RUBBER SEAL & CLAMP DETAILS



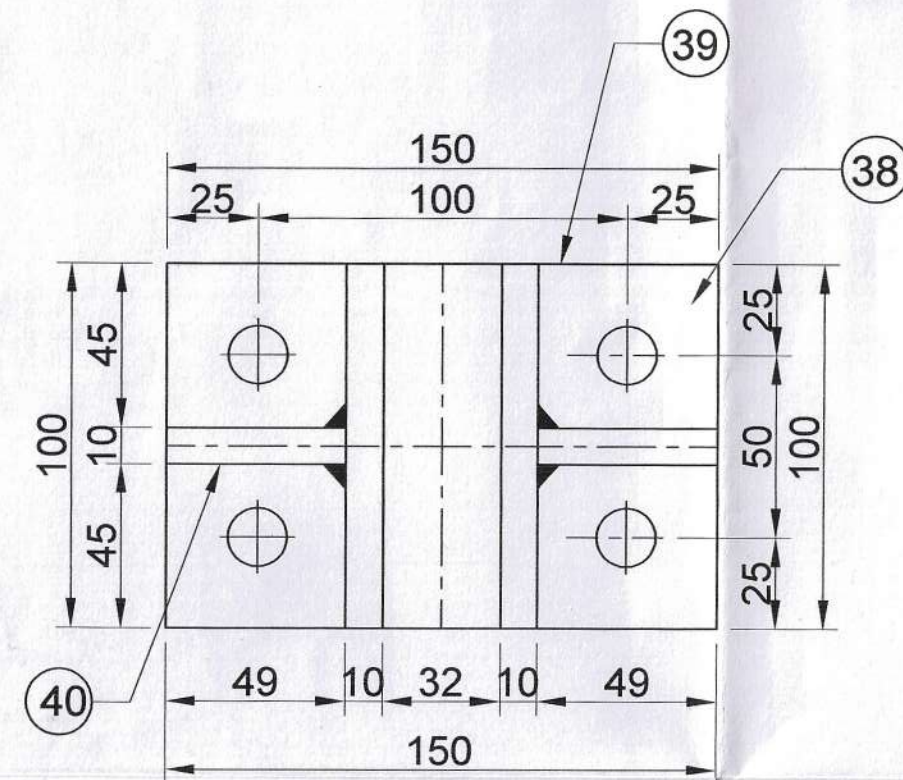
BOTTOM RUBBER SEAL & CLAMP DETAILS



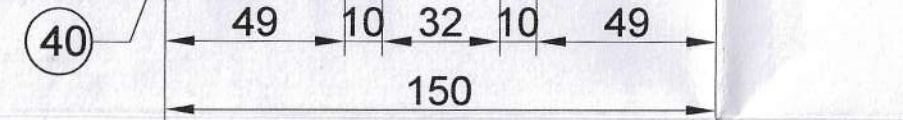
ITEM-33  
TOP CORNER SEAL



GUIDE SHOE  
DETAILS



ITEM-45



ITEM-36  
SIDE SEAL

NOTE:-

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
2. NUMBER OF OPENING = 4 NOS.
3. ALL WELDS ARE 6MM CONTINUOUS FILLET UNLESS OTHERWISE SPECIFIED
4. THE QUANTITY INDICATED FOR ONE GATE ONLY. TOTAL REQUIRED = 4 NOS.
5. FABRICATION ERECTION TOLERANCES TO BE AS PER IS:4622.



OM METALS INFRAPROJECTS LTD.

WAPCOS LTD.

(A GOVT. OF INDIA ENTERPRISE)

NORTH KOEL RESERVOIR PROJECT, JHARKHAND

IRRIGATION SLUICE GATE (2.0M x 3.0M)  
GATE DETAILS

(SHEET 2 OF 2)

DRAWN BY IDREES AHMAD

CHECKED ANURAG

SCALE

SUBMITTED BY: M. SRIVALLABHA

DRG NO : OMIL/NKRP/ISG/302

REV-3

| REV. | DESCRIPTION                                                                                        |
|------|----------------------------------------------------------------------------------------------------|
| R1   | REVISED AS WAPCOS MAIL DATED 12-02-2016                                                            |
| R2   | REVISED AS WAPCOS MAIL DATED 19-03-2018                                                            |
| R2   | REVISED AS WAPCOS MAIL DATED 31-03-2018                                                            |
| R3   | REVISED AS PER WAPCOS COMPLIANCE WAPCOS LETTER NO. WAP/Infra/NK-JHK/2019, DATED 20.12.2019/12.2019 |



Recommended for Approval

However this approval does not relieve the contractor of its responsibility for accuracy and completion of design, fabrication, erection, commissioning and satisfactory performance of the equipment at site and guarantee etc.

20/8/20

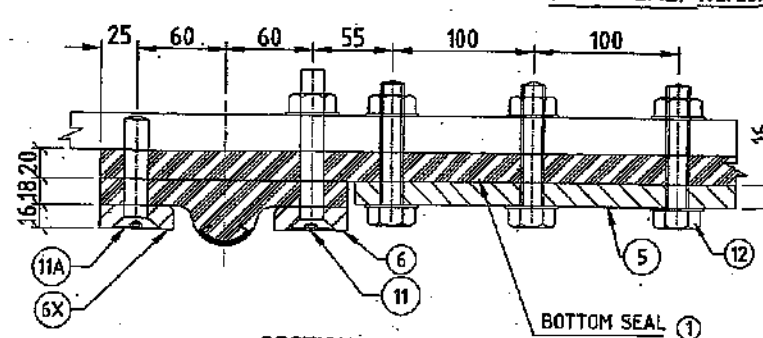
Director

Central Water Commission

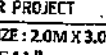
and Reservoir Duty

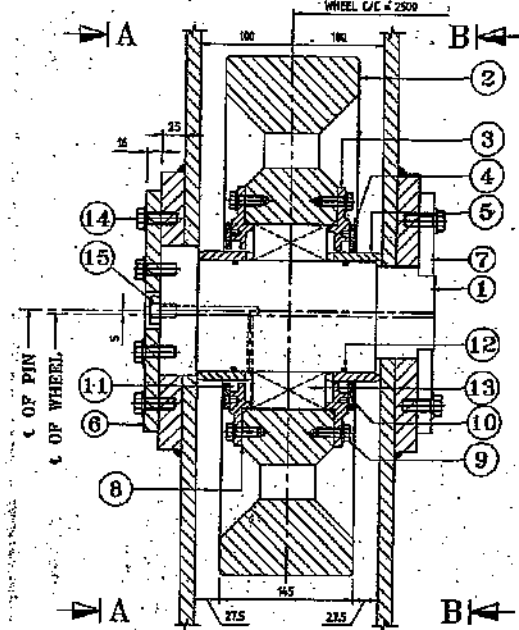




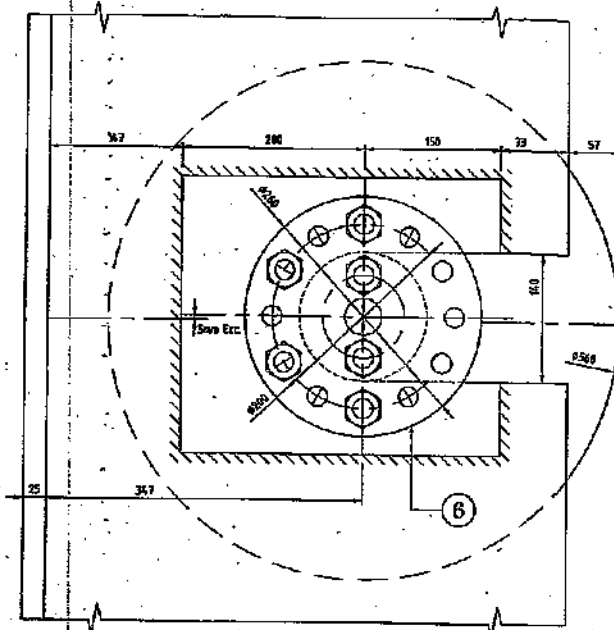


SECTION - DD

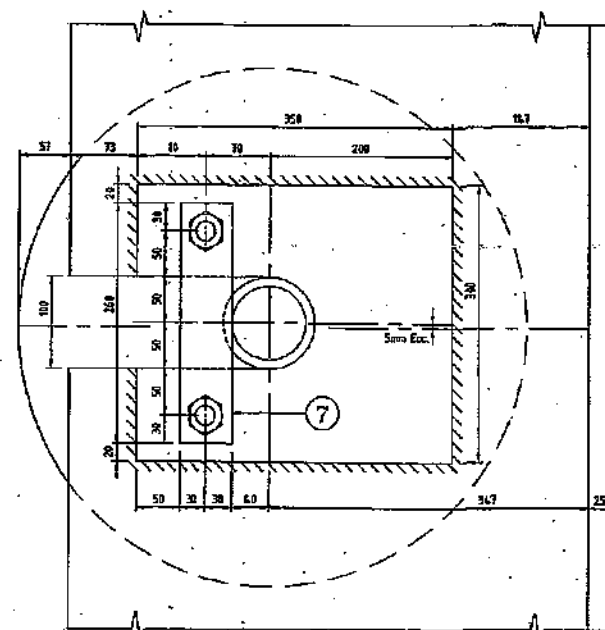
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|  |               | <b>OM METALS INFRAPROJECTS LTD.</b>                                                                 |                                                                                       |
| <b>CLIENT</b>                                                                         |               | <b>WAPCOS LTD.</b>                                                                                  |                                                                                       |
| <b>PROJECT</b>                                                                        |               | NORTH KOEL RESERVOIR PROJECT                                                                        |                                                                                       |
| <b>TITLE</b>                                                                          |               | LOW LEVEL SLUICE GATE (SIZE : 2.0M X 3.0M)<br><u>"DETAIL OF SEAL"</u>                               |                                                                                       |
| <b>DRAWN BY</b>                                                                       | PANKAJ NEGI   | SUBMITTED BY:  |  |
| <b>CHECKED BY</b>                                                                     | ANURAG SHUKLA |                                                                                                     |                                                                                       |
| <b>SCALE</b>                                                                          |               | DRG NO : OME/IKRPL/156/02                                                                           | SH.-2 OF 2                                                                            |
| <b>REV</b>                                                                            |               |                                                                                                     | <b>REV-3</b>                                                                          |



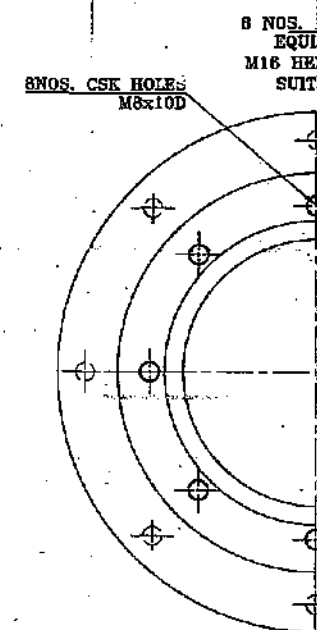
SECTIONAL ELEVATION OF WHEEL ASSEMBLY



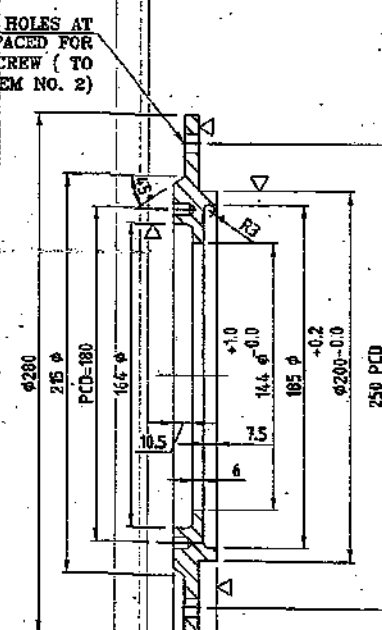
VIEW -AA



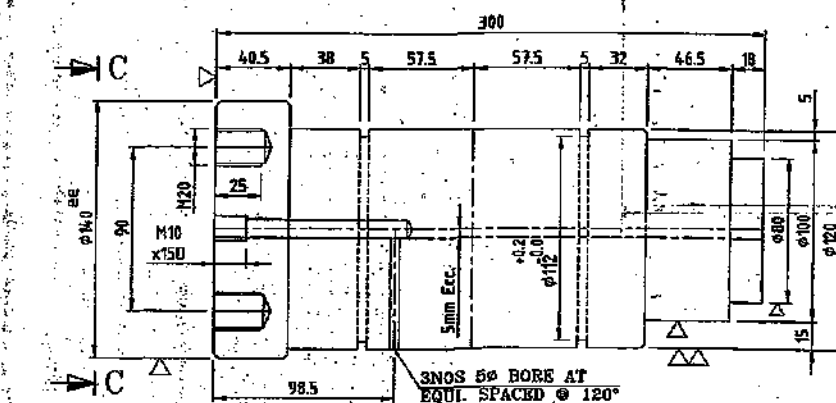
VIEW -BB



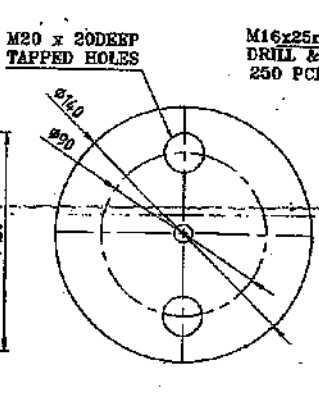
VIEW -CC



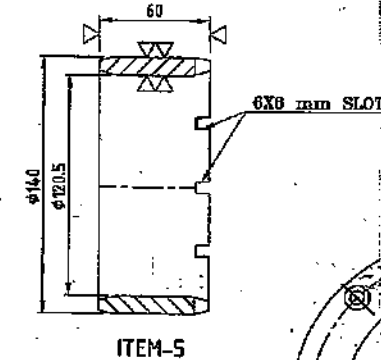
BEARING RETAINER ITEM NO. 3)



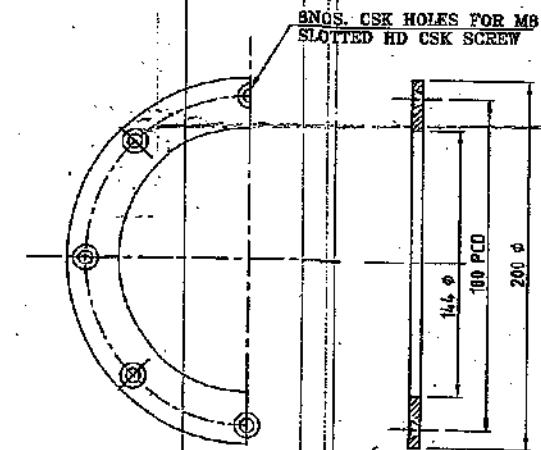
PIN (ITEM-1)



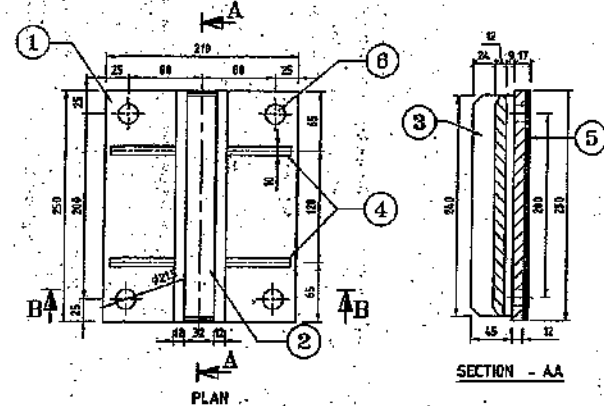
WHEEL (ITEM NO. 2)



ITEM-5



COVER PLATE (4)



SECTION - AA

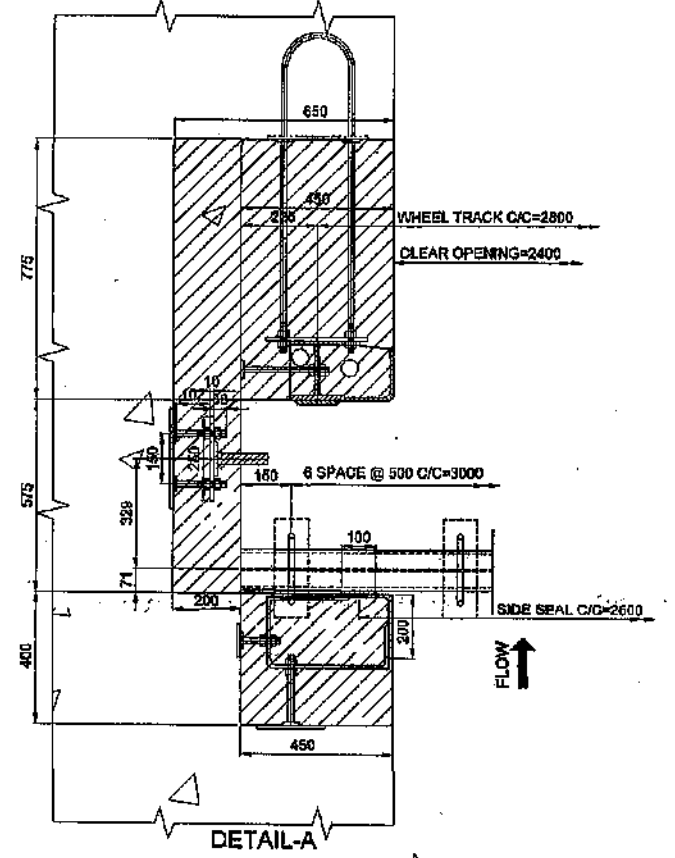
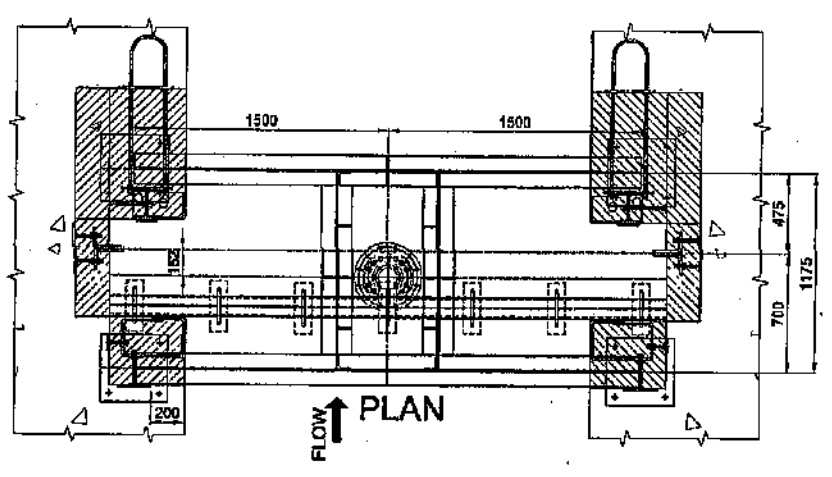
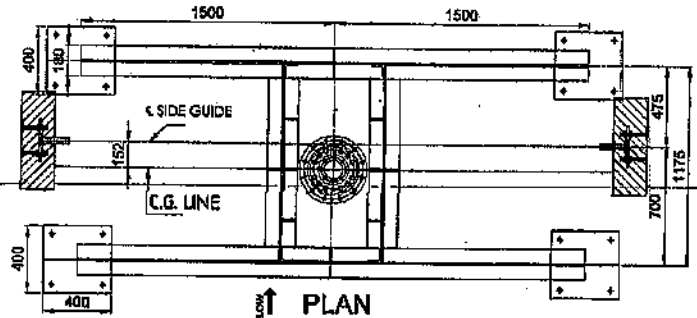
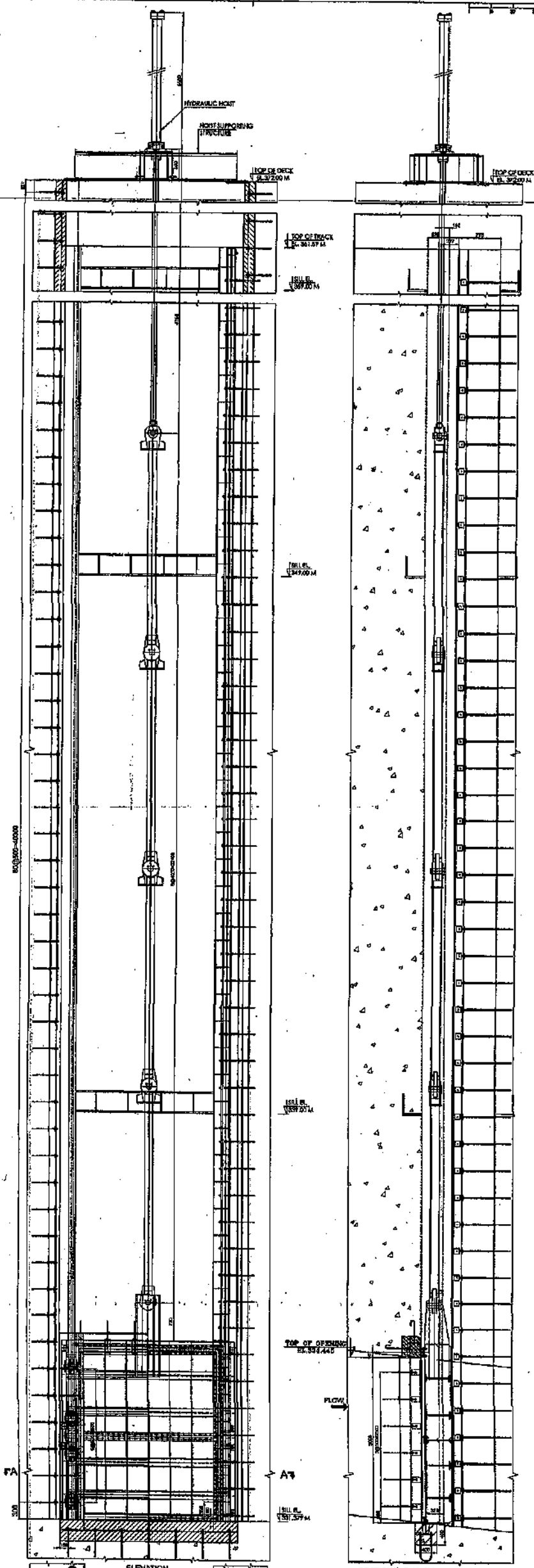
- NOTE:-  
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.  
2. ALL WELDS ARE 6MM CONTINUOUS FILLET UNLESS OTHERWISE SPECIFIED.  
3. NUMBER OF GATE = 2 NO.  
4. FABRICATION TOLERANCES TO BE AS PER IS - 4022.  
5. 90% OF GUIDE SHOES REQ. FOR 1 GATE.

| S.NO.          | ITEM                    | THK | WIDTH | LENGTH | QTY. | WEIGHT | MATERIAL                |
|----------------|-------------------------|-----|-------|--------|------|--------|-------------------------|
| 1              | BASE PL                 | 12  | 210   | 250    | 1    | 4.95   | IS-2062, Gr. E250 Cu BR |
| 2              | PLATE                   | 12  | 32    | 240    | 1    | 0.72   | IS-2062, Gr. E250 Cu BR |
| 3              | PLATE                   | 12  | 45    | 240    | 2    | 2.03   | IS-2062, Gr. E250 Cu BR |
| 4              | STIFFENER PL            | 10  | 45    | 70     | 4    | 0.99   | IS-2062, Gr. E250 Cu BR |
| 5              | SHIM PL                 | 5   | 210   | 250    | 1    | 2.06   | IS-2062, Gr. E250 Cu BR |
| 6              | M16 HD BOLT WITH WASHER | 75  | 4     |        |      |        | IS-1367, CL4.8          |
| TOTAL WEIGHT = |                         |     |       |        |      | 10.75  | KGS                     |

| S.NO.          | ITEM                                     | THK  | WIDTH    | LENGTH | QTY.  | WEIGHT | MATERIAL                       |
|----------------|------------------------------------------|------|----------|--------|-------|--------|--------------------------------|
| 1              | PIN Ø                                    | 240  | 300      | 1      | 36.23 | 183.00 | AS-420 / IS-1570 (P-VL) 20Cr13 |
| 2              | WHEEL                                    | 345  | ID-200   | OD-560 | 1     | 183.00 | IS-1030, Gr. 280-520           |
| 3              | BEARING RETAINER                         | 24   | ID-144   | OD-280 | 2     | 20.08  | IS-2062 Gr. E250 Cu BR         |
| 4              | COVER PL                                 | 6    | ID-344   | OD-200 | 2     | 2.00   | IS-2062 Gr. E250 Cu BR         |
| 5              | SPACER                                   | 60   | ID-120.5 | OD-140 | 2     | 2.00   | IS-2062 Gr. E250 Cu BR         |
| 6              | VERNIER PLATE Ø                          | 250  | 16       | 1      | 6.67  |        | IS-2062 Gr. E250 Cu BR         |
| 7              | KEEPER PL                                | 16   | 60       | 280    | 1     | 1.96   | IS-2062 Gr. E250 Cu BR         |
| 8              | GASKET                                   | 1    | ID-215   | OD-280 | 2     |        | RUBBER                         |
| 9              | HEX HD SCREW M16                         | 30   | 16       |        |       |        | IS-1367, CL4.8                 |
| 10             | M8 SLOTTED CSK HD SCREW                  | 15   | 16       |        |       |        | IS-1367, CL4.8                 |
| 11             | ONL SEAL                                 | 10.5 | ID-140   | OD-164 | 2     |        | RUBBER                         |
| 12             | O RING (5mm IN SEC)                      |      |          |        | 2     | 0.20   | RUBBER                         |
| 13             | BEARING-24324CC/W33, ID-120.0D-200.0W-80 |      |          |        | 1     | 10.30  | SKF/FAIR/NTN                   |
| 14             | HEX HD SCREW M20                         | 40   | 8        |        |       |        | IS-1367, CL4.8                 |
| 15             | BUTTON HD GREASE NIPPLE M30              |      |          |        | 1     |        | IS-4009 / BRASS                |
| TOTAL WEIGHT = |                                          |      |          |        |       | 262.36 | KGS                            |

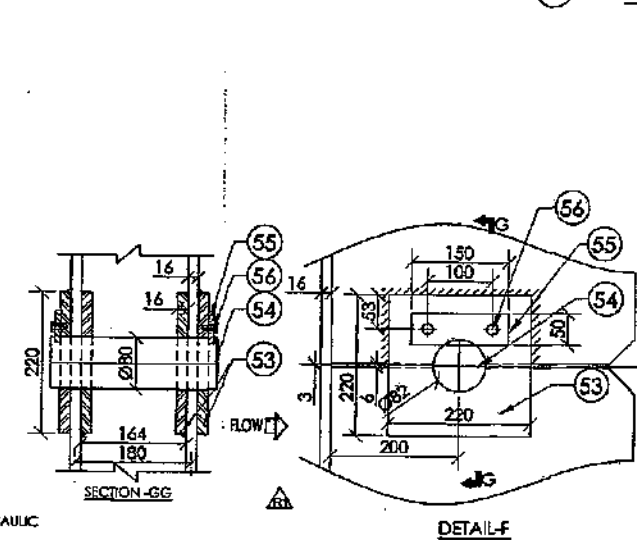
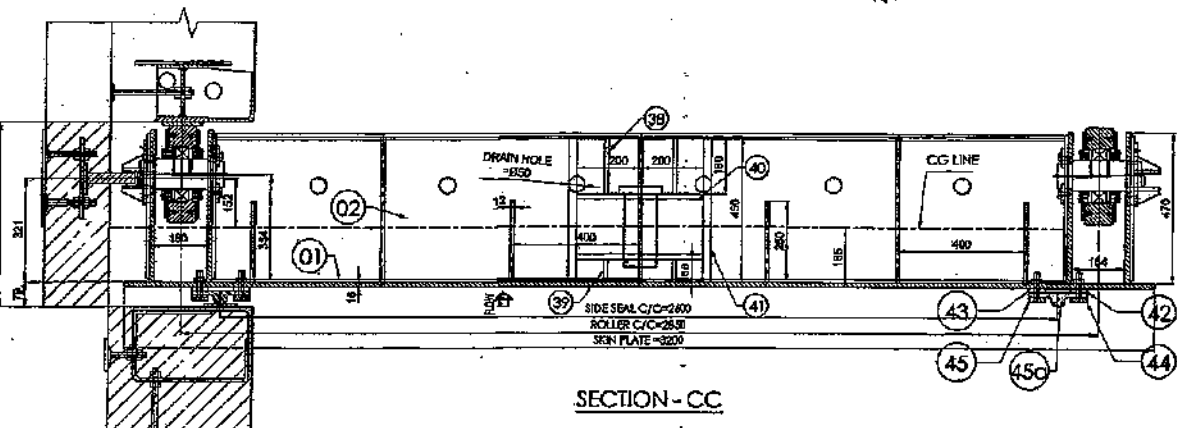
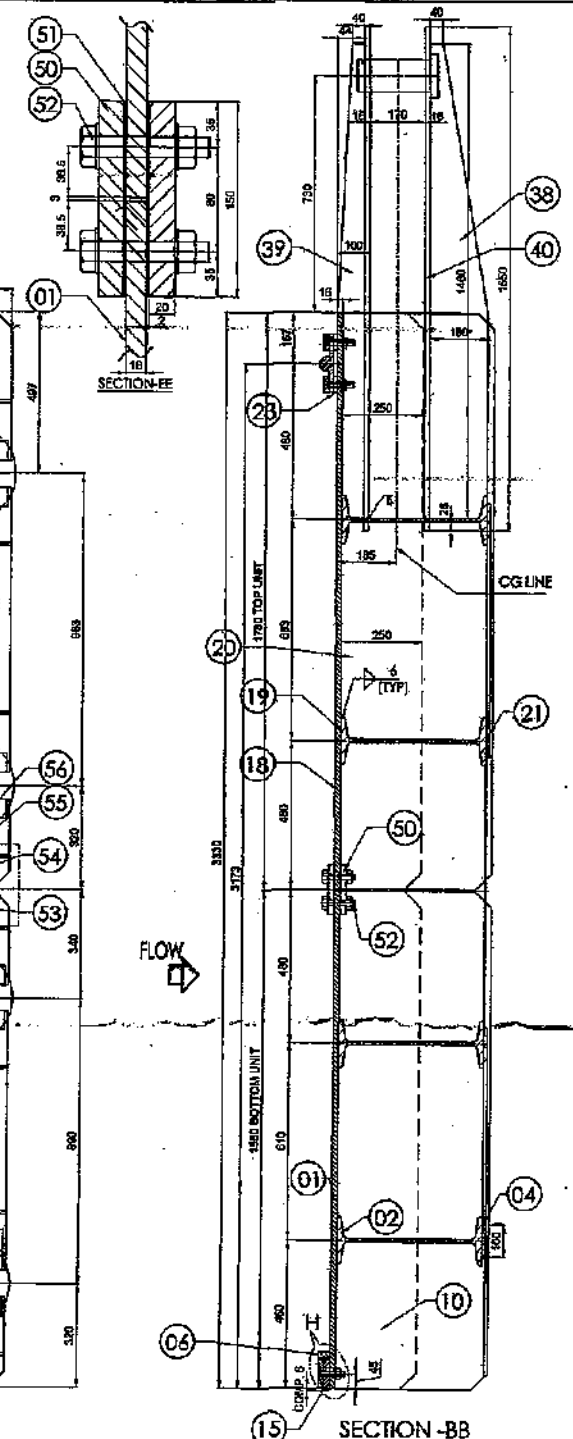
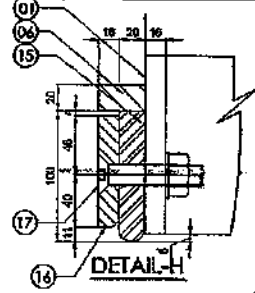
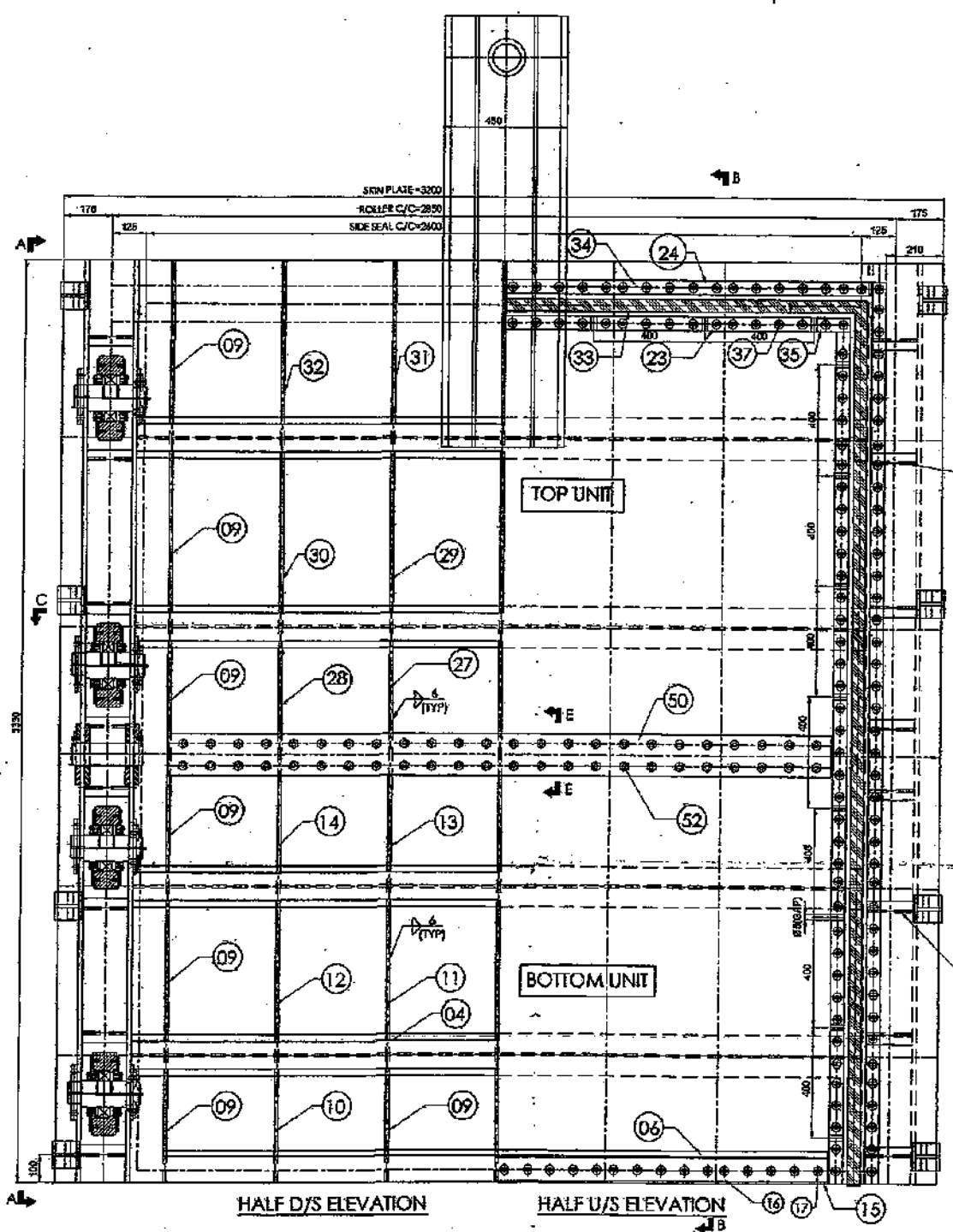
- NOTE:-  
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.  
2. ALL WELDS ARE 6MM CONTINUOUS FILLET UNLESS OTHERWISE SPECIFIED.  
3. NUMBER OF OPENING GATE = 2 No.  
4. TOTAL No. OF WHEEL ASSEMBLY = 08 Nos. / GATE  
5. THE MATERIAL OF ITEM ARE MARKED IN FURNISHED SIZES.  
6. THE BEARING ARE TO BE FULLY GREASED IN THE SHOP AFTER ASSEMBLY WITH GATE LEAF.

|                                 |                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------|
| ON METALS INFRAPROJECTS LIMITED |                                                                                  |
| CLIENT                          | WAPCOS LTD.                                                                      |
| PROJECT                         | NORTH KOEL RESERVOIR PROJECT                                                     |
| TITLE                           | LOW LEVEL SLUICE GATE (SIZE 2.0 M X 3.0M)<br>WHEEL ASSEMBLY & GUIDE SHOE DETAILS |
| DR'WN BY                        | PANKAJ NEGI                                                                      |
| CHECKED BY                      | ANURAG SHUKLA                                                                    |
| SIZE                            | A1 SCALE NTS                                                                     |
| DATE                            | 15.07.2018                                                                       |
| REVISED AS PER WAPCOS MAIL      |                                                                                  |
| DATE                            | 15.08.2018                                                                       |
| ORG NO                          | OM/ANRP/LLSG/43                                                                  |
| REV-2                           |                                                                                  |



- NOTES:-
1. ALL DIMENSIONS ARE IN MM. AND LEVEL IN METRES UNLESS OTHERWISE SPECIFIED.
  2. 1st. STAGE CONCRETE SHOWN THUS ---
  3. 2nd. STAGE CONCRETE GRADE IN 30 SHOWN THUS ---
  4. ALL WELD SHALL BE 6 mm FILLET, CONTINUOUS WELDING DEPTH (U.N.D.)

|                          |                                                     |              |                              |
|--------------------------|-----------------------------------------------------|--------------|------------------------------|
| REV.                     | <b>OM METALS INFRAPROJECTS LTD.</b>                 |              |                              |
|                          | <b>WAPCOS LTD.</b><br>(A SOVT. OF INDIA ENTERPRISE) |              |                              |
|                          | <b>NORTH KOEL RESERVOIR PROJECT, JHARKHAND</b>      |              |                              |
|                          | <b>INTAKE SERVICE GATE (2.4M x 3.066M)</b>          |              |                              |
|                          | <b>"GENERAL ARRANGMENT"</b>                         |              |                              |
| DESCRIPTION              | DRAWN BY                                            | IOREES AHMAD | SUBMITTED BY: M. SRIVALLABHA |
|                          | CHECKED BY                                          | ANURAG       |                              |
|                          | SCALE                                               |              |                              |
| DRG NO : OM/INKL/ISG/200 |                                                     |              | REV-0                        |



| TOTAL WEIGHT FOR ONE SET = 4882.4 KGS. FOR 2 SETS = 9764.8 KGS. |                                              |     |                |                            |
|-----------------------------------------------------------------|----------------------------------------------|-----|----------------|----------------------------|
| ITEM NO.                                                        | DESCRIPTION                                  | QTY | WEIGHT IN KGS. | MATERIAL                   |
| 56                                                              | HEX HD. BOLT M8 X 18 LG.                     | 8   | -              | IS: 1347, CL 4.6           |
| 55                                                              | PLATE 8MM X 50 X 150 LG.                     | 4   | 1.88           | IS: 2062, E250 Gr-B        |
| 54                                                              | PIN Ø80 X 240 LG.                            | 2   | 20.52          | IS: 1570, AISI 420         |
| 53                                                              | PLATE 16THK X 220 X 220 LG.                  | 8   | 48.63          | IS: 2062, E250 Gr-B        |
| 52                                                              | HEX HD. BOLT M14 X 100 LG. WITH NUT & WASHER | 50  | 9.00           | IS: 1347, CL 4.6           |
| 51                                                              | RUBBER 02THK X 150 X 240 LG.                 | 2   | -              | IS: 11855                  |
| 50                                                              | PLATE 20THK X 150 X 240 LG.                  | 2   | 113.51         | IS: 2062, E250 Gr-B        |
| 49                                                              | PLATE 10THK X 43 X 88 LG.                    | 16  | 4.75           | IS: 2062, E250 Gr-B        |
| 48                                                              | PLATE 20THK X 88 X 100 LG.                   | 16  | 24.32          | IS: 2062, E250 Gr-B        |
| 47                                                              | PLATE 10THK X 100 X 150 LG.                  | 8   | 9.42           | IS: 2062, E250 Gr-B        |
| 46                                                              | CSK BOLT M16 X 80 LG. WITH NUT & WASHER      | 150 | 20.20          | AISI 304, AISI 304(V) / GI |
| 45a                                                             | SIDE SEAL 04THK X 100 X 320 LG.              | 2   | -              | IS: 11855 (DOUBLE STEM)    |
| 45                                                              | PL. 16THK X 50 X 3080 LG. (SIDE SEAL CLAMP)  | 2   | 38.68          | IS: 2062, E250 Gr-B        |
| 44                                                              | PL. 16THK X 50 X 3260 LG. (SIDE SEAL CLAMP)  | 2   | 40.95          | IS: 2062, E250 Gr-B        |
| 43                                                              | PL. 12THK X 50 X 3070 LG. (SIDE SEAL BASE)   | 2   | 28.92          | IS: 2062, E250 Gr-B        |
| 42                                                              | PL. 12THK X 50 X 3250 LG. (SIDE SEAL BASE)   | 2   | 30.62          | IS: 2062, E250 Gr-B        |
| 41                                                              | PL. 20THK X 450 X 1460 LG.                   | 2   | 206.30         | IS: 2062, E250 Gr-B        |
| 40                                                              | PL. 16THK X 450 X 1550 LG.                   | 2   | 175.21         | IS: 2062, E250 Gr-B        |
| 39                                                              | STIFFEN. PL. 16THK X 68 X 1460 LG.           | 2   | 24.94          | IS: 2062, E250 Gr-B        |
| 38                                                              | STIFFEN. PL. 16THK X 180 X 1460 LG.          | 2   | 66.02          | IS: 2062, E250 Gr-B        |
| 37                                                              | CSK BOLT M16 X 80 LG. WITH NUT & WASHER      | 66  | 9.43           | AISI 304, AISI 304(V) / GI |
| 36                                                              | TOP CORNER SEAL 04THK X 100 X 320 LG.        | 2   | -              | IS: 11855                  |
| 35                                                              | CLAMP 16THK X 50 X 2520 LG.                  | 1   | 15.83          | IS: 2062, E250 Gr-B        |
| 34                                                              | CLAMP 16THK X 50 X 2670 LG.                  | 1   | 16.77          | IS: 2062, E250 Gr-B        |
| 33                                                              | TOP SEAL 04THK X 100 X 320 LG.               | 1   | -              | IS: 11855 (DOUBLE STEM)    |
| 32                                                              | STIFFEN. PL. 12THK X 450 X 630 LG.           | 3   | 80.12          | IS: 2062, E250 Gr-B        |
| 31                                                              | STIFFEN. PL. 12THK X 250 X 630 LG.           | 4   | 59.35          | IS: 2062, E250 Gr-B        |
| 30                                                              | STIFFEN. PL. 12THK X 250 X 721 LG.           | 3   | 85.46          | IS: 2062, E250 Gr-B        |
| 29                                                              | STIFFEN. PL. 12THK X 250 X 672 LG.           | 4   | 63.30          | IS: 2062, E250 Gr-B        |
| 28                                                              | STIFFEN. PL. 12THK X 450 X 454 LG.           | 3   | 57.74          | IS: 2062, E250 Gr-B        |
| 27                                                              | STIFFEN. PL. 12THK X 250 X 454 LG.           | 4   | 42.77          | IS: 2062, E250 Gr-B        |
| 26                                                              | PL. 10THK X 200 X 450 LG.                    | 4   | 28.26          | IS: 2062, E250 Gr-B        |
| 25                                                              | PL. 10THK X 200 X 450 LG.                    | 4   | 28.26          | IS: 2062, E250 Gr-B        |
| 24                                                              | PL. 12THK X 50 X 2530 LG. (TOP SEAL BASE)    | 1   | 11.92          | IS: 2062, E250 Gr-B        |
| 23                                                              | PL. 12THK X 50 X 2680 LG. (TOP SEAL BASE)    | 1   | 12.62          | IS: 2062, E250 Gr-B        |
| 22                                                              | Inner end box PL. 10THK X 164 X 470 LG.      | 8   | 48.4           | IS: 2062, E250 Gr-B        |
| 21                                                              | HG. PAD PL. 10THK X 100 X 2650 LG.           | 2   | 41.6           | IS: 2062, E250 Gr-B        |
| 20                                                              | END BOX PL. 16THK X 470 X 1777 LG.           | 4   | 419.40         | IS: 2062, E250 Gr-B        |
| 19                                                              | ISM 450 X 2654 LG.                           | 2   | 382.18         | IS: 2062, E250 Gr-A        |
| 18                                                              | SKIN PL. 16THK X 1780 X 3200 LG.             | 1   | 715.42         | IS: 2062, E250 Gr-B        |
| 17                                                              | CSK BOLT M16 X 80 LG. WITH NUT & WASHER      | 30  | 4.84           | AISI 304, AISI 304(V) / GI |
| 16                                                              | CLAMP 16THK X 250 X 2410 LG.                 | 1   | 25.73          | IS: 2062, E250 Gr-B        |
| 15                                                              | BOTTOM SEAL 20THK X 100 X 2780 LG.           | 1   | -              | IS: 11855                  |
| 14                                                              | STIFFEN. PL. 12THK X 450 X 474 LG.           | 3   | 60.28          | IS: 2062, E250 Gr-B        |
| 13                                                              | STIFFEN. PL. 12THK X 250 X 474 LG.           | 4   | 44.63          | IS: 2062, E250 Gr-B        |
| 12                                                              | STIFFEN. PL. 12THK X 450 X 599 LG.           | 3   | 74.17          | IS: 2062, E250 Gr-B        |
| 11                                                              | STIFFEN. PL. 12THK X 250 X 599 LG.           | 4   | 55.43          | IS: 2062, E250 Gr-B        |
| 10                                                              | STIFFEN. PL. 12THK X 450 X 454 LG.           | 3   | 57.84          | IS: 2062, E250 Gr-B        |
| 9                                                               | STIFFEN. PL. 12THK X 250 X 454 LG.           | 4   | 42.84          | IS: 2062, E250 Gr-B        |
| 8                                                               | Wheel Pad PL. 10THK X 200 X 450 LG.          | 4   | 28.26          | IS: 2062, E250 Gr-B        |
| 7                                                               | Wheel Pad PL. 10THK X 200 X 450 LG.          | 4   | 28.26          | IS: 2062, E250 Gr-B        |
| 6                                                               | SEAL STOPPER PL. 36 X 20THK X 2420 LG.       | 1   | 18.7           | IS: 2062, E250 Gr-B        |
| 5                                                               | Inner end box PL. 10THK X 164 X 470 LG.      | 8   | 48.4           | IS: 2062, E250 Gr-B        |
| 4                                                               | HG. PAD PL. 10THK X 100 X 2650 LG.           | 2   | 41.6           | IS: 2062, E250 Gr-B        |
| 3                                                               | END BOX PL. 16THK X 470 X 1547 LG.           | 4   | 365.29         | IS: 2062, E250 Gr-B        |
| 2                                                               | ISM 450 X 2654 LG.                           | 2   | 382.18         | IS: 2062, E250 Gr-A        |
| 1                                                               | SKIN PL. 16THK X 1550 X 3200 LG.             | 1   | 622.98         | IS: 2062, E250 Gr-B        |

Approved  
13/02/2018

OM METALS INFRAPROJECTS LTD.  
(A GOVT. OF INDIA ENTERPRISE)

WAPCOS LTD.  
(A GOVT. OF INDIA ENTERPRISE)

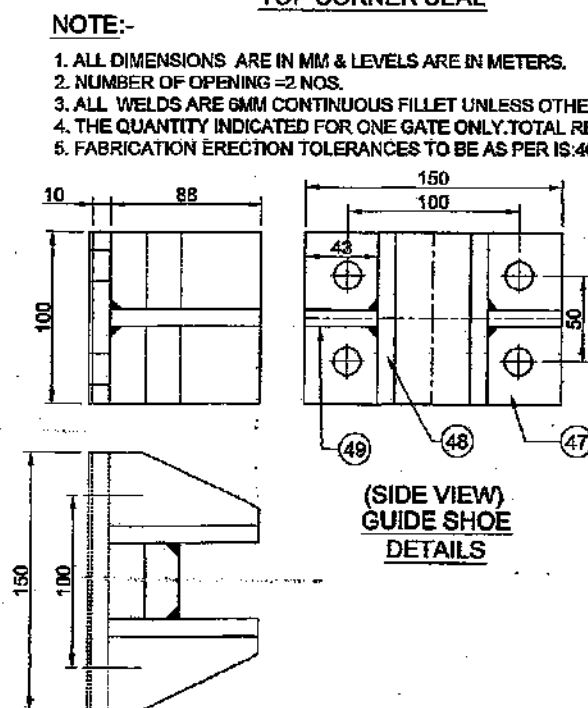
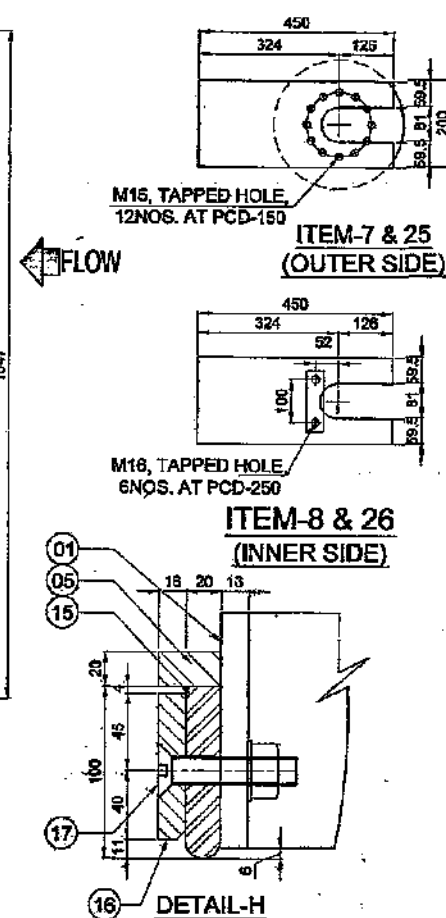
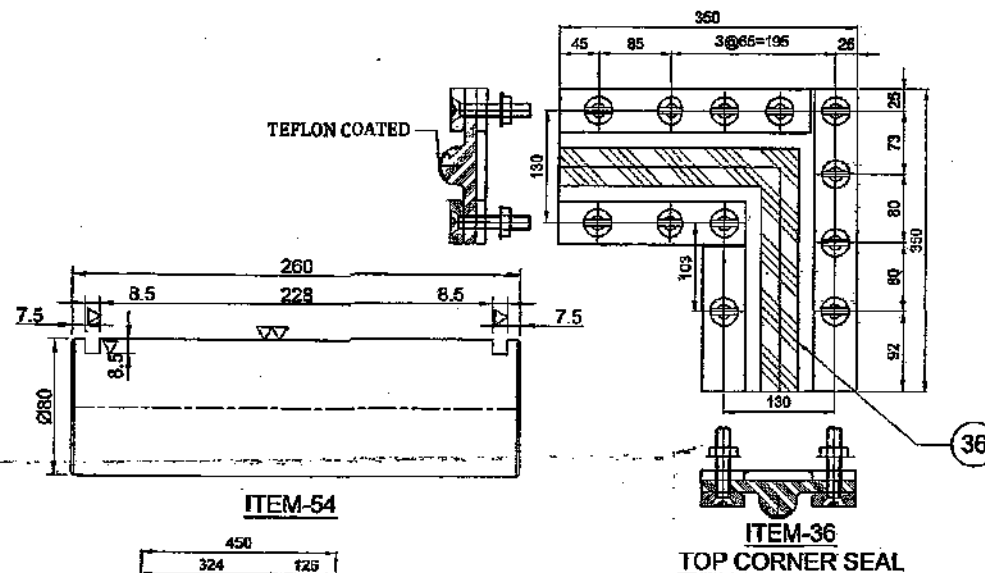
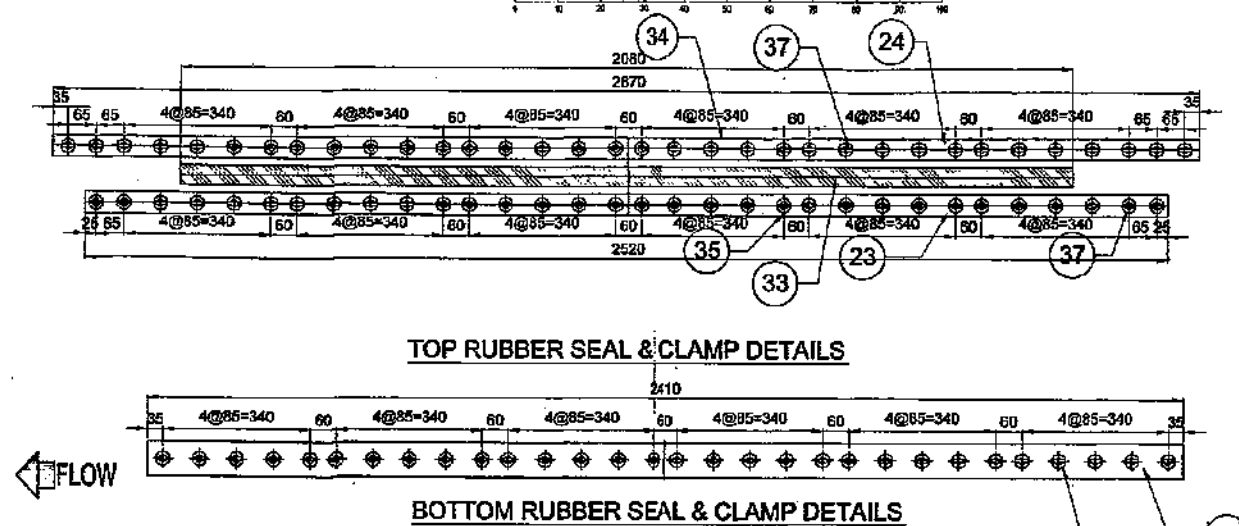
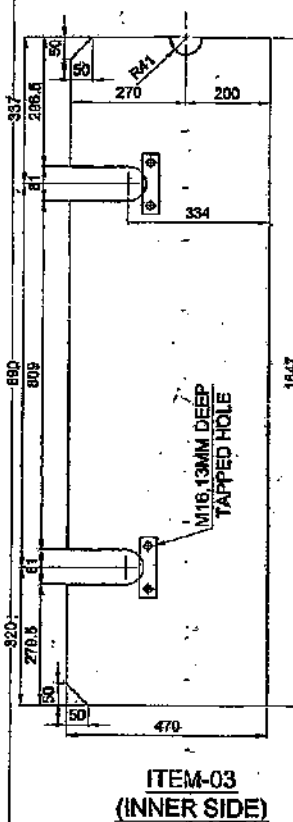
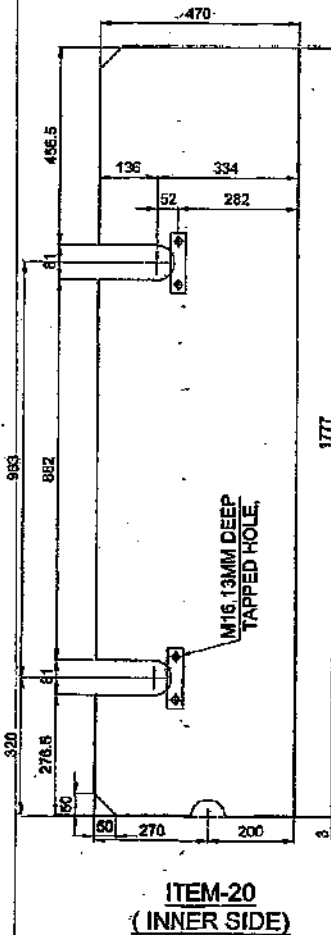
CLIENT: WAPCOS LTD.  
TITLE: NORTH KOEL RESERVOIR PROJECT, JHARKHAND  
INTAKE SERVICE GATE (2.4M X 3.066M)  
GATE ASSEMBLY

DRAWN BY: IDREES AHMAD  
CHECKED BY: ANURAG  
SCALE: 1:1

SUBMITTED BY: M. SRIVALLABHA  
DRG NO: OMIL/NKP/SG/202  
REV: 1

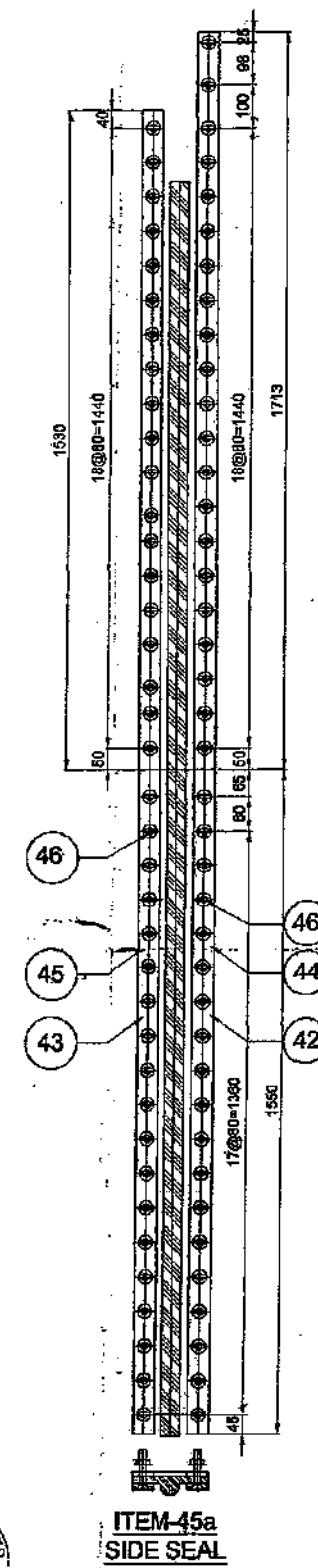
(SHEET 1 OF 2)

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
2. NUMBER OF OPENING - 2 NOS.
3. ALL WELDS ARE GMAW CONTINUOUS FILLET UNLESS OTHERWISE SPECIFIED.
4. THE QUANTITY INDICATED FOR ONE GATE ONLY. TOTAL REQUIRED - 2 NOS.
5. FABRICATION TOLERANCES TO BE AS PER IS: 4622.
6. INTAKE SERVICE GATE IS OPERATED BY HYDRAULIC HOSE. THE CAPACITY OF HYDRAULIC CYLINDER IS 25MT SINGLE ACTING TYPE.
7. TOP AND SIDE SEAL BASE PLATE WILL BE PROVIDED WITH A GAP OF 5MM (400 C/C DISTANCE) TO PRESSURE THE RUBBER SEAL.



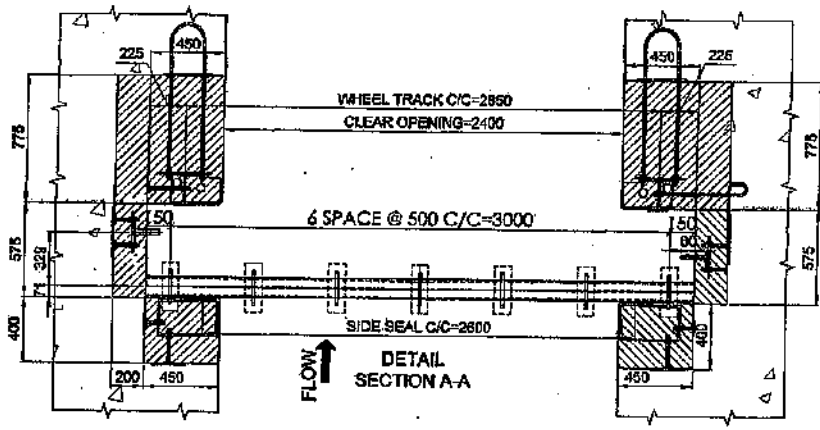
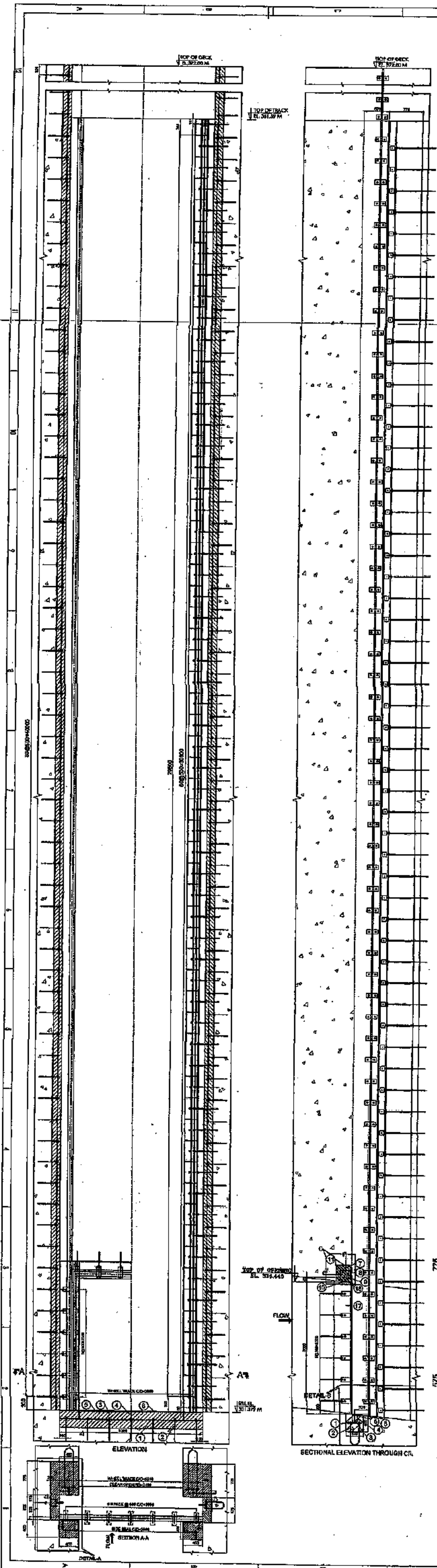
**NOTE:-**

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
2. NUMBER OF OPENING =2 NOS.
3. ALL WELDS ARE 6MM CONTINUOUS FILLET UNLESS OTHERWISE SPECIFIED
4. THE QUANTITY INDICATED FOR ONE GATE ONLY.TOTAL REQUIRED =2 NOS.
5. FABRICATION ERECTION TOLERANCES TO BE AS PER IS:4622.



Approved  
APCOS LIMITED  
15/03/18  
पाकोस लिमिटेड

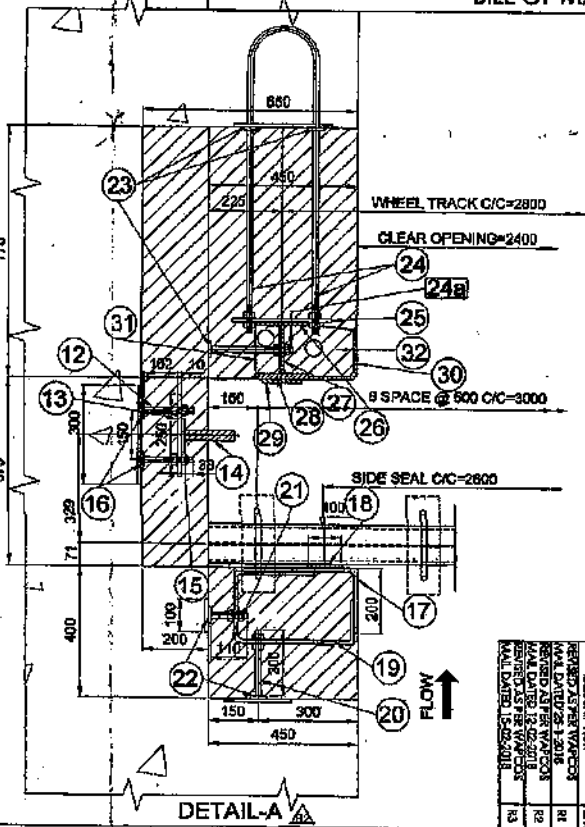
|                                                                                       |          |                                                     |                                                                                                         |
|---------------------------------------------------------------------------------------|----------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|  |          | OM METALS INFRAPROJECTS LTD.                        |                                                                                                         |
|                                                                                       |          | WAPCOS LTD.<br>(A GOVT. OF INDIA ENTERPRISE)        |                                                                                                         |
| REVISIONS AS PER ENCL. LETTER DATED                                                   | CLIENT   | NORTH KOEL RESERVOIR PROJECT, JHARKHAND             |                                                                                                         |
|                                                                                       | TITLE    | INTAKE SERVICE GATE (2.4M x 3.066M)<br>GATE DETAILS |                                                                                                         |
|                                                                                       | DRAWN BY | IDREES AHMAD                                        | <br>(SHEET 2 OF 2) |
| CHECKED                                                                               | ANURAG   | SUBMITTED BY: M. SRIVALLABHA                        |                                                                                                         |
| REV                                                                                   | SCALE    | DRG NO : OMILINKPISG/202                            | REV-1                                                                                                   |



TOTAL WEIGHT = 11653.0 KGS. FOR 2 VENTS = 23306 KGS.

| TOTAL WEIGHT |                                                   |            | 11653.0        | KGS.                        |                |
|--------------|---------------------------------------------------|------------|----------------|-----------------------------|----------------|
| 34           | M16 HEX.HD. BOLT WITH NUT & WASHER                | 16         | 1.00           | IS:1347, CL.4.6             |                |
| 33           | ISA-65X65X8-130                                   | 16         | 13.31          | IS:2062 Gr.A                |                |
| 32           | PL. 156x10THx209 LG.                              | 120        | 307.13         | IS:2062 Gr.B                | C/S            |
| 31           | PL. 74x10THx150 LG.                               | 120        | 104.56         | IS:2062 Gr.B                | C/S            |
| 30           | PL. 300x10THx30210 LG.                            | 2          | 1422.89        | IS:2062 Gr.B                | B/S            |
| 29           | SLIDE TRACK PL. 120x12THx30210 LG.                | 2          | 474.30         | IS:1570.20C13 / AISI:420    |                |
| 28           | TRACK BASE PL. 160x16THx30210 LG.                 | 2          | 1214.20        | IS:2062 Gr.B                |                |
| 27           | WEB PL. 150x12THx30210 LG.                        | 2          | 853.73         | IS:2062 Gr.B                |                |
| 26           | PL. 160x10THx30210 LG.                            | 2          | 758.88         | IS:2062 Gr.B                |                |
| 25           | PL. 100x10THx 300 LG.                             | 122        | 287.31         | IS:2062 Gr.B                |                |
| 24a          | ROD Ø16x250 LG. WITH DOUBLE NUT & WASHER          | 122        | 48.80          | IS:2062 Gr.B                |                |
| 24           | ROD Ø16x625 LG. WITH DOUBLE NUT & WASHER          | 244        | 244.00         | IS:2062 Gr.B                |                |
| 23           | PL.50x8THx30210 LG.                               | 6          | 569.16         | IS:2062 Gr.B                |                |
| 22           | PL.50x8THx3220 LG.                                | 4          | 40.44          | IS:2062 Gr.B                |                |
| 21           | ROD Ø16x110 LG. WITH DOUBLE NUT & WASHER          | 12         | 2.11           | IS:2062 Gr.B                |                |
| 20           | ROD Ø16x200 LG. WITH DOUBLE NUT & WASHER          | 12         | 3.84           | IS:2062 Gr.B                |                |
| 19           | PL.100x10THx941 LG.                               | 12         | 88.64          | IS:2062 Gr.B                |                |
| 18           | PL.100x10THx3210 LG.                              | 2          | 50.40          | IS:1570-V.04C18N10/AISI:304 |                |
| 17           | ISA 200x200x12THx3220 LG.                         | 2          | 237.64         | IS:2062 Gr.A                |                |
| 16B          | THREADED ROD WITH DOUBLE NUT & WASHER- 16 Ø 70LG. | 12         | 1.3            | IS:2062 Gr.B                |                |
| 16A          | ISA 65X65X8THx65LG.                               | 24         | 12.0           | IS:2062 Gr.A                |                |
| 16           | PL.50x8THx40620 LG.                               | 4          | 510.2          | IS:2062 Gr.B                |                |
| 15           | PL.100x10THx40620 LG.                             | 2          | 637.7          | IS:2062 Gr.B                |                |
| 14           | GUIDE PL.150x32THx40620 LG.                       | 2          | 3061.1         | IS:2062 Gr.B                |                |
| 13           | PL.100x10THx250 LG.                               | 162        | 317.9          | IS:2062 Gr.B                |                |
| 12           | ROD Ø16x150 LG. WITH DOUBLE NUT & WASHER          | 324        | 77.76          | IS:2062 Gr.B                |                |
| 11           | PL.50x8THx3300 LG.                                | 2          | 20.72          | IS:2062 Gr.B                |                |
| 10           | PL.400x10THx2400 LG.                              | 1          | 75.36          | IS:2062 Gr.B                | B/S            |
| 9            | PL.100x10THx2500 LG.                              | 1          | 19.63          | IS:1570-V.04C18N10/AISI:304 |                |
| 8            | PL.100x10THx730 LG.                               | 6          | 34.85          | IS:2062 Gr.B                | B/S            |
| 7            | ROD Ø16x150 LG. WITH DOUBLE NUT & WASHER          | 12         | 2.88           | IS:2062 Gr.B                |                |
| 6            | PL. 100x10THx2700 LG.                             | 1          | 21.20          | IS:1570-V.04C18N10/AISI:304 |                |
| 5            | PL. 120x10THx3300 LG.                             | 1          | 31.09          | IS:2062 Gr.B                |                |
| 4            | PL. 57x10THx200 LG.                               | 6          | 5.37           | IS:2062 Gr.B                | C/S            |
| 3            | ISMB 200 x 3300 LG.                               | 1          | 79.86          | IS:2062 Gr.A                | TOP FLANGE C/S |
| 2            | ROD Ø16x230 LG. WITH DOUBLE NUT & WASHER          | 14         | 5.15           | IS:2062 Gr.B                |                |
| 1            | PL.100x10THx300 LG.                               | 7          | 16.49          | IS:2062 Gr.B                |                |
| ITEM NO.     | DESCRIPTION                                       | NOS. REQD. | WEIGHT IN Kgs. | MATERIAL                    | REMARKS        |

**BILL OF MATERIAL FOR ONE VENT**



- NOTES:-**
1. ALL DIMENSIONS ARE IN MM AND LEVEL IN METRES UNLESS OTHERWISE SPECIFIED.
  2. 1st STAGE CONCRETE SHOWN THUS ---
  3. 2nd STAGE CONCRETE GRADE AS SHOWN THUS ---
  4. ALL WELD SHALL BE 5mm FILLET, CONTINUOUS WELDING DEPTH (U.N.G.)
  5. ITEM NO. 23 WILL BE FIXED EITHER BY WELDING TO EXISTING REINFORCEMENT ROD EXPOSED OR ANCHOR BOLT (MILITARY) TO THE 1ST STAGE CONCRETE.



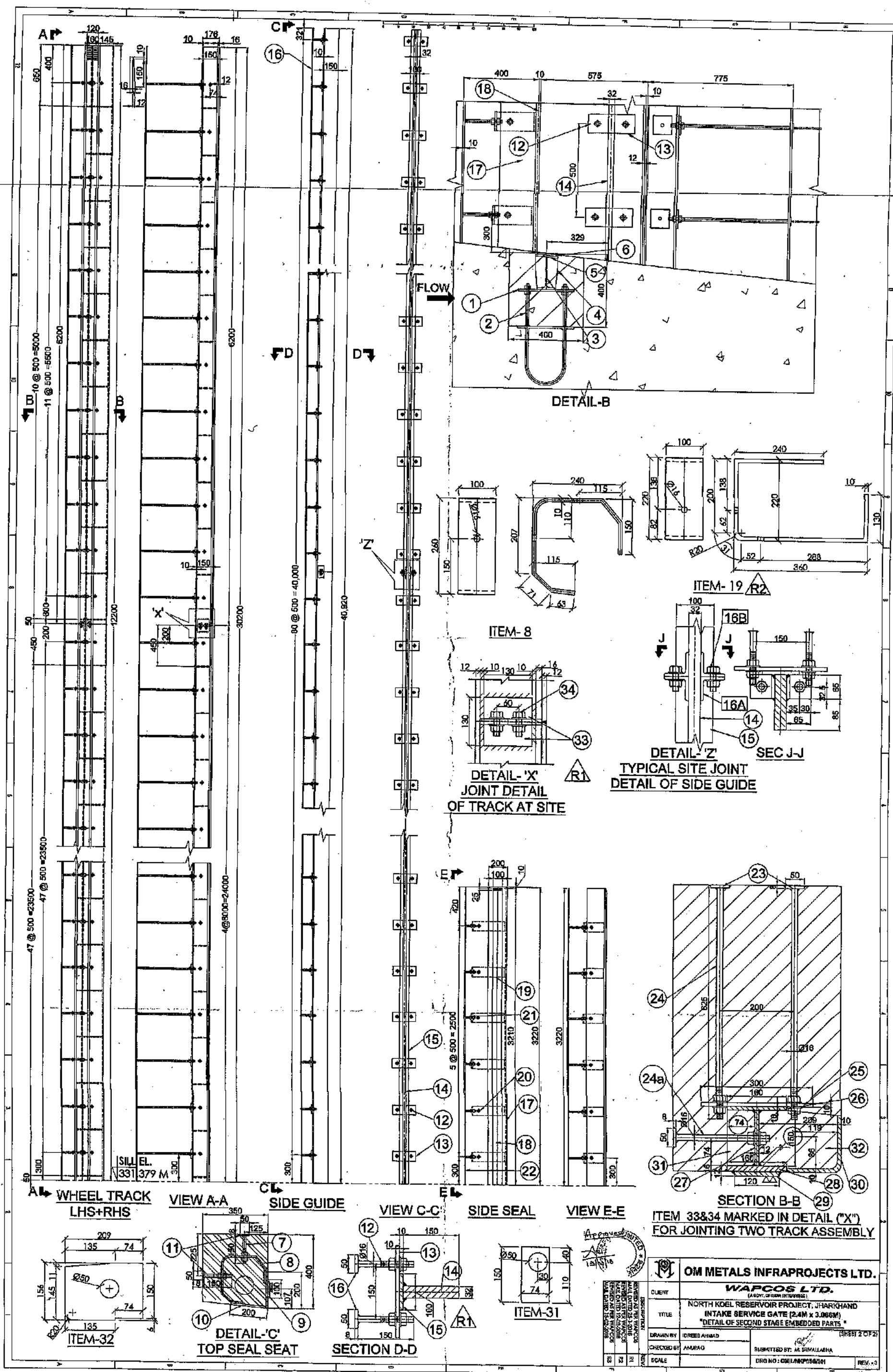
**OM METALS INFRAPROJECTS LTD.**

**WAPCOS LTD.**  
(A GOVT. OF INDIA ENTERPRISE)

**CLIENT**  
NORTH KOEL RESERVOIR PROJECT, JHARKHAND  
INTAKE SERVICE GATE (2.4M x 3.066M)  
"DETAIL OF SECOND STAGE EMBEDDED PARTS"

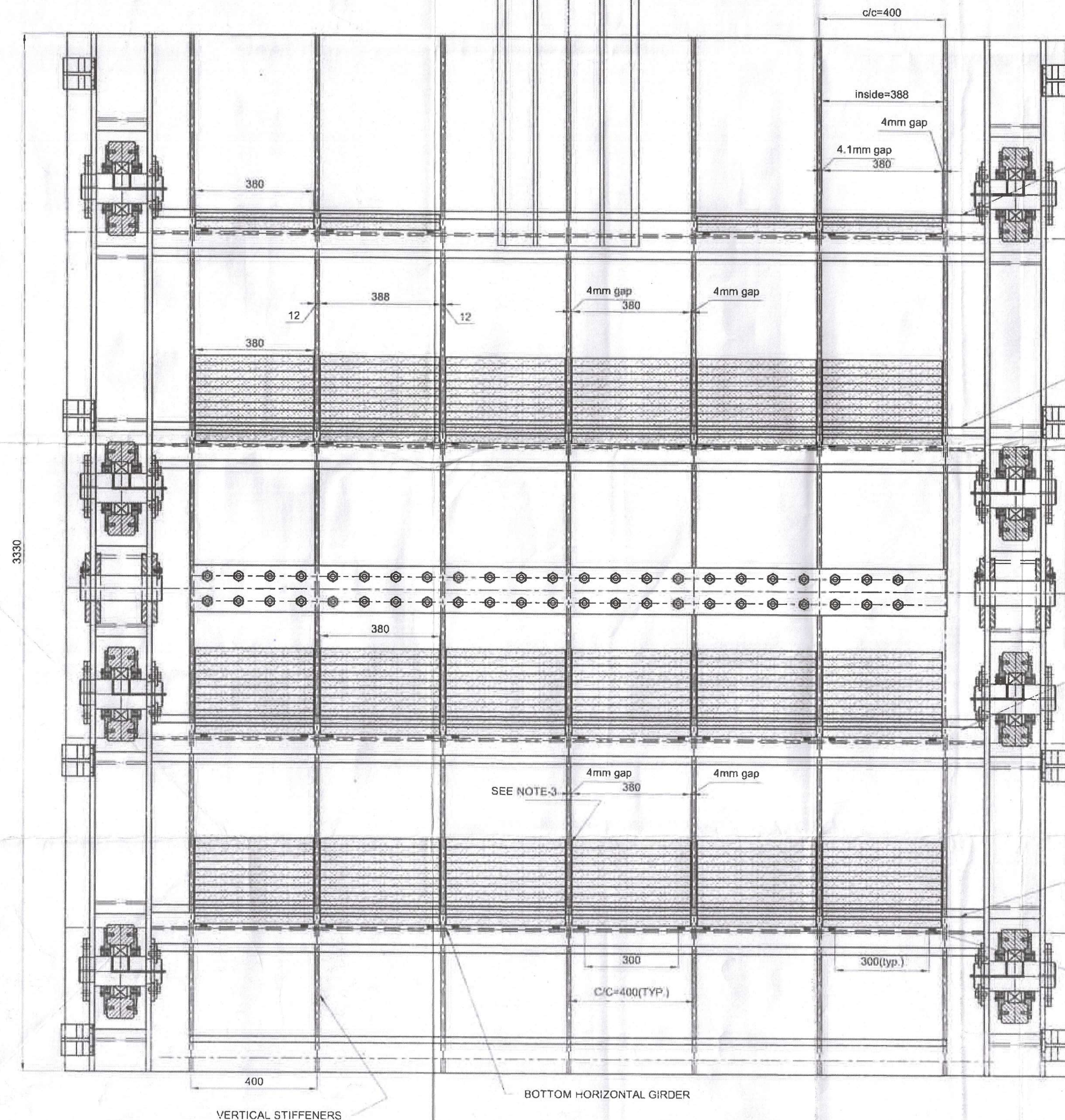
**DRAWN BY** JONES ARMA  
**CHECKED BY** ANURAG  
**SCALE**

**SUBMITTED BY** M. SRIVALLABHA  
**DRD NO.** OM/NK/P/00/201  
**REV.** 1 OF 2

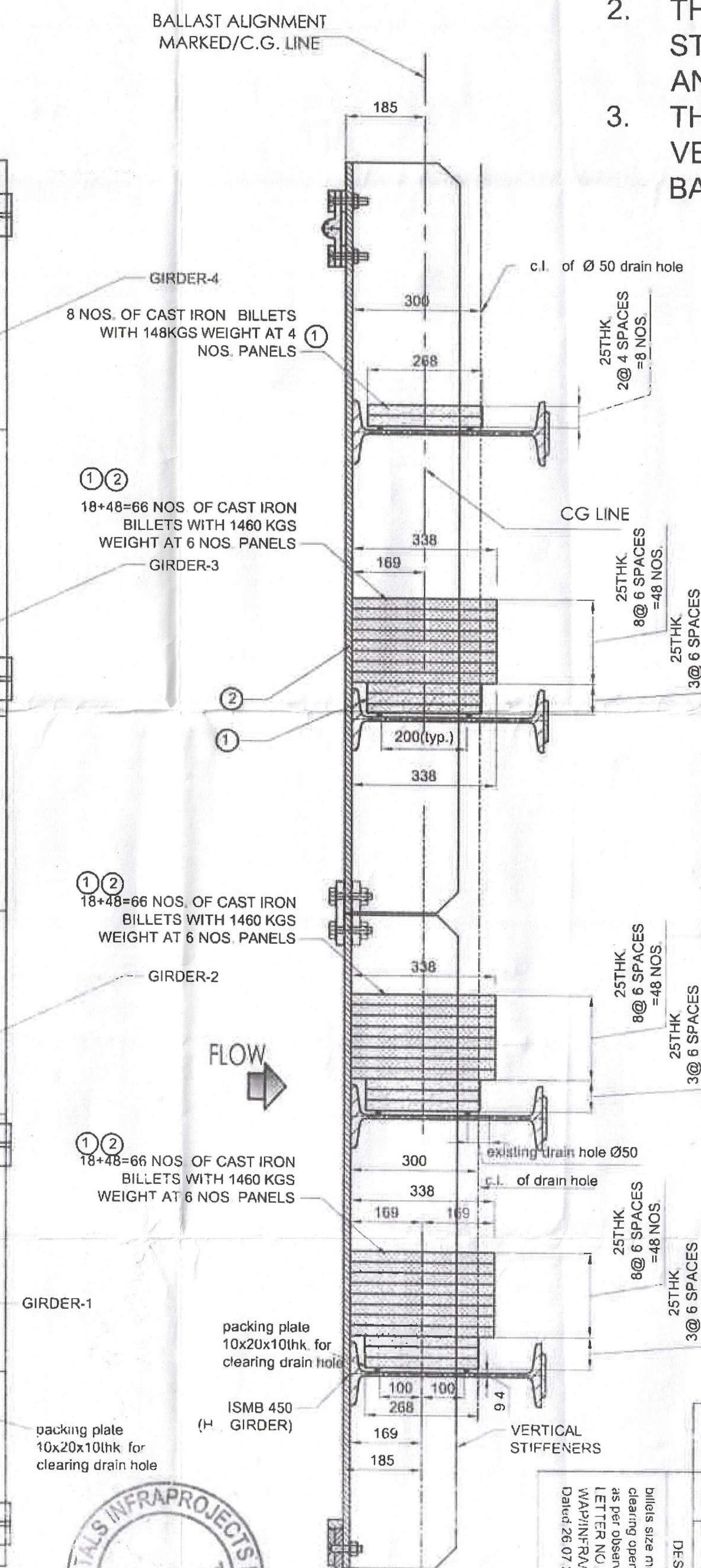


# IMPORTANT NOTES:-

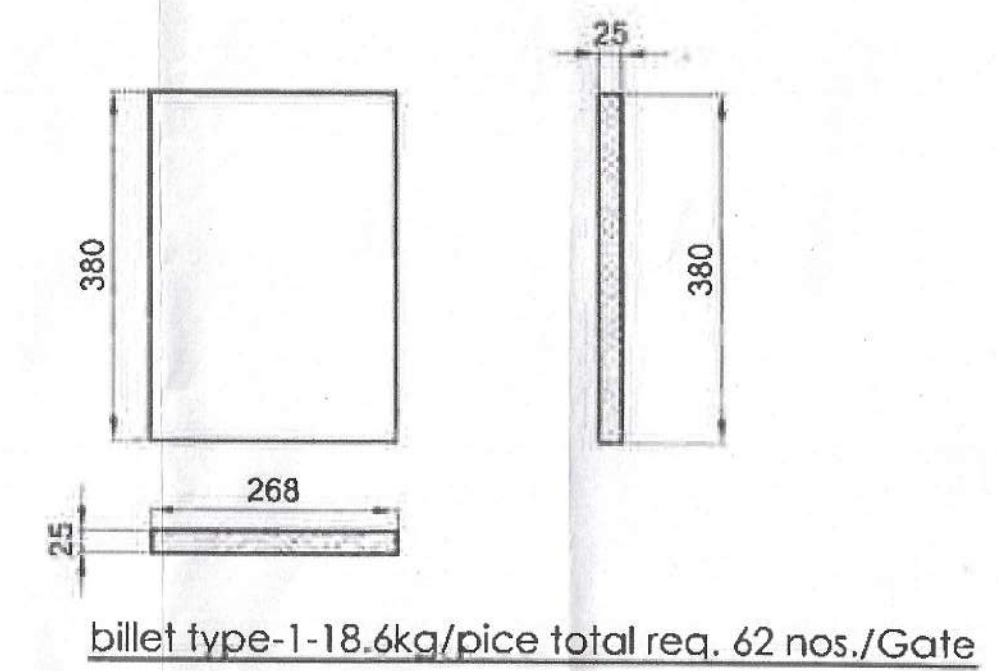
1. BALLAST SHOULD HOLD BY TACK WELD WITH VERTICAL STIFFENERS.
2. THE TACK WELDING QUALITY & STRENGTH SHOULD MAINTAIN THE RIGHT ANGLE WITH C.G. MARKED IN LINE.
3. THE GAP SHOULD BE 4MM BETWEEN THE VERTICAL STIFFENER OF EACH SIDE OF BALLAST.



DOWN STREAM ELEVATION OF GATE LEAF



END VIEW



| TOTAL WEIGHT FOR 2 GATES = 4528 KGS. FOR 23ET CONSISTS = 9052 KGS. |                          |            |                |           |
|--------------------------------------------------------------------|--------------------------|------------|----------------|-----------|
| TOTAL WEIGHT FOR ONE                                               |                          | 4528       | KGS.           |           |
| 2                                                                  | Billet 25THKx380-338 LG. | 144        | 3375           | CAST IRON |
| 1                                                                  | Billet 25THKx380-268 LG. | 62         | 1153           | CAST IRON |
| ITEM NO.                                                           | DESCRIPTION              | NOS. REQD. | WEIGHT IN KGS. | MATERIAL  |

- NOTES:-
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
  2. NUMBER OF OPENING = 2 NOS.
  3. TOTAL BLAST WEIGHT :
    - I) H. GIRDER-1=1460KG.
    - II) H. GIRDER-2=1460KG.
    - III) H. GIRDER-3=1460KG.
    - IV) H. GIRDER-4=148KG.

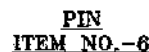
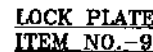
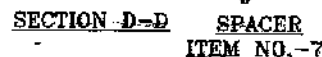
| OM METALS INFRAPROJECTS LTD.            |                                         |
|-----------------------------------------|-----------------------------------------|
| WAPCOS LTD.                             |                                         |
| A GOVT OF INDIA ENTERPRISE              |                                         |
| NORTH KOEL RESERVOIR PROJECT, JHARKHAND |                                         |
| INTAKE SERVICE GATE (2.4M x 3.066M)     |                                         |
| BALLAST DETAILS                         |                                         |
| CLIENT                                  | WAPCOS LTD.                             |
| TITLE                                   | NORTH KOEL RESERVOIR PROJECT, JHARKHAND |
| DRAWN BY                                | MOHAN SANGWAN                           |
| CHECKED BY                              | MOHIT                                   |
| SCALE                                   | DRG NO : OMIL/NKP/ISG/202A              |
| REV                                     | REV-1                                   |

Recommended for approval. However this approval does not relieve the Contractor of any responsibility for accuracy and corrections of Design, Design, Fabrication, Erection, Commissioning and satisfactory performance of the equipment at site and guarantee etc.

Director  
Gates Design (N&W) Div.  
Central Water Commission  
P.O. Purnea, New Delhi

However this does not relieve the contractor of any responsibility for accuracy and corrections of Design, Design, Fabrication, Erection, Commissioning and satisfactory performance of the equipment at site and guarantee etc.



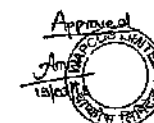


1. ALL DIMENSIONS ARE IN MM. AND LEVEL IN METRES UNLESS OTHERWISE SPECIFIED.
2. ALL WELD SHALL BE 6 mm FILLET, CONTINUOUS WELDING DEPTH. (U.N.O.)
3. ALL FABRICATED MEMBERS SHALL BE CONTROL ASSEMBLED WITH OTHERS BEFORE DISPATCH.

TOTAL WEIGHT FOR 1 LINK = 318.43 KG.  
TOTAL LINKS REQD. FOR 1 GATE = 8 NOS

| QTY      | DESCRIPTION                 | UNIT | QTY        | UNIT PRICE     | AMOUNT                         | REMARKS |
|----------|-----------------------------|------|------------|----------------|--------------------------------|---------|
| 12s      | PL. 10THK. 106x170 LG.      |      | 2          | 2.67           | RS:2062 GrE 250 Qs. B          |         |
| 12       | PL. 10THK. x106x100 LG.     |      | 4          | 5.14           | RS:2062 GrE 250 Qs. B          | etc.s   |
| 11       | PL. 20THK. x100x220 LG.     |      | 2          | 5.91           | RS:2062 GrE 250 Qs. B          |         |
| 10       | HEK. HD. BOLT M16x25 LG.    |      | 2          | -              | IS: 1367                       |         |
| 9        | LOCK PL. 8x40x140 LG.       |      | 1          | 0.4            | IS: 2062 QsE 250 Qs. B         |         |
| 8        | FREE                        |      |            |                |                                |         |
| 7        | SPACER ID 32xOD 100x 48 LG. |      | 4          | 6.36           | RS:305                         |         |
| 6        | PIN Ø100/135x250 LG.        |      | 2          | 56.15          | 20 Cc13/30Cc13/ANSI420xANSI 40 |         |
| 5        | PL. 10THK. x140x70 LG.      |      | 4          | 1.3            | IS: 2062 GrE 250 Qs. B         |         |
| 4        | PL. 7UTHK. x300x470 LG.     |      | 1          | 77.48          | IS: 2062 GrE 250 Qs. B         | c.c.s   |
| 3        | PL. 16THK. x300x440 LG.     |      | 2          | 33.16          | IS: 2062 GrE 250 Qs. B         | c.c.s   |
| 2        | PL. 10THK. x150x370 LG.     |      | 1          | 43.69          | IS: 2062 GrE 250 Qs. B         |         |
| 1        | PL. 10THK. x150x370 LG.     |      | 2          | 87.37          | IS: 2062 GrE 250 Qs. B         |         |
| PART NO. | DESCRIPTION                 | QTY  | UNIT PRICE | TOTAL WT (KGS) | MATERIAL                       | REMARKS |

### BILL OF MATERIAL FOR ONE HOIST LINK



**OM METALS INFRAPROJECTS LTD.**

**WAPCOS LTD.**

(A.GENT. OF BUDGET INTERESTS)

**NORTH KOEL RESERVOIR PROJECT, JHARKHAND  
INTAKE SERVICE GATE (2.4M x 3.066M)  
DETAILS OF CONNECTING BEAM, PIN & SPACERS**

|   |          |              |
|---|----------|--------------|
| 2 | DRAWN BY | MORRIS AHMAD |
|---|----------|--------------|

CHECKED BY: ANI/PAC

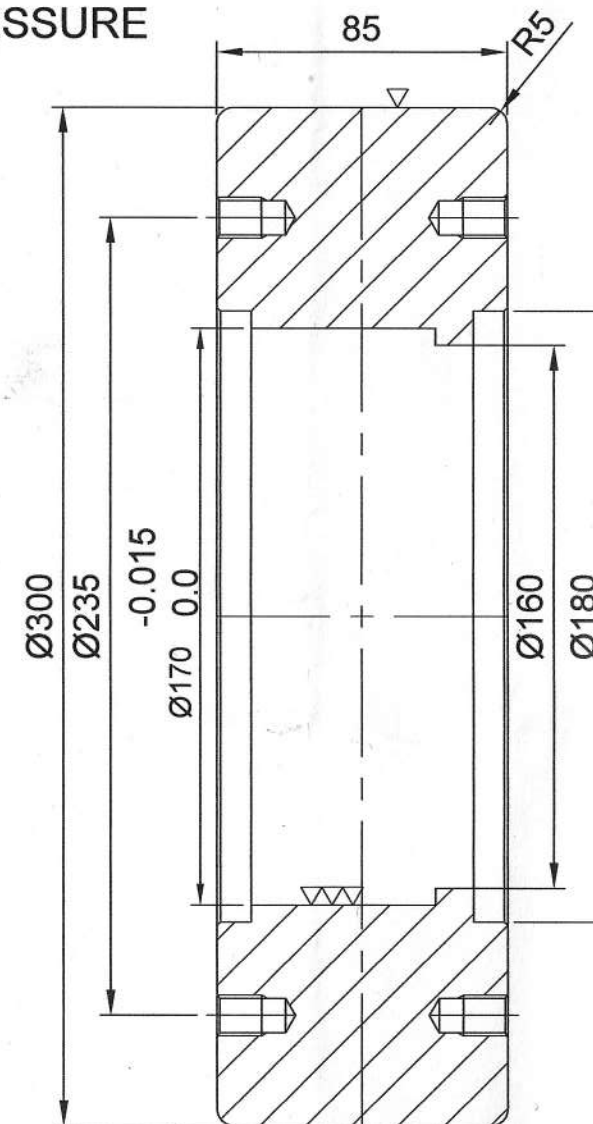
SUBMITTED BY: M. SRIVALLABHA

20

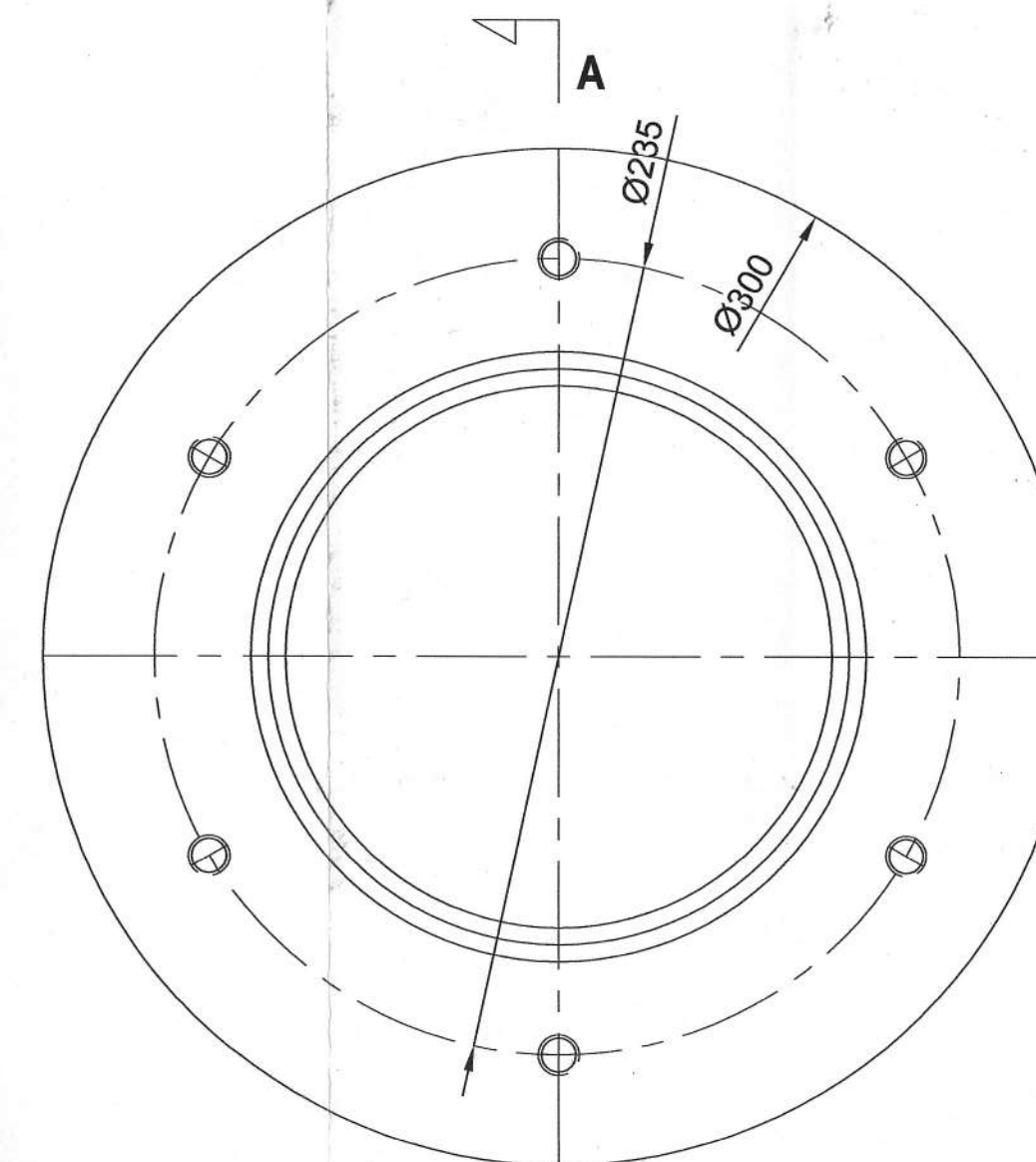
SUBMIT (E) BY: M. SRIVALLABHA

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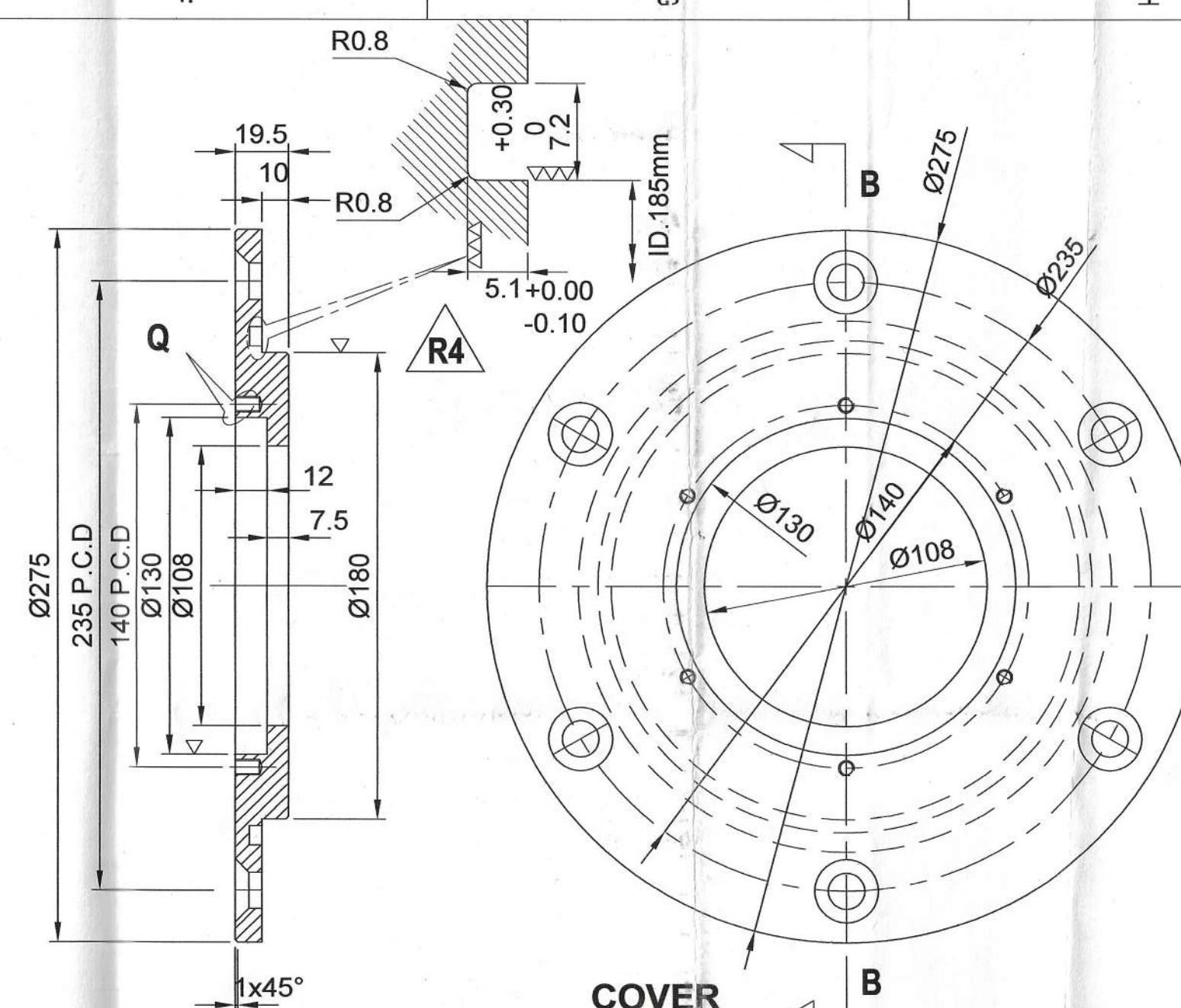
7a R4  
SKF/KOYO/or STD., O-RING  
, O-RING, ID. 88, DIA.4MM  
(FOR STATIC SEALING ON  
CYLINDRICAL SURFACE



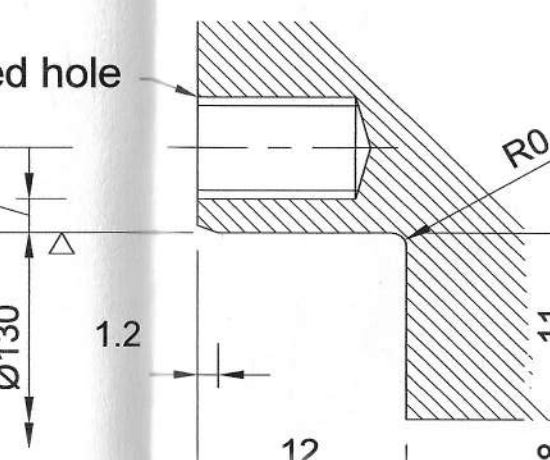
**SECTION A-A**



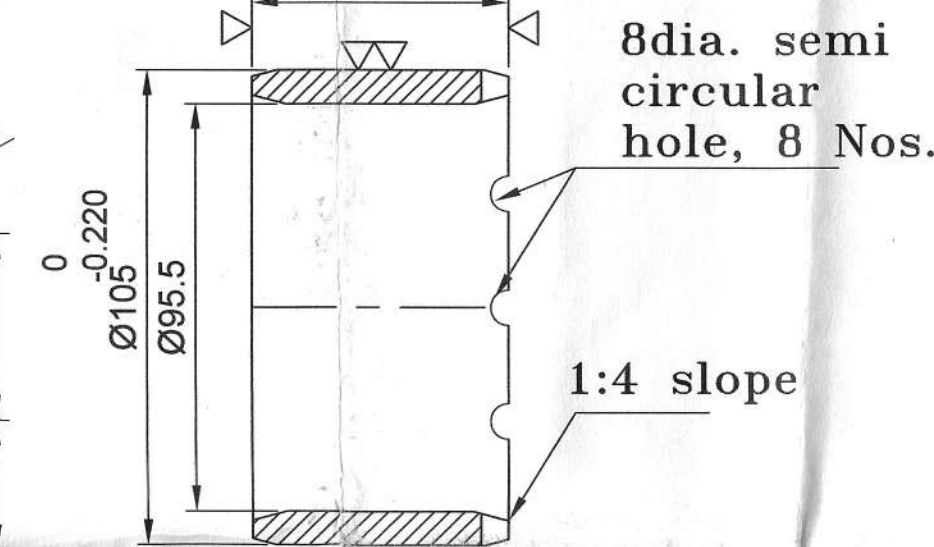
**WHEEL**  
**ITEM NO.-1**



### SECTION B-B

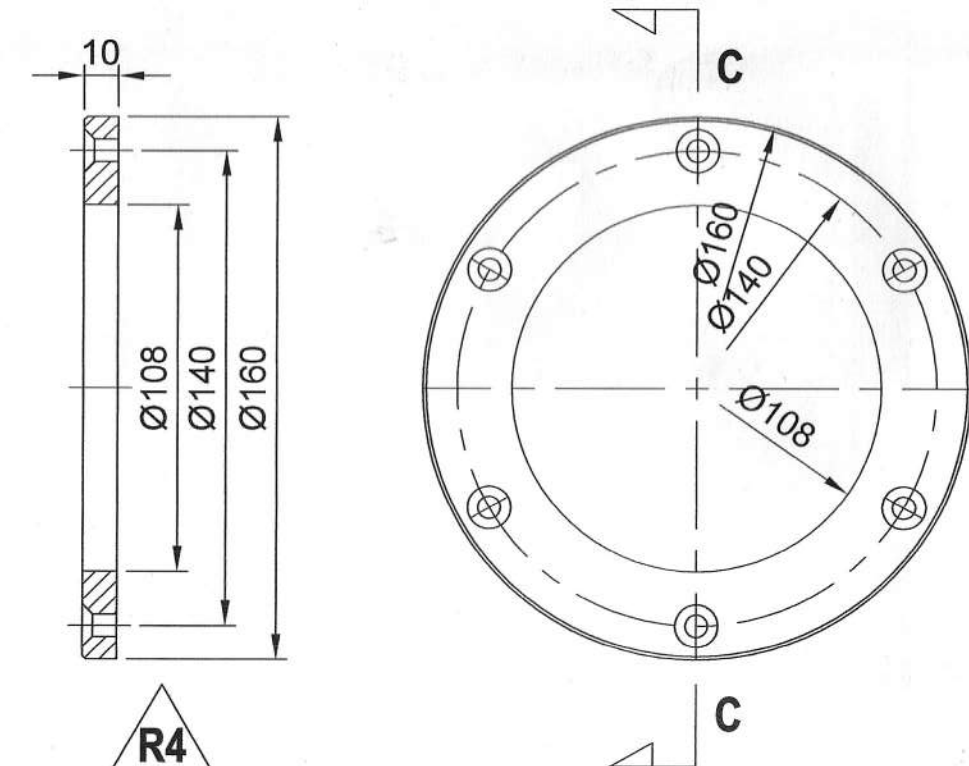


### DETAIL "Q"



ITEM-5a

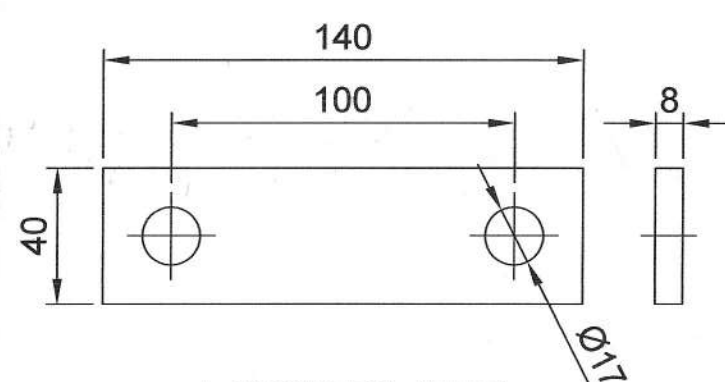
## WHEEL ASSEMBLY



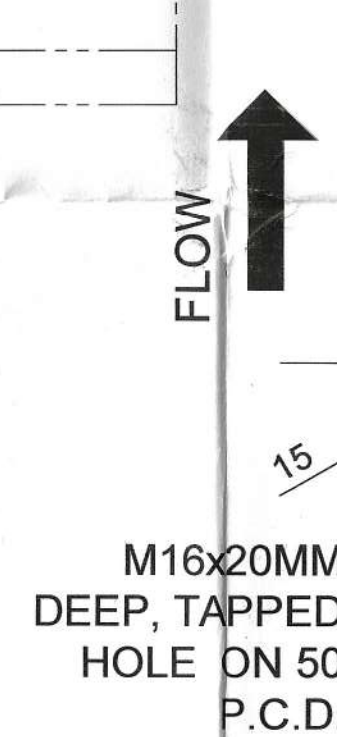
### SECTION C-C

### OIL SEAL RETAINER

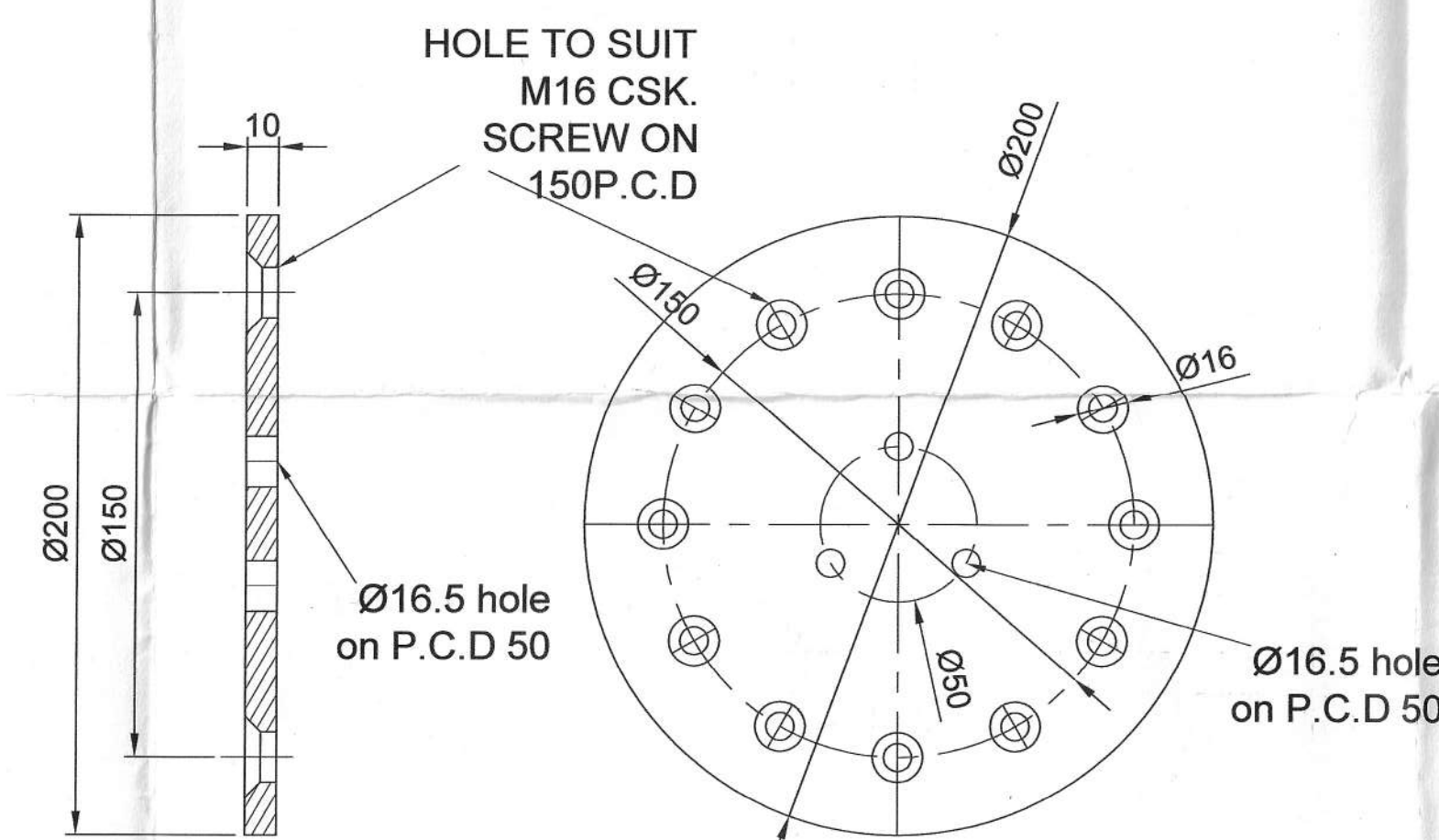
#### ITEM NO.- 3



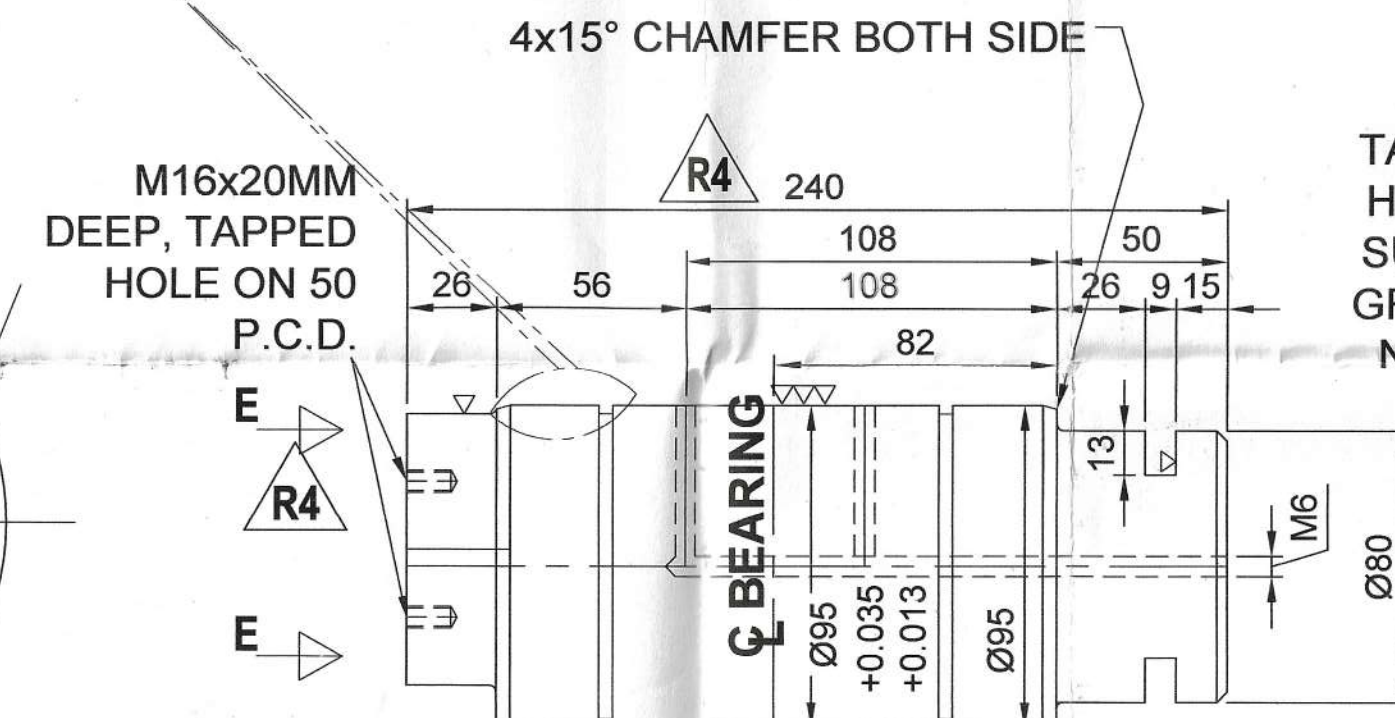
**LOCK PLATE**  
**ITEM NO.- 11**



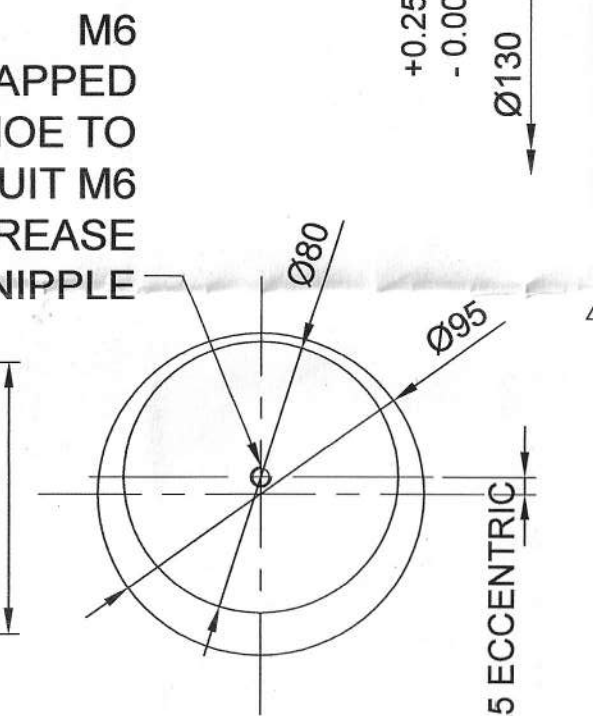
## SECTION E-E



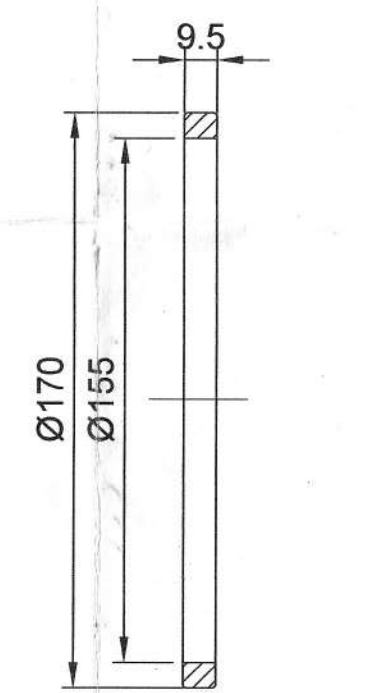
**VERNIER PLATE**  
**ITEM NO.- 13**



**PIN**  
**ITEM NO.- 4**



**BUSH**  
**ITEM NO.- 5**



**SECTION D-D**

APPROVED BY VIDE CWC LETTER NO.  
112/1/2008-GD(N&W)/156-159, DATED 03.03.2020

IT WILL BE TESTED IN WORKSHOP AT THE TIME OF INSPECTION FOR WATER TIGHTNESS

|                |                           |                                                                                                                  |                  |                                          |                                             |
|----------------|---------------------------|------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------|---------------------------------------------|
|                |                           | TOTAL WEIGHT FOR 8 WHEEL ASSY. = 701.02 KG.                                                                      |                  |                                          |                                             |
|                |                           | TOTAL WEIGHT FOR 1 WHEEL ASSY. = 87.65 KG.                                                                       |                  |                                          |                                             |
| WHEEL ASSEMBLY | 7b                        | STD. O-RING , O-RING ID. 185. DIA.6MM (FOR STATIC SEALING ON FLAT SURFACE SURFACE. FOR INTERNAL PRESSURE. 2 NOS. |                  |                                          |                                             |
|                | 7a                        | STD. O-RING , O-RING ID. 88. DIA.4MM (FOR STATIC SEALING ON CYLINDRICAL SURFACE. 2NOS.                           |                  |                                          |                                             |
|                | 5a                        | SPACER OD105xD95.5x60.5 LG.                                                                                      | 2                | 1.42                                     | IS:305, Bronze or Corrosion resisting steel |
|                | 15                        | HEX. HD. M16x30 LG.                                                                                              | 3                | 1.0                                      | IS:1367 Cl. 4.6                             |
|                | 14                        | CSK. BOLT M16x30 LG.                                                                                             | 12               | 3.3                                      | IS:1367 Cl. 4.6                             |
|                | 13                        | VERNIER PLATE OD-200-ID81-10THK.                                                                                 | 1                | 6.0                                      | IS:2062 Gr.E 250 Qa. B                      |
|                | 12                        | HEX. HD. M16x30 LG.                                                                                              | 4                | 1.6                                      | IS:1367 Cl. 4.6                             |
|                | 11                        | LOCK PLATE 8THK.x40x140 LG.                                                                                      | 2                | 0.4                                      | IS:2062 Gr.E 250 Qa. B                      |
|                | 10                        | GREENSE NIPPLE M6                                                                                                | 1                | -                                        | IS:4009                                     |
|                | 9                         | CSK. BOLT M12x50 LG.                                                                                             | 12               | 3.4                                      | IS:1367 Cl. 4.6                             |
|                | 8                         | CSK. BOLT M6x30 LG.                                                                                              | 12               | 1.3                                      | IS:1367 Cl. 4.6                             |
|                | 7                         | OIL SEAL OD.120xID.105x12.5thk                                                                                   | 2                | -                                        | Lip seal DIN3760-A105x130x12-NBR            |
| 6              | BEARING OD. 170xID.x95x43 | 1                                                                                                                | -                | SKF 22219 CC/W33/FAG /NTN/ZKL            |                                             |
| 5              | BUSH OD170xID155x7.5 LG.  | 1                                                                                                                | 0.3              | IS:305 Gr. AB-1                          |                                             |
| 4              | PIN Ø105x264 LG.          | 1                                                                                                                | 19.0             | IS:1570 PT.-V Gr. 20 Cr.13, AISI 420/430 |                                             |
| 3              | OIL SEAL RETAINER Ø160x10 | 2                                                                                                                | 1.05             | IS:2062 Gr.E 250 Qa. A                   |                                             |
| 2              | COVER Ø275x20             | 2                                                                                                                | 16.3             | IS:2062 Gr.E 250 Qa. B                   |                                             |
| 1              | WHEEL Ø300x85             | 1                                                                                                                | 34.0             | IS:1030Gr.280-520W (HARDNESS-180-200BHN) |                                             |
| PART NO.       | DESCRIPTION               | NOS. REQD.                                                                                                       | TOTAL WT. (KGS.) | MATERIAL                                 | REMARKS                                     |

|             |                                                                           |                                                                                                                    |                                |                                                                                       |         |
|-------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------|---------|
|             |                                                                           |                               |                                |                                                                                       |         |
| CLIENT      |                                                                           | NORTH KOEL RESERVOIR PROJECT, JHARKHAND<br><b>INTAKE SERVICE GATE (2.4M x 3.066M)</b><br><b>" WHEEL ASSEMBLY "</b> |                                |                                                                                       |         |
| DESCRIPTION |                                                                           | TITLE                                                                                                              |                                |  |         |
|             |                                                                           | DRAWN BY                                                                                                           | IDREES AHMAD <i>Maha Saeed</i> |                                                                                       |         |
|             |                                                                           | CHECKED                                                                                                            | ANURAG                         | SUBMITTED BY: M. SRIVALLABH                                                           |         |
| REV         | SCALE                                                                     |                                                                                                                    |                                | DRG NO : OMIL/NKP/ISG/204                                                             | REV. -5 |
| R1          | REVISED AS PER WAPCOS MAIL DATED 26-01-2018                               |                                                                                                                    |                                |                                                                                       |         |
| R2          | REVISED AS WAPCOS MAIL DATED 12-02-2018                                   |                                                                                                                    |                                |                                                                                       |         |
| R3          | REVISED AS WAPCOS MAIL DATED 16-02-2018                                   |                                                                                                                    |                                |                                                                                       |         |
| R4          | COMPILED AS PER WAPCOS REVISED WAPCOS LETTER DATED 20.12.2018 TO 12.01.19 |                                                                                                                    |                                |                                                                                       |         |
| R5          | REMOVED AS PER CMC LETTER NO. 1171/2008-OP/NA/M/99-98 DATED 03.02.2020    |                                                                                                                    |                                |                                                                                       |         |

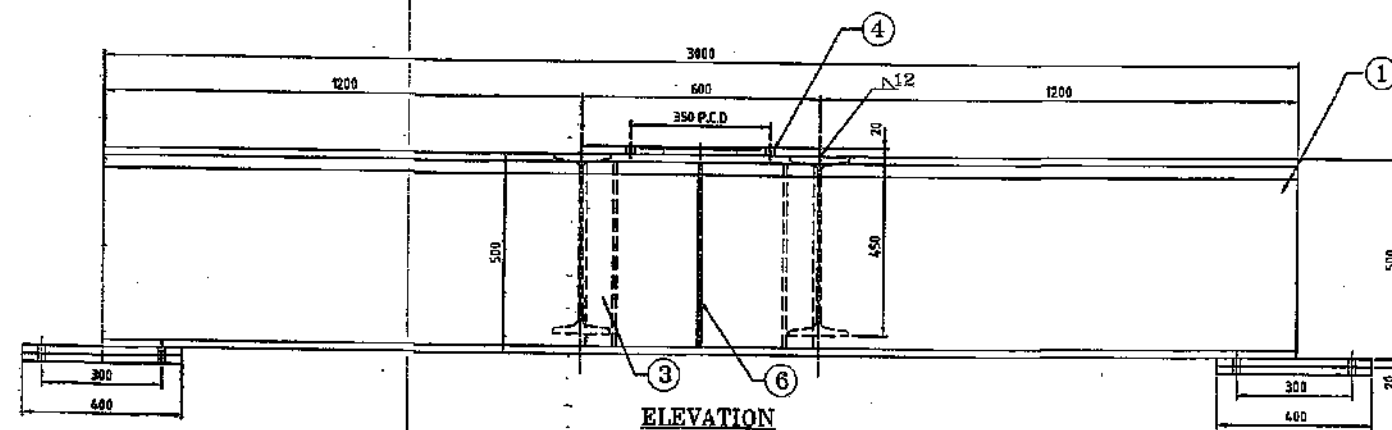
RECOMMENDED FOR APPROVAL

Noted  
Amir  
17/10/20

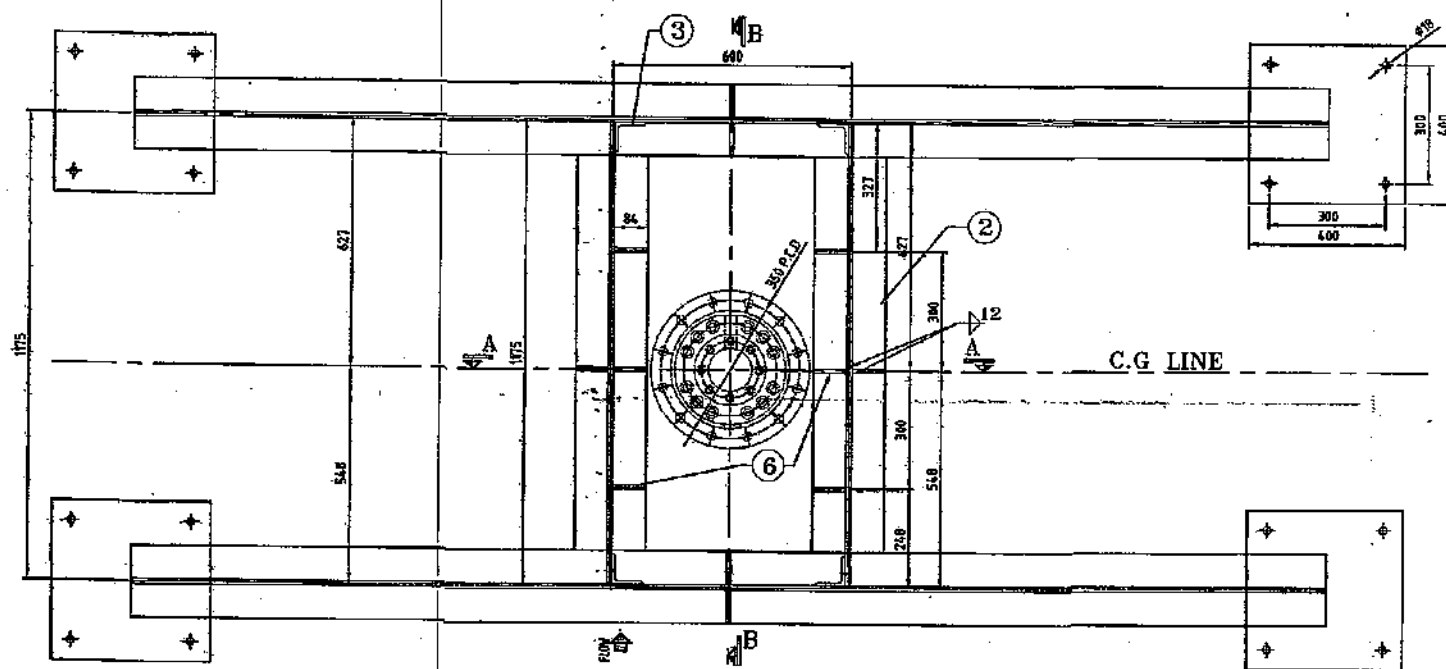
However this does not relieve the Contractor of any responsibility for accuracy and correctness of design, drawings, fabrication, erection, commissioning and satisfactory performance of the equipment at site and guarantee etc.

Signature  
28/10/20  
Director

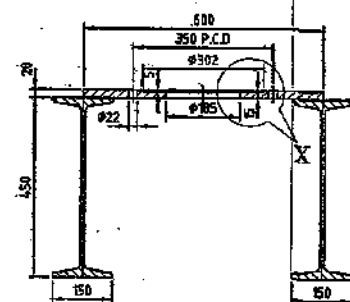
Central Water Commission  
New Delhi



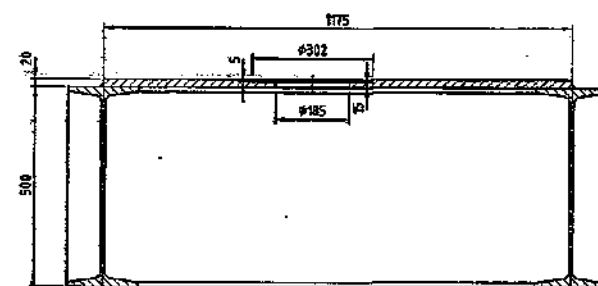
ELEVATION



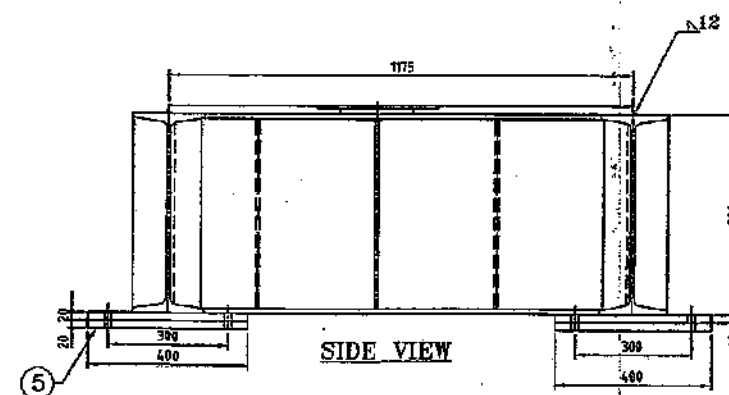
PLAN



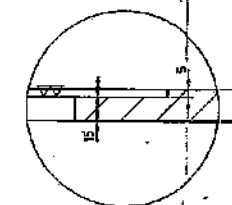
SECTION A-A



SECTION B-B



SIDE VIEW



DETAIL-X

# NOTES:-

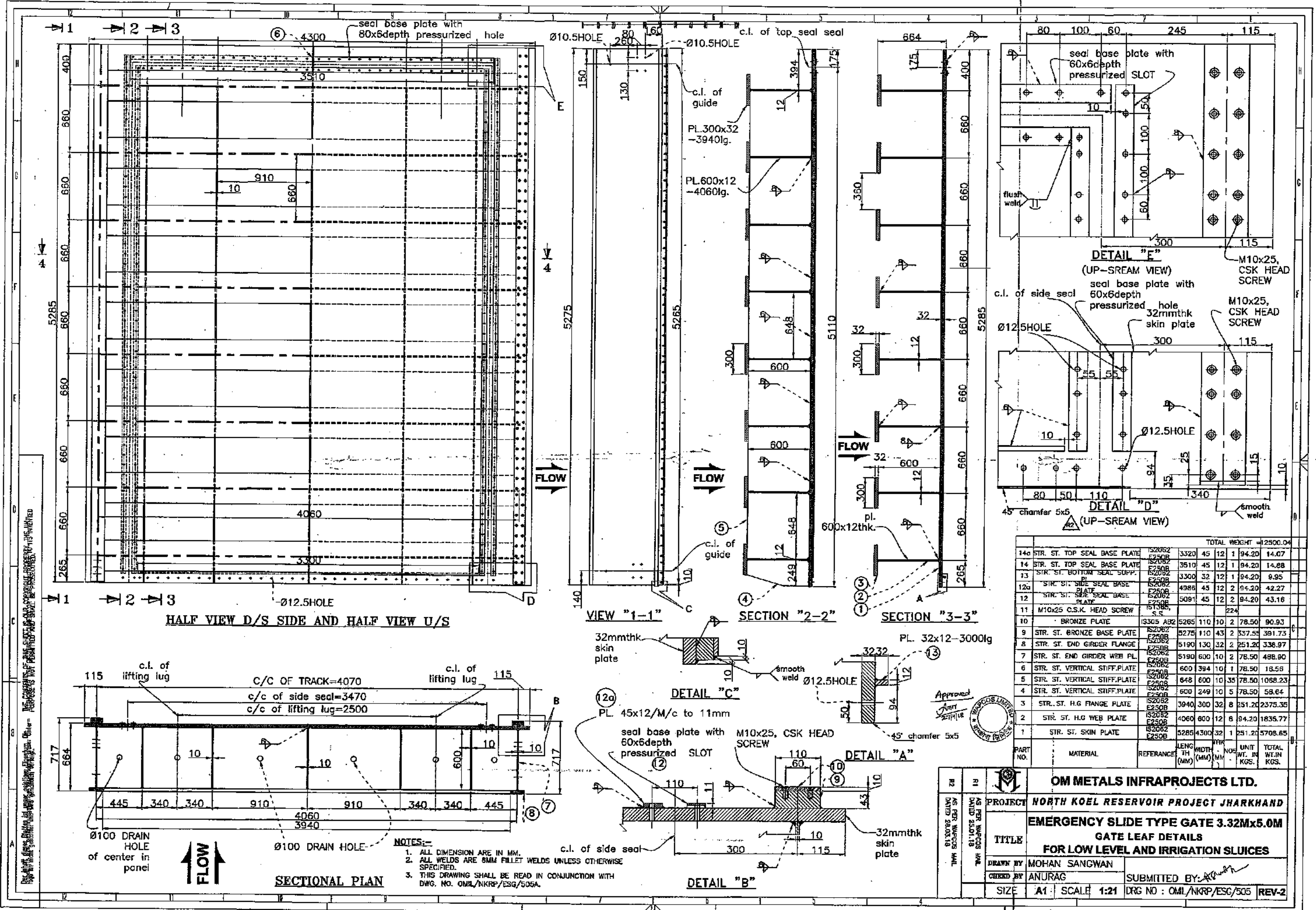
1. ALL DIMENSIONS ARE IN MM. AND LEVEL IN METRES UNLESS OTHERWISE SPECIFIED.
2. ALL WELD SHALL BE 6 mm FILLET, CONTINUOUS WELDING DEPTH. (U.N.O.)
3. ALL FABRICATED MEMBERS SHALL BE CONTROL ASSEMBLED WITH OTHERS BEFORE DISPATCH.
3. HYDRAULIC HOIST. CYLINDER DETAILS WILL BE INCORPORATED AFTER RECEIPT OF SAME FROM HYDRAULIC HOIST. MANUFACTURERS.

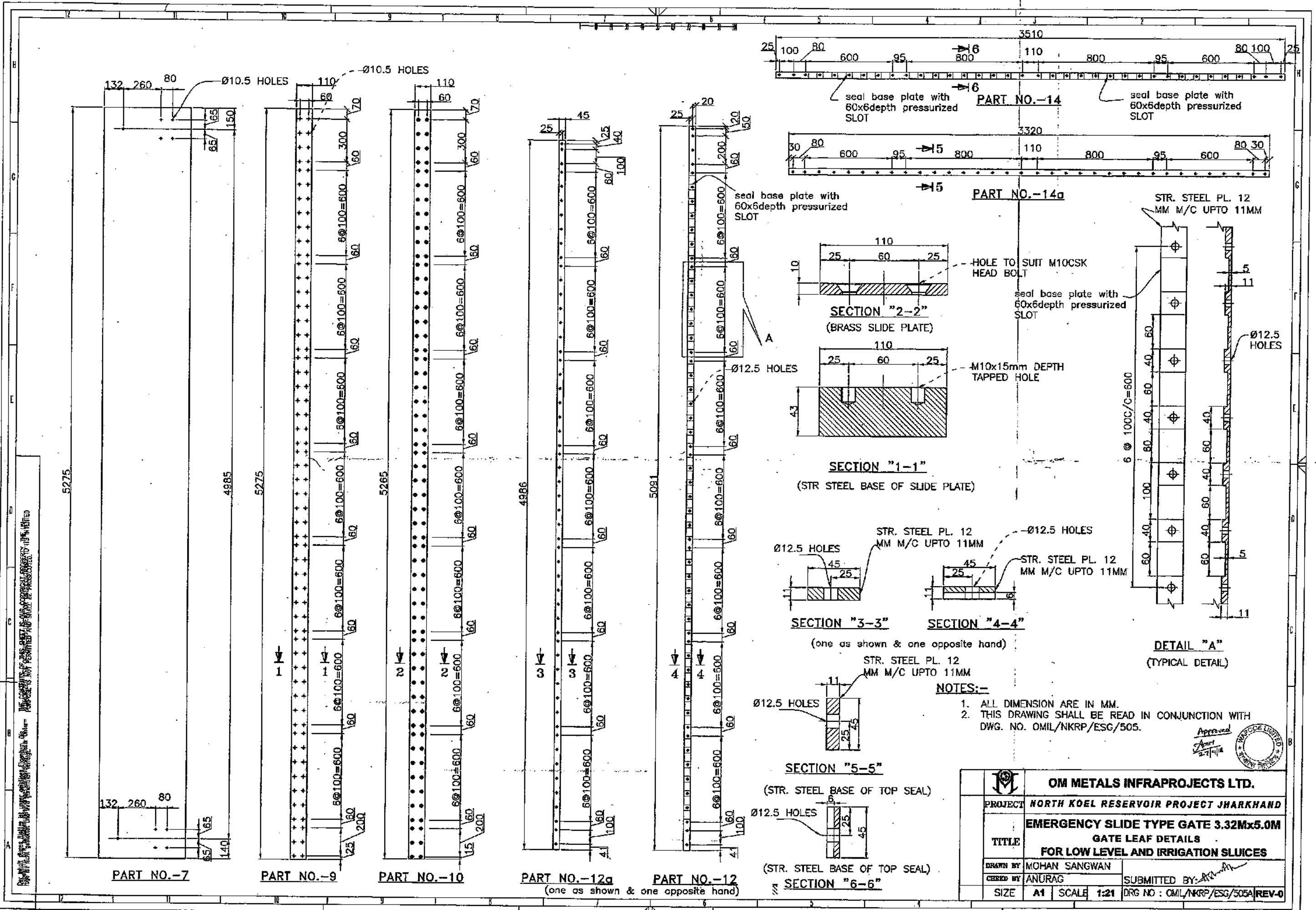
TOTAL WEIGHT = 1040.2 KG.

| PART NO. | DESCRIPTION                      | NOS. | TOTAL WT. (KGS.) | MATERIAL                | REMARKS |
|----------|----------------------------------|------|------------------|-------------------------|---------|
| 6        | STIFFNER PL. 10THK. x 24x115 LG. | 12   | 31.71            | IS: 2062 Gr.E 250 Qa. B |         |
| 5        | PL. 20THK. x 400x400 LG.         | 8    | 194.0            | IS: 2062 Gr.E 250 Qa. B |         |
| 4        | PL. 20THK. x 600x1175 LG.        | 1    | 106.88           | IS: 2062 Gr.E 250 Qa. B | cts     |
| 3        | ISA 75x75x10x415 LG.             | 4    | 19.26            | IS: 2062 Gr.E 250 Qa. A | cts     |
| 2        | ISMB 450x1163 LG.                | 2    | 167.94           | IS: 2062 Gr.E 250 Qa. A |         |
| 1        | ISMB 300x300 LG.                 | 2    | 521.4            | IS: 2062 Gr.E 250 Qa. A |         |
|          |                                  |      |                  |                         |         |

BILL OF MATERIAL FULL QUANTITY FOR ONE OPENING

| REV. | DESCRIPTION                             | DATE |
|------|-----------------------------------------|------|
| 1    | OM METALS INFRAPROJECTS LTD.            |      |
| 2    | WAPCOS LTD.                             |      |
| 3    | (A SOVL. OF INDIA ENTERPRISE)           |      |
| 4    | NORTH KOEL RESERVOIR PROJECT, JHARKHAND |      |
| 5    | INTAKE SERVICE GATE (2.4M x 3.066M)     |      |
| 6    | DETAILS OF SUPPORTING STRUCTURE         |      |
| 7    | DRAWN BY: MDREES AHMAD                  |      |
| 8    | CHECKED BY: M. SRIVALLABHA              |      |
| 9    | SCALE                                   |      |
| 10   | SUBMITTED BY:                           |      |
| 11   | DRG NO: OMILANKP/SG/205                 |      |
| 12   | REV-0                                   |      |



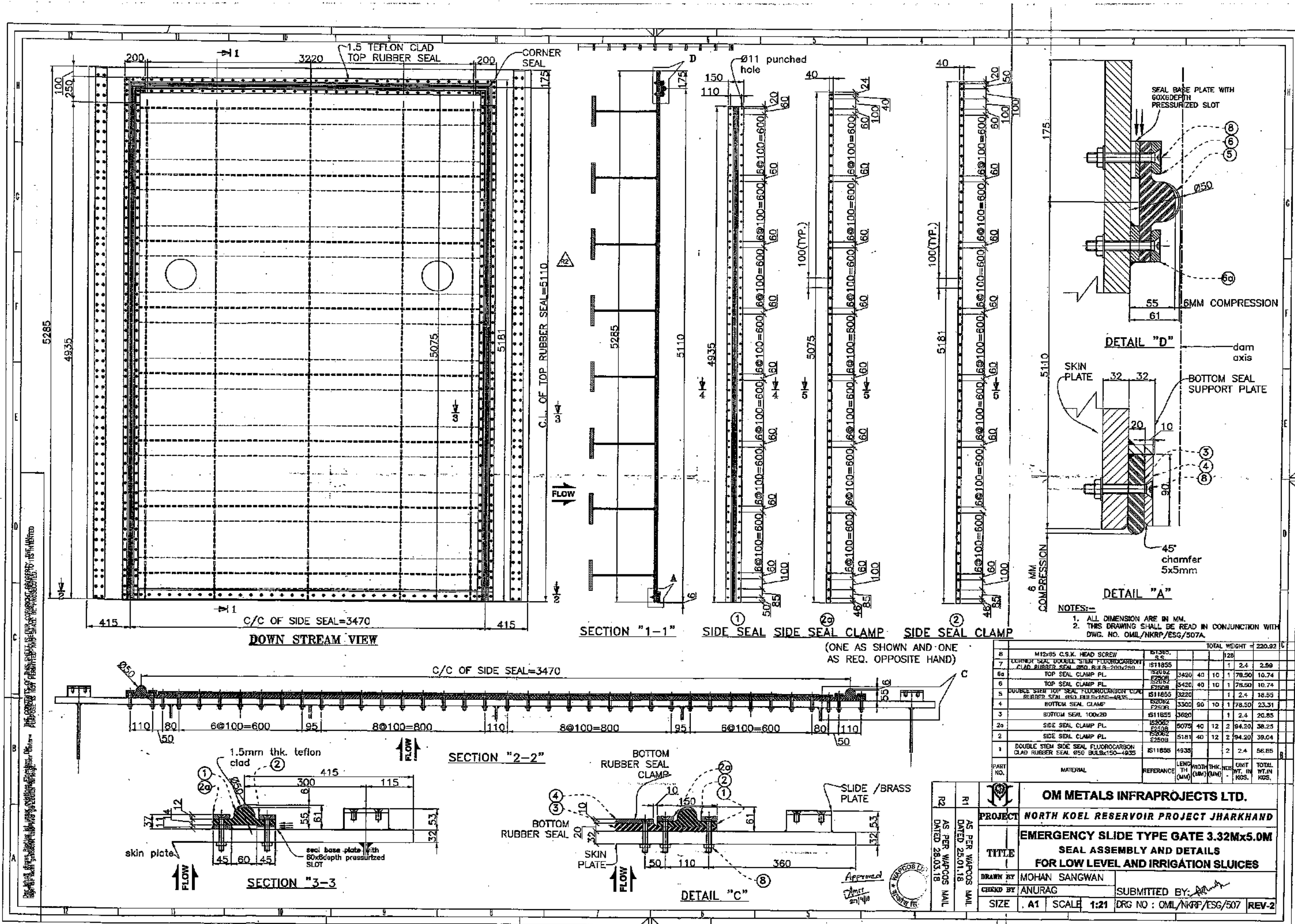


NOTES:-  
 1. ALL DIMENSION ARE IN MM.  
 2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO. OMIL/NKRP/ESG/505.

Approved  
 Anurag  
 27/1/18

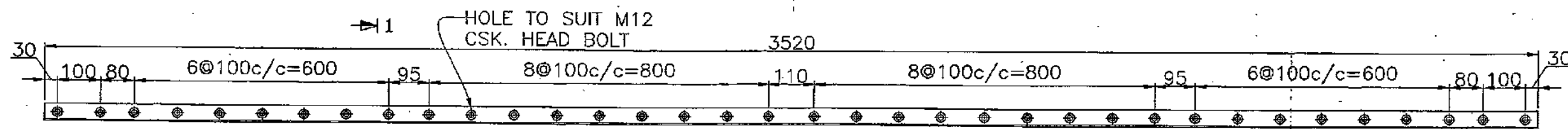
|                              |                                                                                                   |                                   |      |
|------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------|------|
| OM METALS INFRAPROJECTS LTD. |                                                                                                   |                                   |      |
| PROJECT                      | NORTH KOEL RESERVOIR PROJECT JHARKHAND                                                            |                                   |      |
| TITLE                        | EMERGENCY SLIDE TYPE GATE 3.32Mx5.0M<br>GATE LEAF DETAILS<br>FOR LOW LEVEL AND IRRIGATION SLUICES |                                   |      |
| DRAWN BY                     | MOHAN SANGWAN                                                                                     | SUBMITTED BY: <i>[Signature]</i>  |      |
| CHECKED BY                   | ANURAG                                                                                            | DRG NO : OMIL/NKRP/ESG/505A/REV-0 |      |
| SIZE                         | A1                                                                                                | SCALE                             | 1:21 |



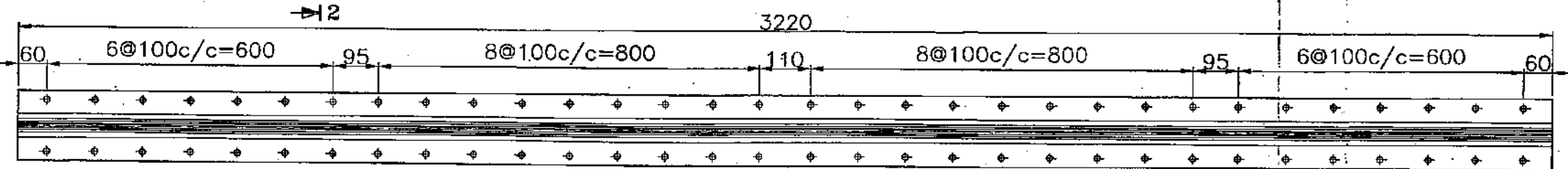


(ONE AS SHOWN AND  
ONE AS REQ.  
OPPOSITE HAND)

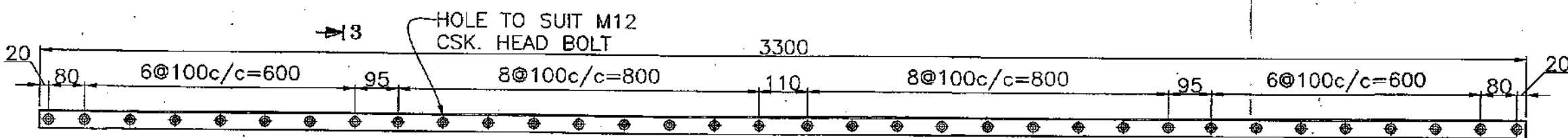
Approved  
23/11/18



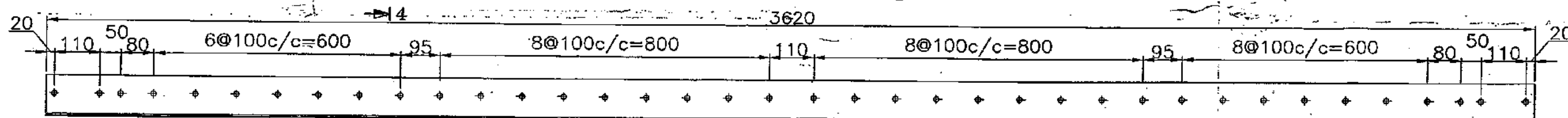
TOP SEAL CLAMP ⑥



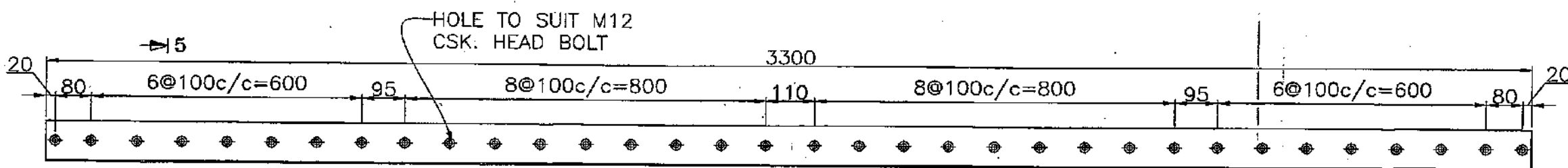
TOP RUBBER SEAL 1.5MM TEFLON CLAD ⑤



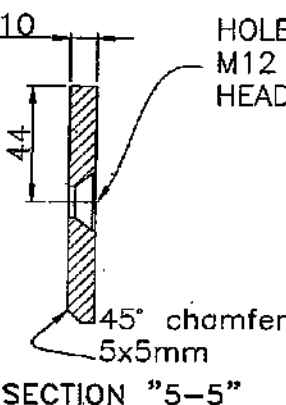
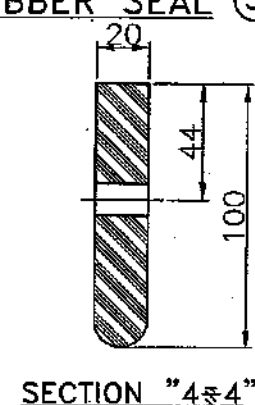
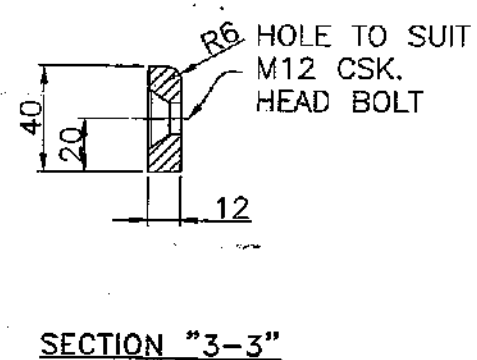
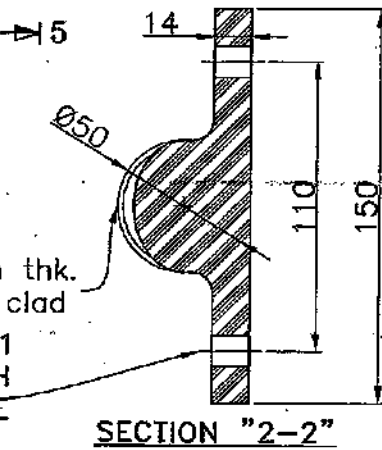
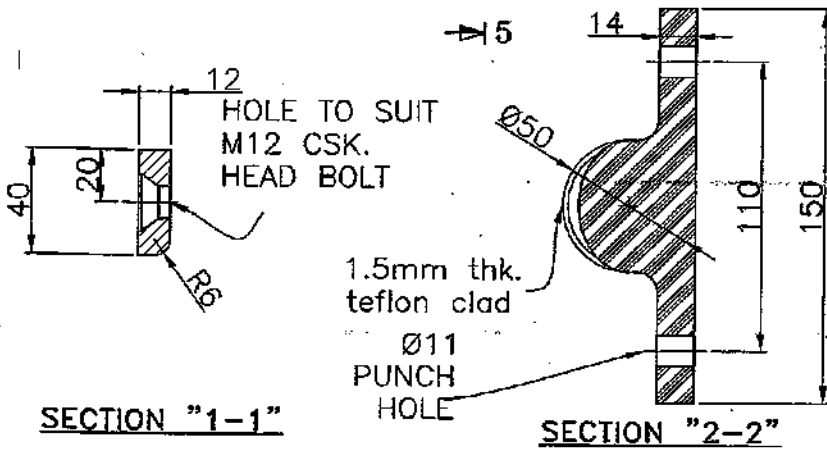
TOP SEAL CLAMP ⑥a



BOTTOM SEAL CLAMP ④

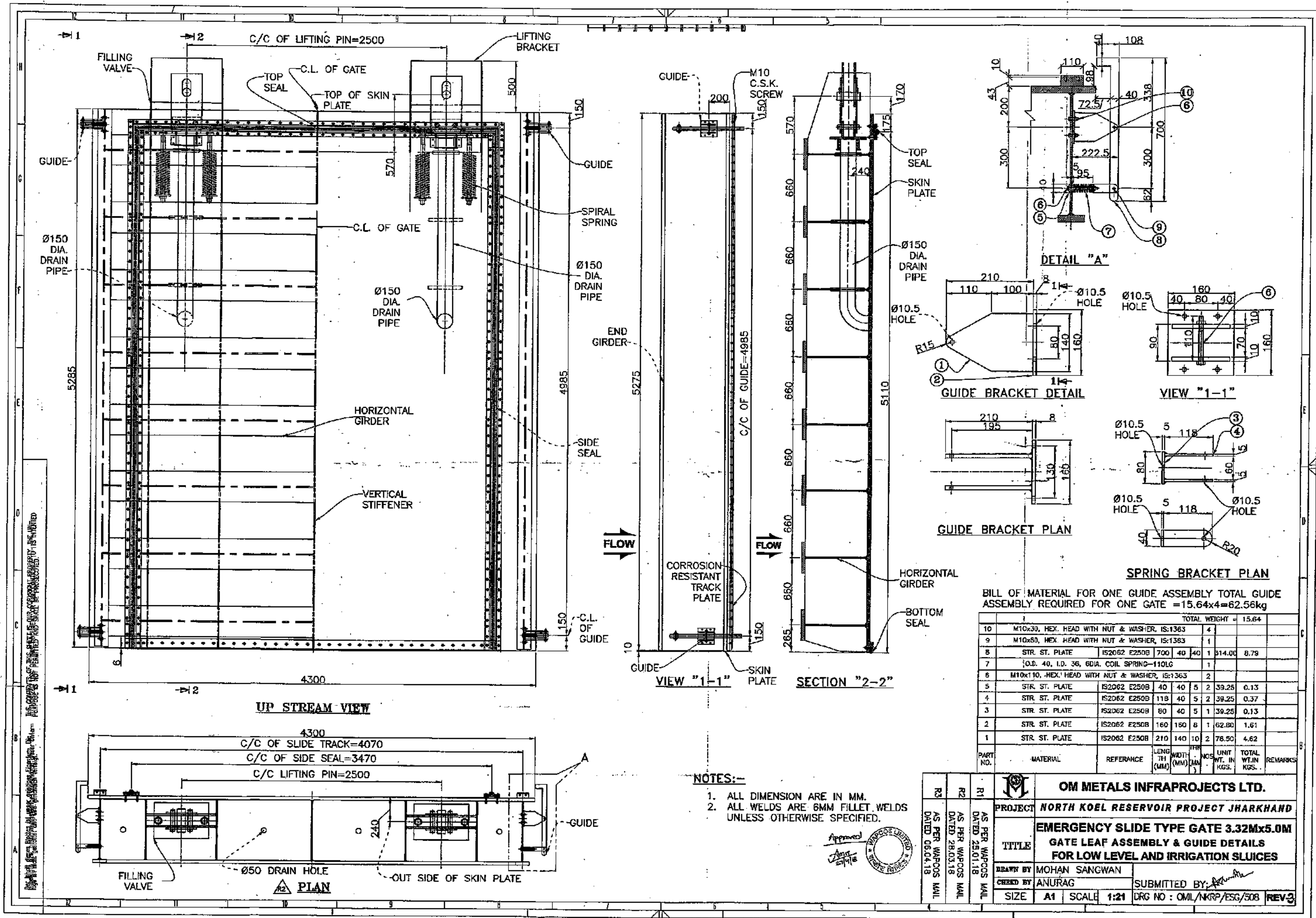


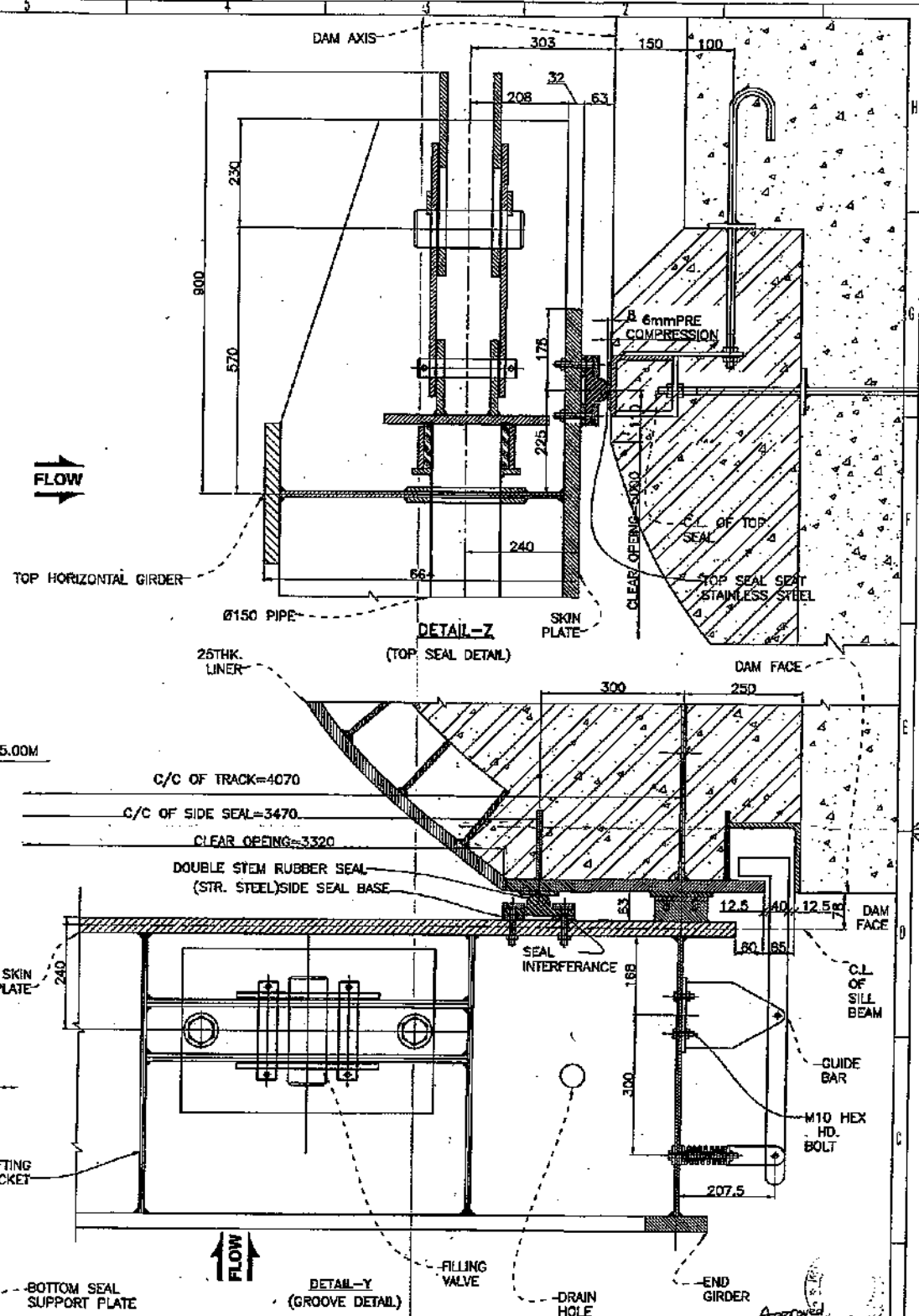
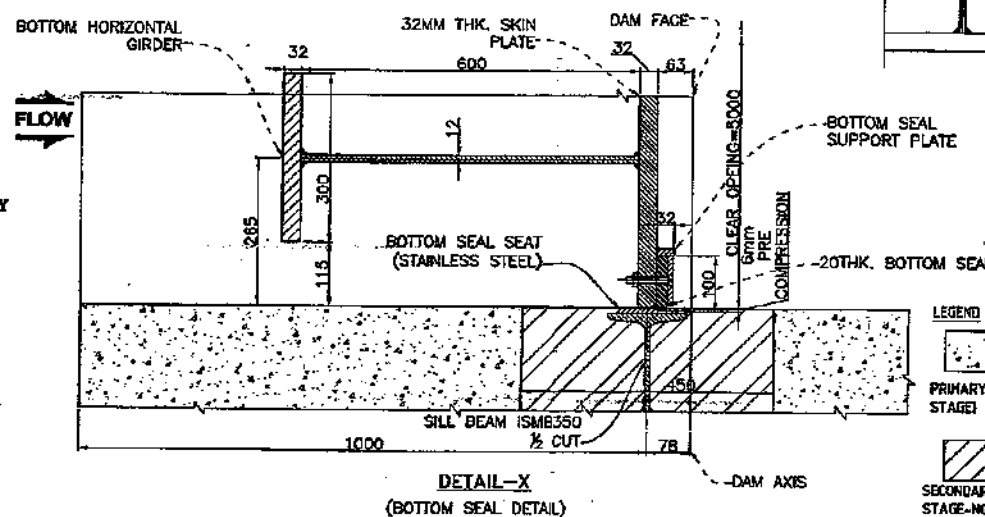
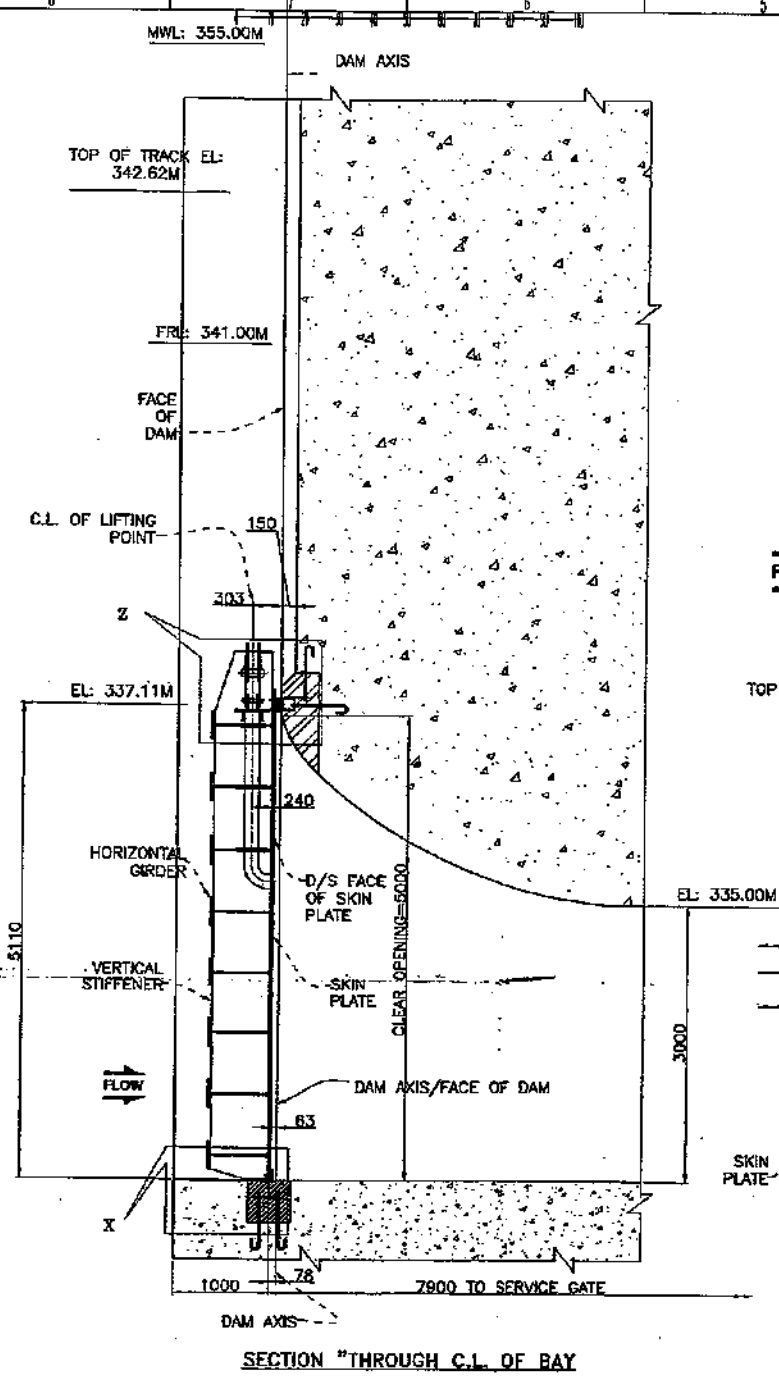
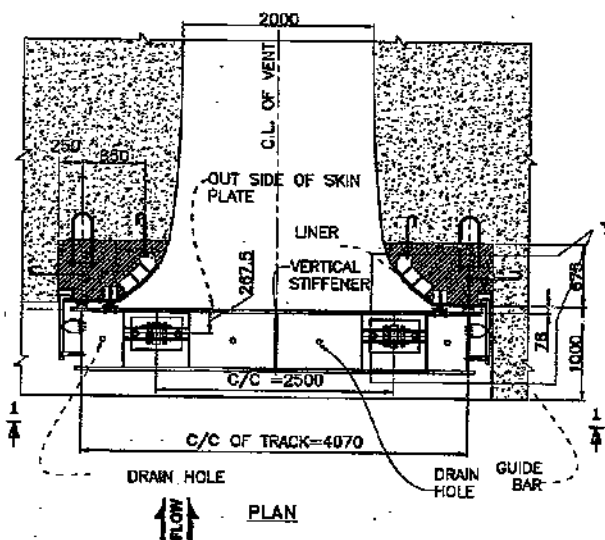
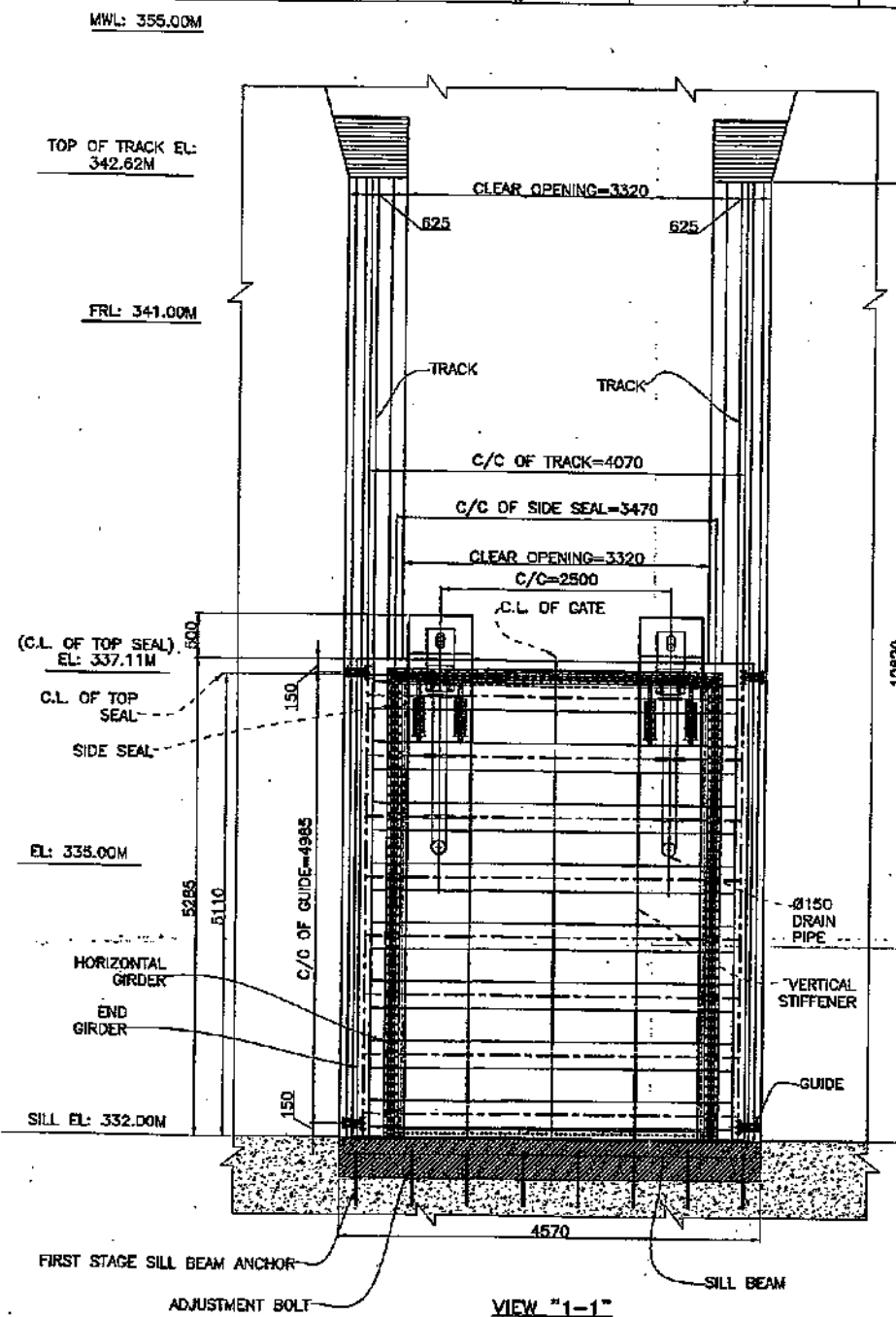
BOTTOM RUBBER SEAL ③



- NOTES:-
1. ALL DIMENSION ARE IN MM.
  2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO. OMIL/NKRP/ESG/507.

|                              |                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------|
| OM METALS INFRAPROJECTS LTD. |                                                                                                      |
| PROJECT                      | NORTH KOEL RESERVOIR PROJECT JHARKHAND                                                               |
| TITLE                        | EMERGENCY SLIDE TYPE GATE 3.32Mx5.0M<br>RUBBER PARTS DETAILS<br>FOR LOW LEVEL AND IRRIGATION SLUICES |
| DRAWN BY                     | MOHAN SANGWAN                                                                                        |
| CHECKED BY                   | ANURAG                                                                                               |
| SIZE                         | A1                                                                                                   |
| SCALE                        | 1:21                                                                                                 |
| SUBMITTED BY                 | DRG NO : OMIL/NKRP/ESG/507A/REV-0                                                                    |





- NOTES:
1. ALL DIMENSION ARE IN MM AND LEVEL IN METERS.
  2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.
  3. NOS. OF OPENING 2+4=6NOS.

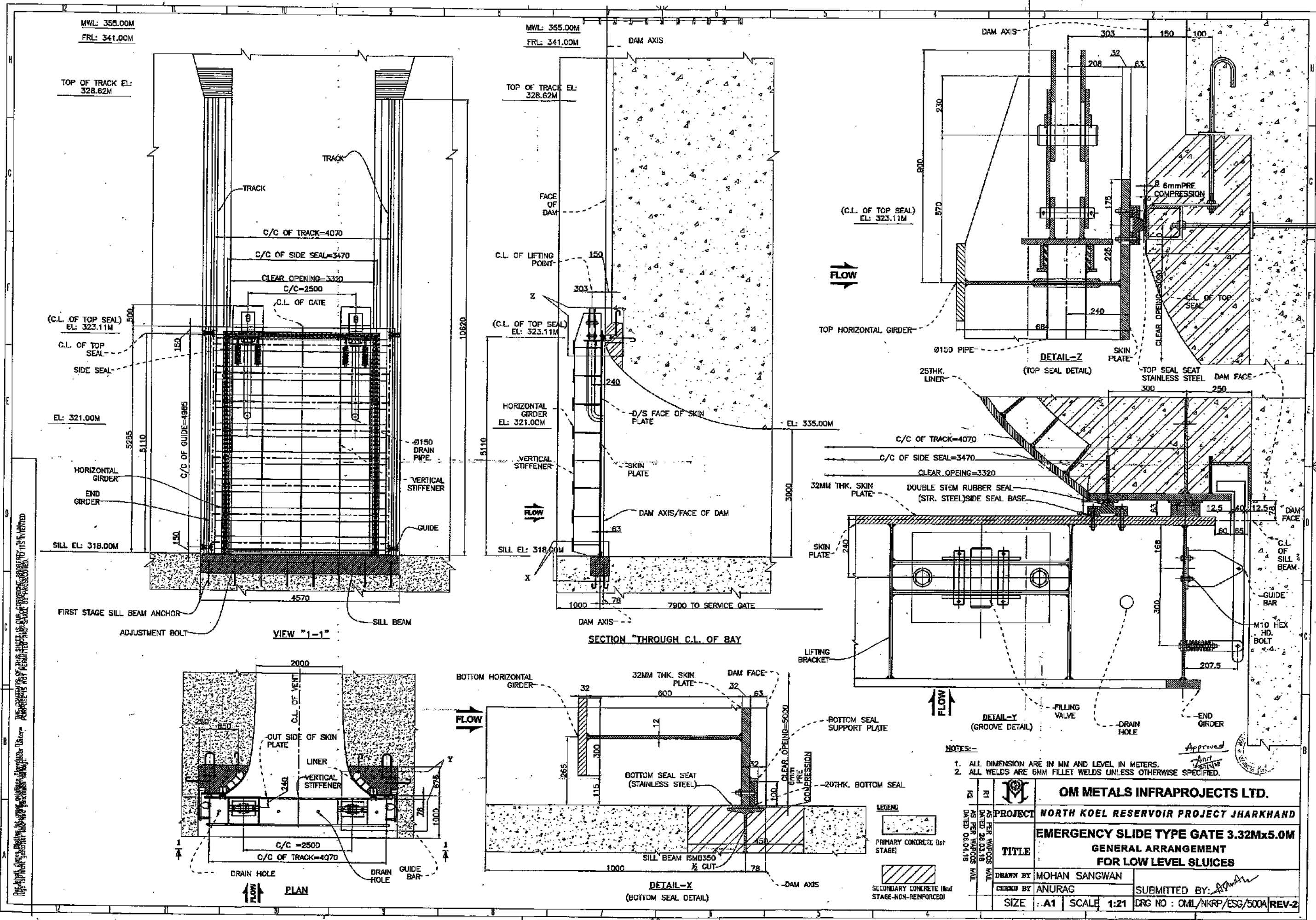
|                                  |                                                                                       |
|----------------------------------|---------------------------------------------------------------------------------------|
| OM METALS INFRAPROJECTS LTD.     |                                                                                       |
| PROJECT                          | NORTH KOEL RESERVOIR PROJECT JHARKHAND                                                |
| TITLE                            | EMERGENCY SLIDE TYPE GATE 3.32Mx5.0M<br>GENERAL ARRANGEMENT<br>FOR IRRIGATION SLUICES |
| DRAWN BY                         | MOHAN SANGWAN                                                                         |
| CHECKED BY                       | ANURAG                                                                                |
| SIZE                             | A1 SCALE 1:21                                                                         |
| SUBMITTED BY: <i>[Signature]</i> |                                                                                       |
| DRG NO : OML/NRP/ESG/500 REV-3   |                                                                                       |

LEGEND

PRIMARY CONCRETE (1st STAGE)

SECONDARY CONCRETE (2nd STAGE-NON-REINFORCED)





# NOTES:-

1. ALL DIMENSION ARE IN MM AND LEVEL IN METERS.
2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.
3. THE REINFORCEMENT RODS SHALL BE FLEXIBLE EXTENDED IN TO THE BLOCK-OUTS AND SUITABLE DOWEL BARS SHALL BE PROVIDED TO ENSURE PROPER BONDING BETWEEN 1st STAGE AND 2nd STAGE CONCERTING SUBSEQUENTLY THE DOWEL BARS ARE NOT INDICATED IN THIS DRAWINGS.
4. CONCRETE IN AND AROUND THE BLOCK-OUT SHALL BE M20 GRADE CONFORMING TO IS:456.

## LEGEND

PRIMARY CONCRETE  
(1st STAGE)

SECONDARY CONCRETE (2nd  
STAGE-NON-REINFORCED)

EL: 370.00M

MWL: 355.00M

CREST EL:352.28M

EL: 350.54M

FRL: 341.00M

TOP OF TRACK  
EL: 328.62M

EL: 370.00M

MWL: 355.00M

CREST EL:352.28M

EL: 350.54M

FRL: 341.00M

TOP OF TRACK  
EL: 328.62M

AB-3

C/C OF TRACK=4070 ±1.5mm

CLEAR OPENING=3320

7 SPACES @600C/C=4200

## SECTION "2-2"

C/C=4070

## BILL OF MATERIAL FOR ONE BAY

| E.M. | PART NO. | MATERIAL       | REFERENCE                   | LENGTH (MM) | WIDTH (MM) | THICK (MM) | NO. | UNIT WT. IN KGS. | TOTAL WT. IN KGS. | REMARKS |
|------|----------|----------------|-----------------------------|-------------|------------|------------|-----|------------------|-------------------|---------|
|      |          |                |                             |             |            |            |     |                  |                   |         |
| AB-3 | 2        | #18 ROD        | IS2062 E250B/ RINL SAE 1018 | 432         |            |            | 86  | 1.6              | 45.62             |         |
|      | 1        | STR. ST. PLATE | IS2062 E250B                | 100         | 100        | 10         | 86  | 78.50            | 51.81             |         |
| AB-2 | 2        | #18 ROD        | IS2062 E250B/ RINL SAE 1018 | 432         |            |            | 16  | 1.6              | 11.06             |         |
|      | 1        | STR. ST. PLATE | IS2062 E250B                | 300         | 100        | 10         | 8   | 78.50            | 18.84             |         |
| AB-1 | 2        | #18 ROD        | IS2062 E250B/ RINL SAE 1018 | 680         |            |            | 36  | 1.6              | 39.17             |         |
|      | 1        | STR. ST. PLATE | IS2062 E250B                | 300         | 100        | 10         | 36  | 78.50            | 84.78             |         |

## OM METALS INFRAPROJECTS LTD.

PROJECT NORTH KOEL RESERVOIR PROJECT JHARKHAND

EMERGENCY SLIDE TYPE GATE 3.32Mx5.0M  
BLOCK-OUT DETAILS  
FOR LOW LEVEL SLUICES

DRAWN BY MOHAN SANGWAN

CHECKED BY ANURAG

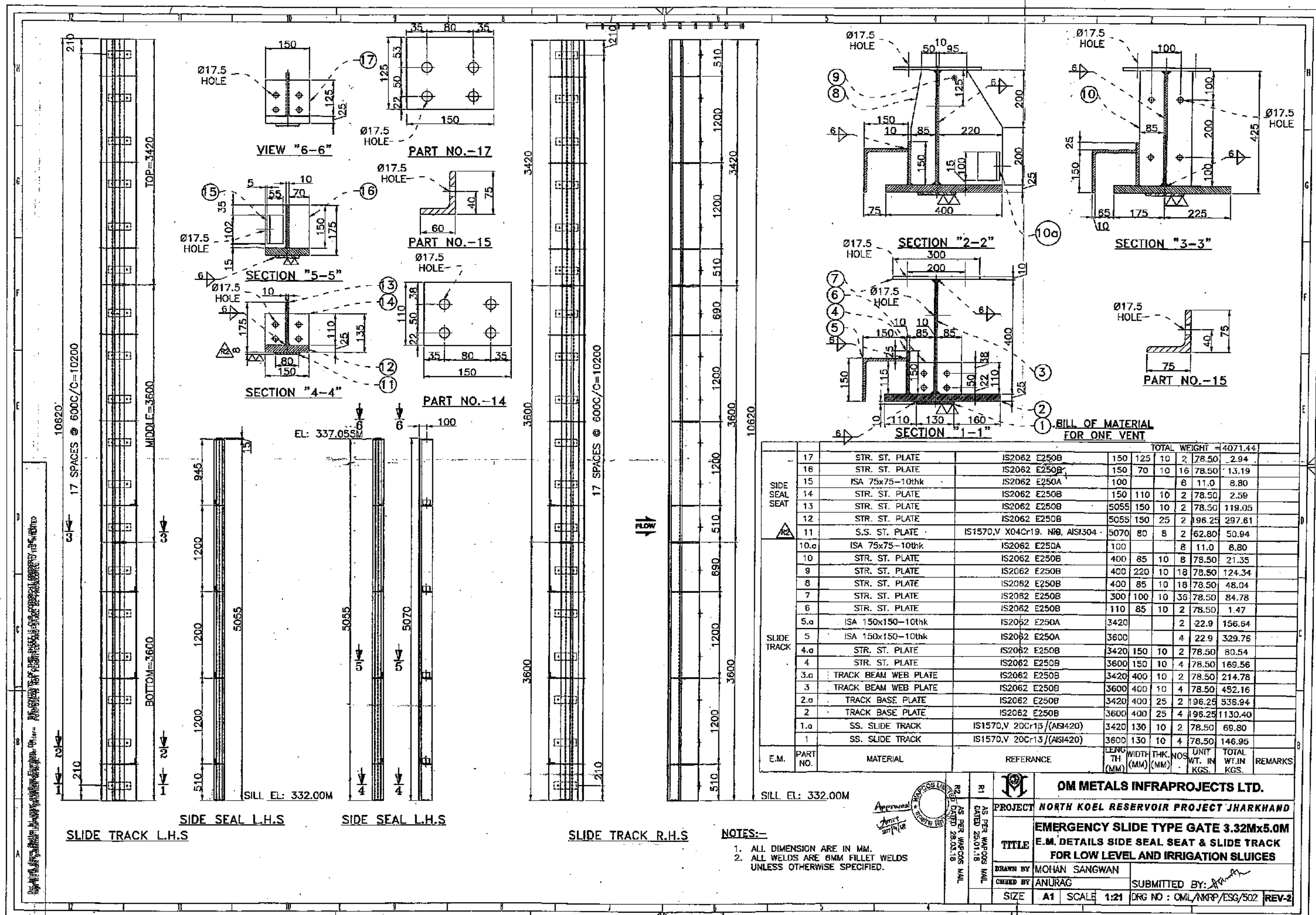
SIZE A1 SCALE 1:21

SUBMITTED BY: *[Signature]*

DRG NO : OMIL/NKRP/ESG/501A REV-1

SECTION "THROUGH C.L. OF BAY"





| TOTAL WEIGHT = 4071.44 |                 |                             |                                |              |            |           |       |                  |                  |         |
|------------------------|-----------------|-----------------------------|--------------------------------|--------------|------------|-----------|-------|------------------|------------------|---------|
| SIDE SEAL SEAT         | 17              | STR. ST. PLATE              | IS2062 E250B                   | 150          | 125        | 10        | 2     | 78.50            | 2.94             |         |
|                        | 16              | STR. ST. PLATE              | IS2062 E250B                   | 150          | 70         | 10        | 16    | 78.50            | 13.19            |         |
|                        | 15              | ISA 75x75-10thk             | IS2062 E250A                   | 100          |            |           | 8     | 11.0             | 8.80             |         |
|                        | 14              | STR. ST. PLATE              | IS2062 E250B                   | 150          | 110        | 10        | 2     | 78.50            | 2.59             |         |
|                        | 13              | STR. ST. PLATE              | IS2062 E250B                   | 5055         | 150        | 10        | 2     | 78.50            | 119.05           |         |
|                        | 12              | STR. ST. PLATE              | IS2062 E250B                   | 5055         | 150        | 25        | 2     | 196.25           | 297.61           |         |
|                        | 11              | S.S. ST. PLATE              | IS1570.V X04Cr19. Ni8, AISI304 | 5070         | 80         | 8         | 2     | 62.80            | 50.94            |         |
| SLIDE TRACK            | 10.a            | ISA 75x75-10thk             | IS2062 E250A                   | 100          |            |           | 8     | 11.0             | 8.80             |         |
|                        | 10              | STR. ST. PLATE              | IS2062 E250B                   | 400          | 85         | 10        | 8     | 78.50            | 21.35            |         |
|                        | 9               | STR. ST. PLATE              | IS2062 E250B                   | 400          | 220        | 10        | 18    | 78.50            | 124.34           |         |
|                        | 8               | STR. ST. PLATE              | IS2062 E250B                   | 400          | 85         | 10        | 18    | 78.50            | 48.04            |         |
|                        | 7               | STR. ST. PLATE              | IS2062 E250B                   | 300          | 100        | 10        | 36    | 78.50            | 84.78            |         |
|                        | 6               | STR. ST. PLATE              | IS2062 E250B                   | 110          | 85         | 10        | 2     | 78.50            | 1.47             |         |
|                        | 5.a             | ISA 150x150-10thk           | IS2062 E250A                   | 3420         |            |           | 2     | 22.9             | 156.64           |         |
|                        | 5               | ISA 150x150-10thk           | IS2062 E250A                   | 3600         |            |           | 4     | 22.9             | 329.76           |         |
|                        | 4.a             | STR. ST. PLATE              | IS2062 E250B                   | 3420         | 150        | 10        | 2     | 78.50            | 80.54            |         |
|                        | 4               | STR. ST. PLATE              | IS2062 E250B                   | 3600         | 150        | 10        | 4     | 78.50            | 169.56           |         |
|                        | 3.a             | TRACK BEAM WEB PLATE        | IS2062 E250B                   | 3420         | 400        | 10        | 2     | 78.50            | 214.78           |         |
|                        | 3               | TRACK BEAM WEB PLATE        | IS2062 E250B                   | 3600         | 400        | 10        | 4     | 78.50            | 452.16           |         |
|                        | 2.a             | TRACK BASE PLATE            | IS2062 E250B                   | 3420         | 400        | 25        | 2     | 196.25           | 536.94           |         |
|                        | 2               | TRACK BASE PLATE            | IS2062 E250B                   | 3600         | 400        | 25        | 4     | 196.25           | 1130.40          |         |
| 1.a                    | SS. SLIDE TRACK | IS1570.V 20Cr13 / (AISI420) | 3420                           | 130          | 10         | 2         | 78.50 | 69.80            |                  |         |
| 1                      | SS. SLIDE TRACK | IS1570.V 20Cr13 / (AISI420) | 3600                           | 130          | 10         | 4         | 78.50 | 146.95           |                  |         |
| E.M.                   | PART NO.        | MATERIAL                    | REFERENCE                      | LENG TH (MM) | WIDTH (MM) | THK. (MM) | NOS   | UNIT WT. IN KGS. | TOTAL WT.IN KGS. | REMARKS |

SILL EL: 332.00M

**OM METALS INFRAPROJECTS LTD.**

**PROJECT** NORTH KOEL RESERVOIR PROJECT JHARKHAND

**TITLE** EMERGENCY SLIDE TYPE GATE 3.32Mx5.0M  
E.M. DETAILS SIDE SEAL SEAT & SLIDE TRACK  
FOR LOW LEVEL AND IRRIGATION SLUICES

**DRAWN BY** MOHAN SANGWAN

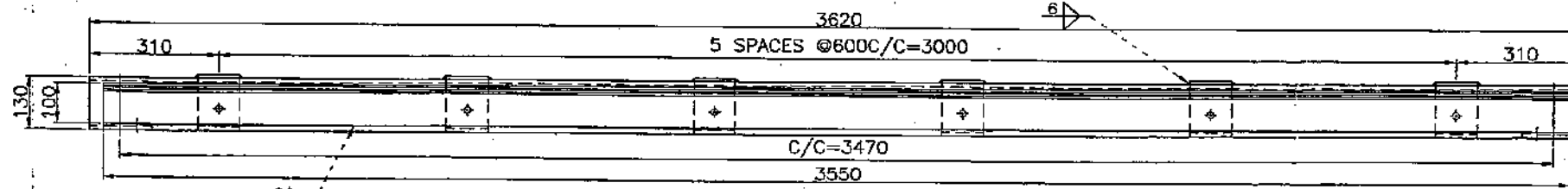
**CHECKED BY** ANURAG

**SIZE** A1 **SCALE** 1:21 **DRG NO** : OML/NKRP/ESG/502 **REV-2**

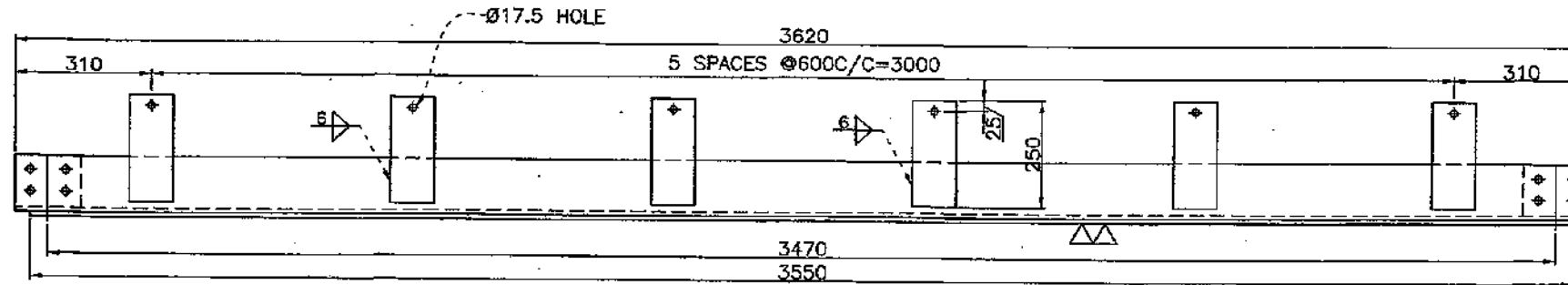
**SUBMITTED BY:** *[Signature]*

**APPROVED** *[Signature]* **DATE** 25.01.18

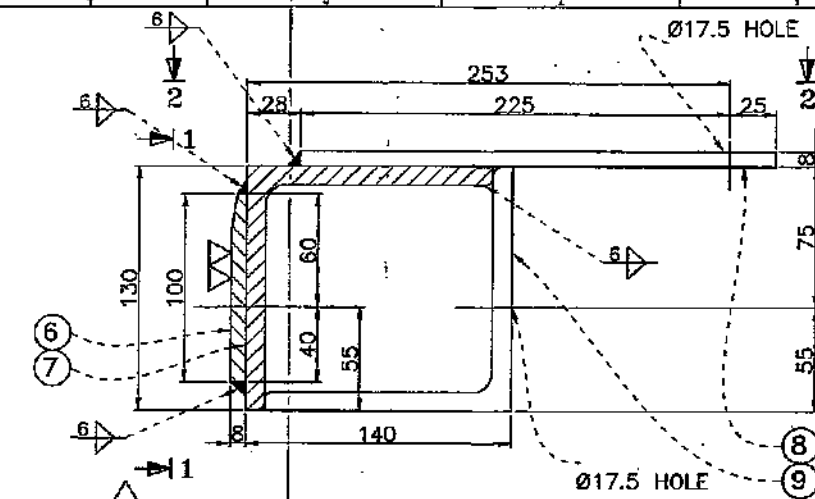
**NOTES:-**  
 1. ALL DIMENSION ARE IN MM.  
 2. ALL WELDS ARE 8MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.



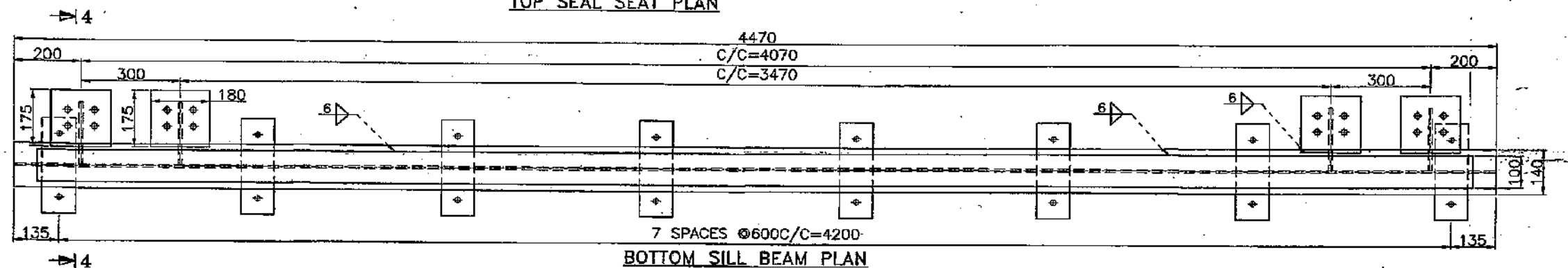
VIEW "1-1"  
TOP SEAL SEAT ELEVATION



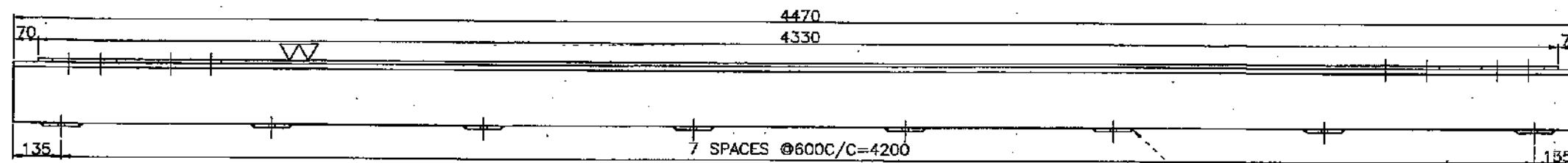
VIEW "2-2"  
TOP SEAL SEAT PLAN



TOP SEAL SEAT SECTION



BOTTOM SILL BEAM PLAN



VIEW "3-3"  
BOTTOM SILL BEAM ELEVATION

NOTES:-

1. ALL DIMENSION ARE IN MM.
2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.

BILL OF MATERIAL FOR ONE VENT

| TOP SEAL BEAM         | PART NO. | MATERIAL             | REFERENCE                     | LENG. TH. (MM) | WIDTH (MM) | THK. (MM) | NO. | UNIT  | TOTAL WT. IN KGS. | REMARKS |
|-----------------------|----------|----------------------|-------------------------------|----------------|------------|-----------|-----|-------|-------------------|---------|
|                       |          |                      |                               |                |            |           |     |       |                   |         |
| TOP SEAL BEAM         | 5        | ISA 130x130-10thk    | IS2062 E250A                  | 100            | 100        | 8         | 6   | 19.7  | 11.82             |         |
|                       | 8        | STR. ST. PLATE       | IS2062 E250B                  | 250            | 100        | 8         | 6   | 52.80 | 8.42              |         |
|                       | 7        | ISA 130x130-10thk    | IS2062 E250A                  | 3620           | 100        | 8         | 1   | 19.7  | 71.31             |         |
|                       | 5        | STR. ST. PLATE       | IS1570.V X04C19. N18, AISI304 | 3550           | 100        | 8         | 1   | 62.83 | 22.29             |         |
|                       | 5        | STR. ST. PLATE       | IS2062 E250B                  | 300            | 200        | 10        | 8   | 78.50 | 37.68             |         |
| SILL BEAM             | 4        | STR. ST. PLATE       | IS2062 E250B                  | 195            | 175        | 10        | 4   | 78.50 | 10.72             |         |
|                       | 5        | STR. ST. PLATE       | IS1570.V X04C19. N18, AISI304 | 180            | 175        | 10        | 4   | 78.50 | 9.89              |         |
|                       | 2        | ISMB350, 1/2 CUT     | IS2062 E250A                  | 4330           | 100        | 10        | 1   | 26.2  | 113.45            |         |
|                       | 1        | SS. BOTTOM SILL SEAT | IS1570.V X04C19. N18, AISI304 | 4470           | 100        | 10        | 1   | 78.50 | 35.09             |         |
| TOTAL WEIGHT = 321.67 |          |                      |                               |                |            |           |     |       |                   |         |

OM METALS INFRAPROJECTS LTD.

PROJECT NORTH KOEL RESERVOIR PROJECT JHARKHAND

TITLE EMERGENCY SLIDE TYPE GATE 3.32Mx5.0M  
E.M. DETAILS BOTTOM SILL BEAM & TOP SEAL SEAT  
FOR LOW LEVEL AND IRRIGATION SLUICES

DRAWN BY MOHAN SANGWAN

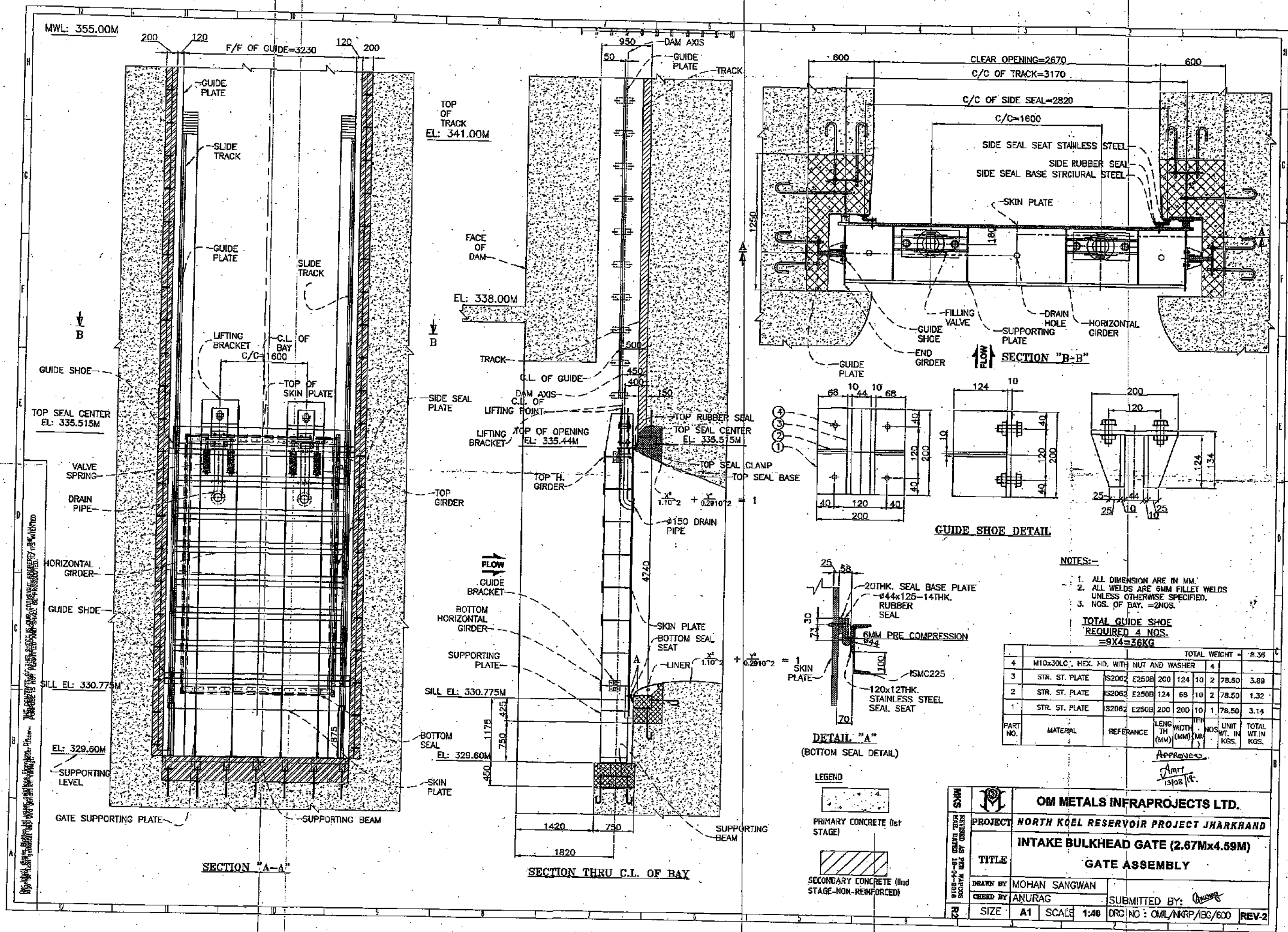
CHECKED BY ANURAG

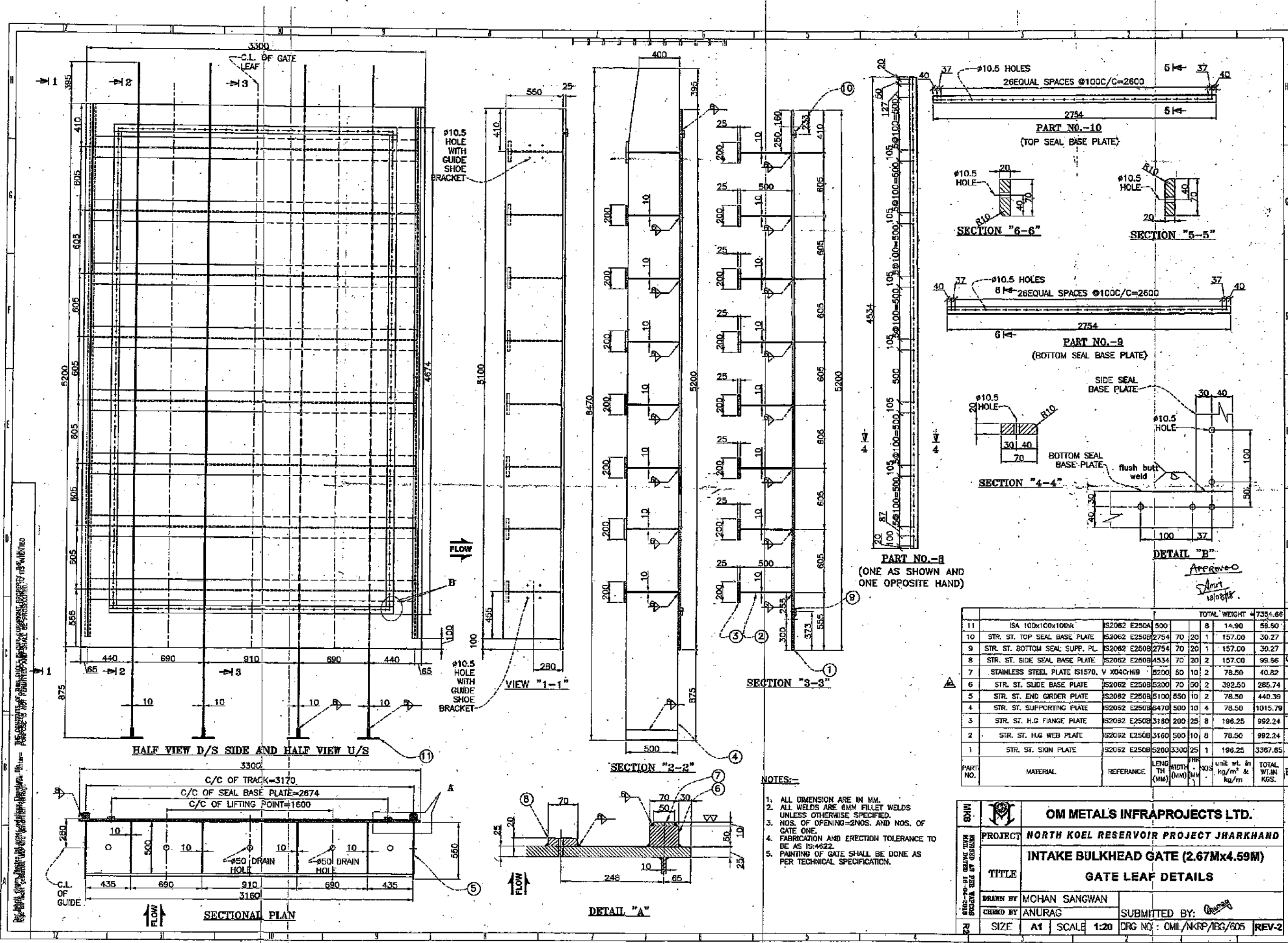
SUBMITTED BY

SIZE A1

SCALE 1:21

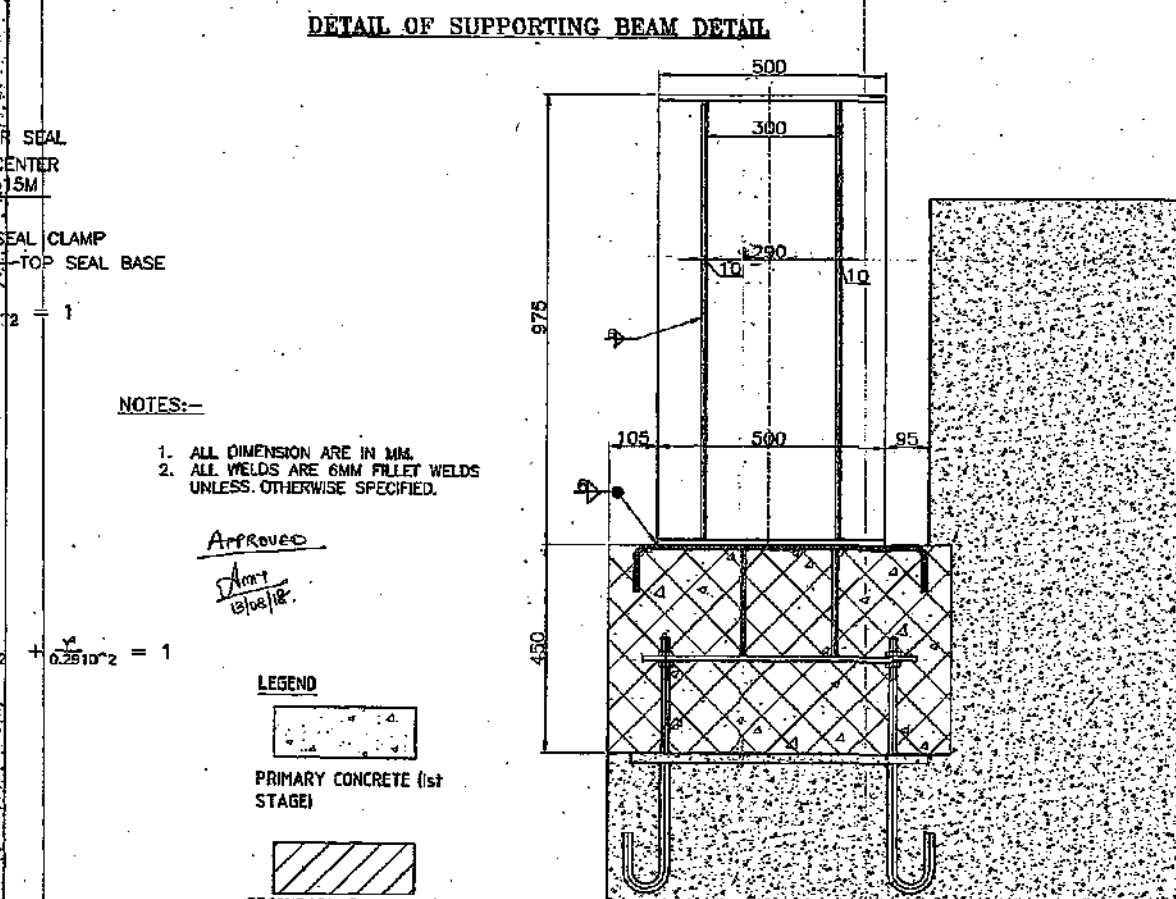
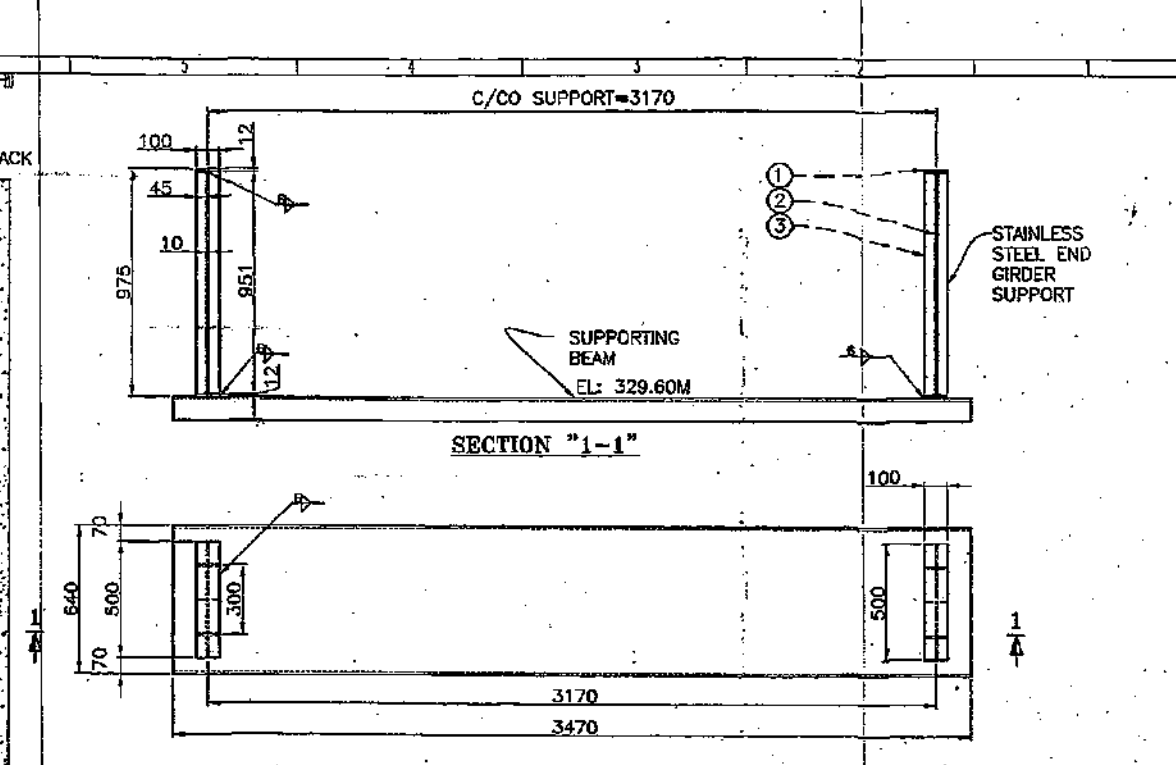
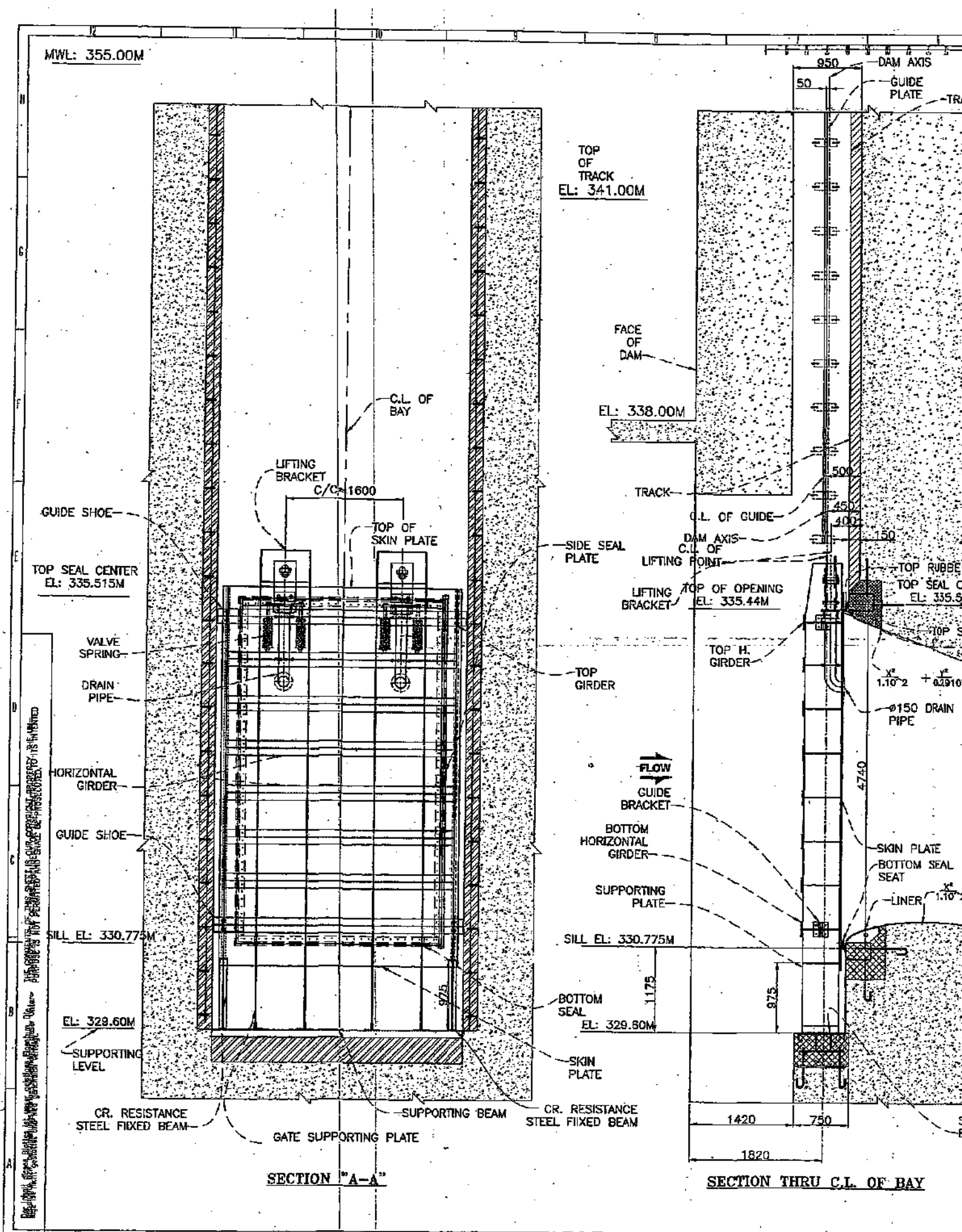
DRG NO : OML/NKRP/ESG/503 REV-2





|          |                                          |              |              | TOTAL WEIGHT = 7354.66 |          |       |                                      |                  |
|----------|------------------------------------------|--------------|--------------|------------------------|----------|-------|--------------------------------------|------------------|
| 11       | ISA 100x100x10mm                         | IS2062 E250A | 500          |                        | 8        | 14.90 | 58.50                                |                  |
| 10       | STR. ST. TOP SEAL BASE PLATE             | IS2062 E250B | 2754         | 70                     | 20       | 1     | 157.00                               | 30.27            |
| 9        | STR. ST. BOTTOM SEAL SUPP. PL.           | IS2062 E250B | 2754         | 70                     | 20       | 1     | 157.00                               | 30.27            |
| 8        | STR. ST. SIDE SEAL BASE PLATE            | IS2062 E250B | 4534         | 70                     | 20       | 2     | 157.00                               | 99.56            |
| 7        | STAINLESS STEEL PLATE IS1570, V X04CrNi9 | S2000        | 50           | 10                     | 2        |       | 78.50                                | 40.82            |
| 6        | STR. ST. SLIDE BASE PLATE                | IS2062 E250B | 5200         | 70                     | 50       | 2     | 392.50                               | 285.74           |
| 5        | STR. ST. END GIRDER PLATE                | IS2062 E250B | 5100         | 550                    | 10       | 2     | 78.50                                | 440.39           |
| 4        | STR. ST. SUPPORTING PLATE                | IS2062 E250B | 6470         | 500                    | 10       | 4     | 78.50                                | 1015.79          |
| 3        | STR. ST. H.G FLANGE PLATE                | IS2062 E250B | 3180         | 200                    | 25       | 8     | 198.25                               | 992.24           |
| 2        | STR. ST. H.G WEB PLATE                   | IS2062 E250B | 3160         | 500                    | 10       | 8     | 78.50                                | 992.24           |
| 1        | STR. ST. SKIN PLATE                      | IS2062 E250B | 5200         | 3300                   | 25       | 1     | 198.25                               | 3367.85          |
| PART NO. | MATERIAL                                 | REFERENCE    | LENG TH (MM) | WIDTH (MM)             | THK (MM) | NOS   | unit wt. in kg/m <sup>2</sup> & kg/m | TOTAL WT.IN KGS. |

|                                     |                                               |
|-------------------------------------|-----------------------------------------------|
| <b>OM METALS INFRAPROJECTS LTD.</b> |                                               |
| <b>PROJECT</b>                      | <b>NORTH KOEL RESERVOIR PROJECT JHARKHAND</b> |
| <b>TITLE</b>                        | <b>INTAKE BULKHEAD GATE (2.67Mx4.59M)</b>     |
| <b>DRAWN BY</b>                     | <b>MOHAN SANGWAN</b>                          |
| <b>CHECKED BY</b>                   | <b>ANURAG</b>                                 |
| <b>SIZE</b>                         | <b>A1</b>                                     |
| <b>SCALE</b>                        | <b>1:20</b>                                   |
| <b>DRG NO.</b>                      | <b>OMIL/NKRP/IBG/605</b>                      |
| <b>REV-2</b>                        | <b>REV-2</b>                                  |



**NOTES:-**

1. ALL DIMENSION ARE IN MM.
2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.

*Approved*  
*Don't Blotter*

**LEGEND**

PRIMARY CONCRETE (1st STAGE)

SECONDARY CONCRETE (2nd STAGE-NON-REINFORCED)

**BILL OF MATERIAL OF CR. STEEL**  
FIXED BEAM IS FOR ONE BAY AND  
SUPPORTING TOTAL NOS. CR. STEEL FIXED BEAM  
REQ. FOR TWO BAYS

| PART NO. | MATERIAL        | LENGTH (MM) | WIDTH (MM) | THICK (MM) | NOS                   | UNIT WT. IN KGS/M | TOTAL WT. IN KGS. | REMARKS |
|----------|-----------------|-------------|------------|------------|-----------------------|-------------------|-------------------|---------|
| 3        | CR. STEEL PLATE | 951         | 45         | 10         | 8                     | 78.50             | 26.88             |         |
| 2        | CR. STEEL PLATE | 951         | 500        | 10         | 2                     | 78.50             | 74.65             |         |
| 1        | CR. STEEL PLATE | 500         | 100        | 12         | 4                     | 84.20             | 16.84             |         |
|          |                 |             |            |            | TOTAL WEIGHT = 120.37 |                   |                   |         |

**OM METALS INFRAPROJECTS LTD.**

**PROJECT** NORTH KOEL RESERVOIR PROJECT JHARKHAND

**TITLE** INTAKE BULKHEAD GATE (2.67Mx4.59M)

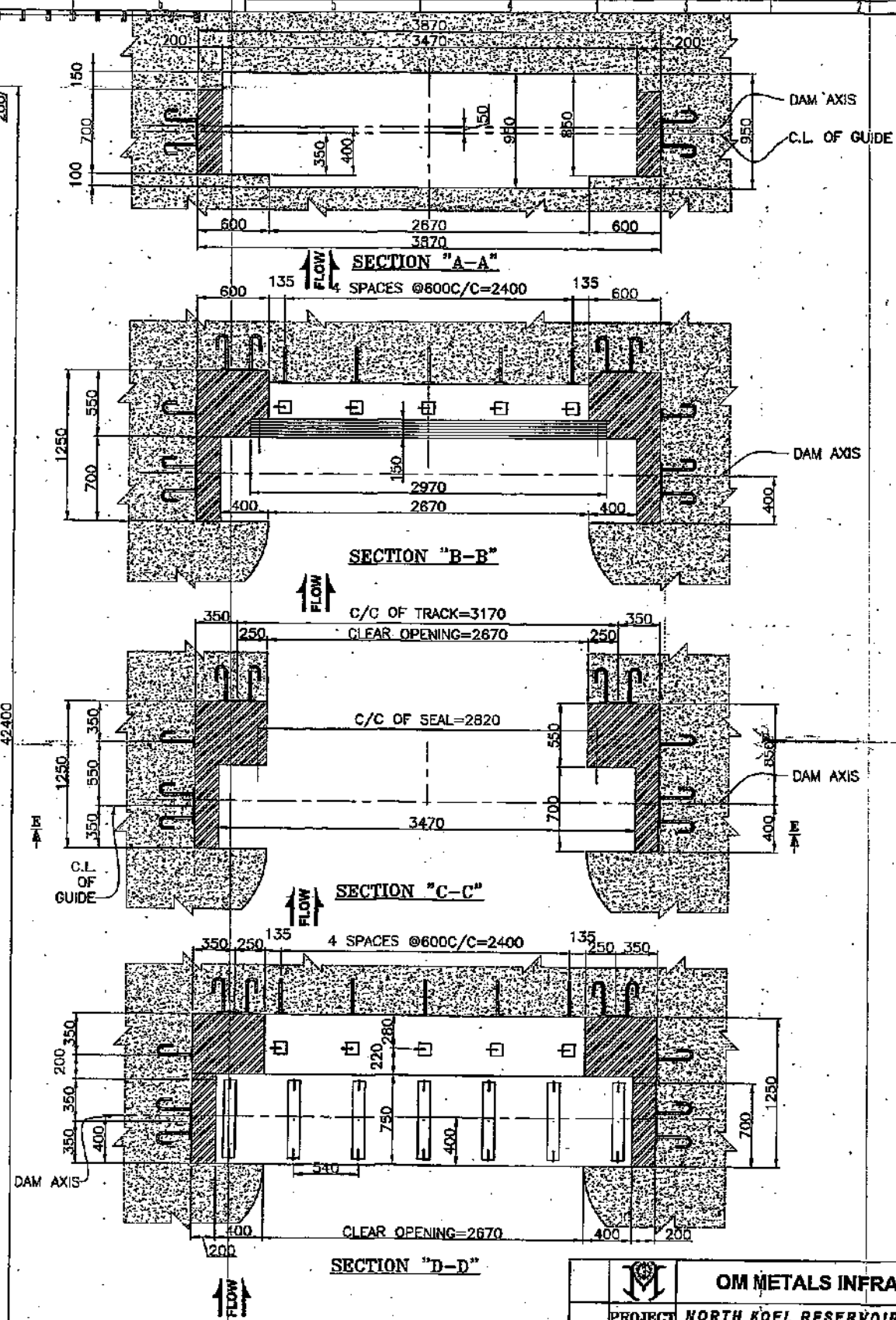
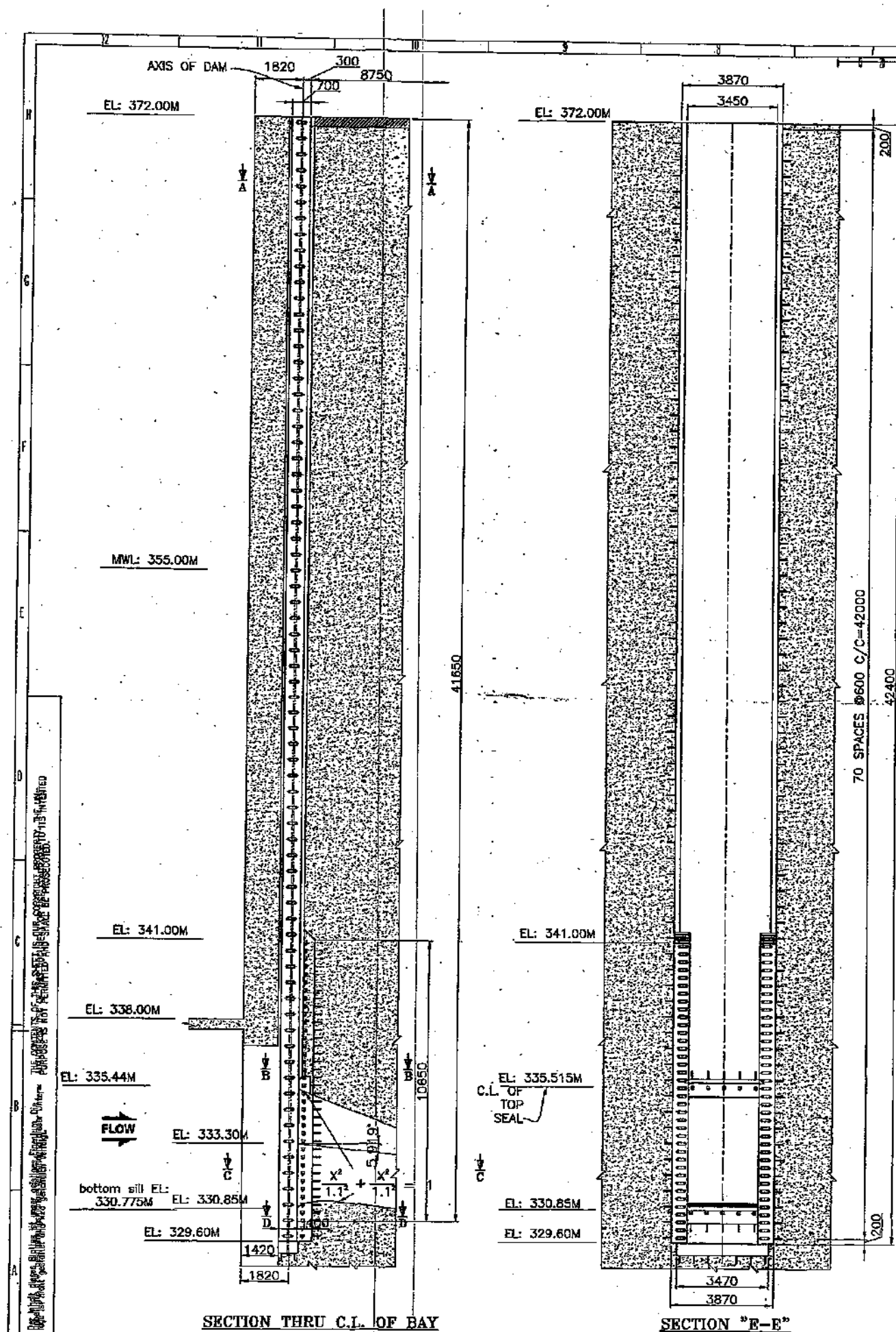
**DETAIL OF CR. STEEL FIXED BEAM**

**DRAWN BY** MOHAN SANGWAN

**CHECKED BY** ANURAG

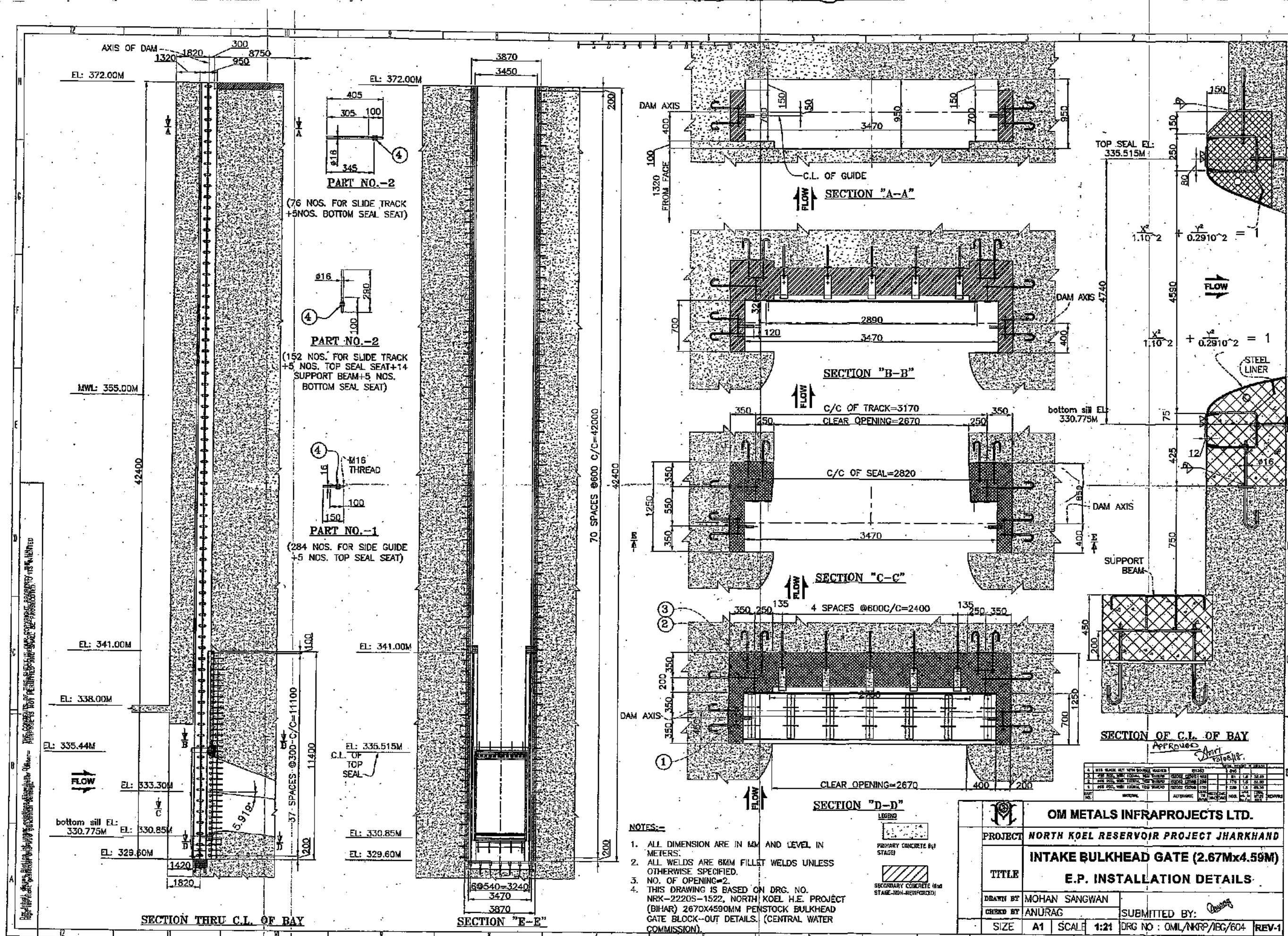
**SUBMITTED BY:** *Chandray*

**SIZE** A1 **SCALE** 1:40 **DRG NO** : OML/NKRP/IBG/600A **REV-1**

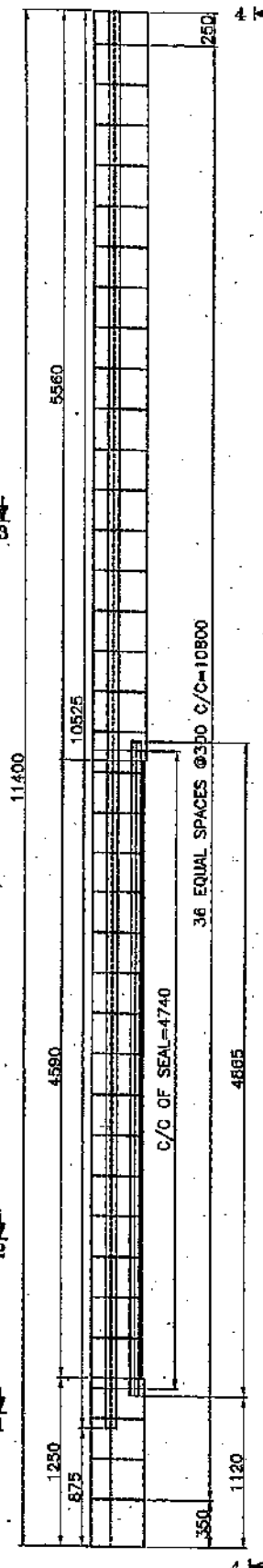


Approved  
Date 15/08/18

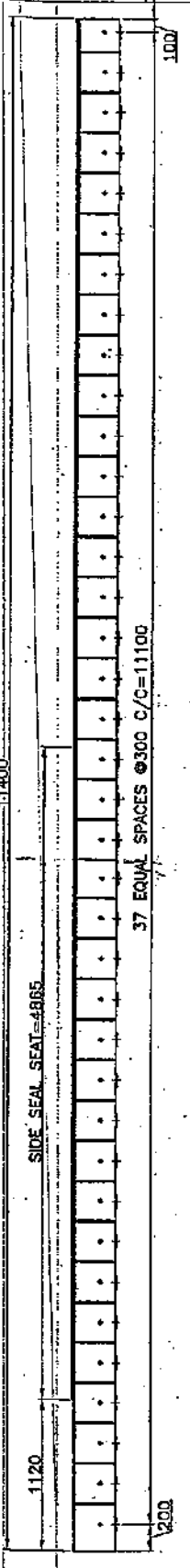
|  |                                                                                       |                                                          |                              |                                                                                                     |                           |       |
|--|---------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------|-------|
|  |  |                                                          | OM METALS INFRAPROJECTS LTD. |                                                                                                     |                           |       |
|  | PROJECT                                                                               | NORTH KOEL RESERVOIR PROJECT JHARKHAND                   |                              |                                                                                                     |                           |       |
|  | TITLE                                                                                 | INTAKE BULK HEAD GATE (2.67Mx4.59M)<br>BLOCK OUT DETAILS |                              |                                                                                                     |                           |       |
|  | DRAWN BY                                                                              | MOHAN SANGWAN                                            |                              |                                                                                                     |                           |       |
|  | CHECKED BY                                                                            | ANURAG                                                   |                              | SUBMITTED BY:  |                           |       |
|  | SIZE                                                                                  | A1                                                       | SCALE                        | 1:21                                                                                                | DRG NO : CML/NKRP/IBG/601 | REV-1 |



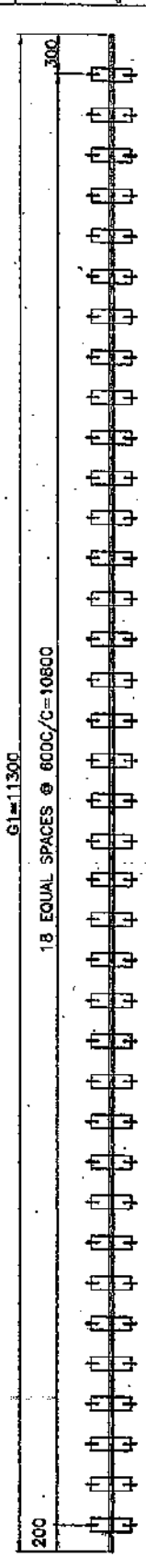




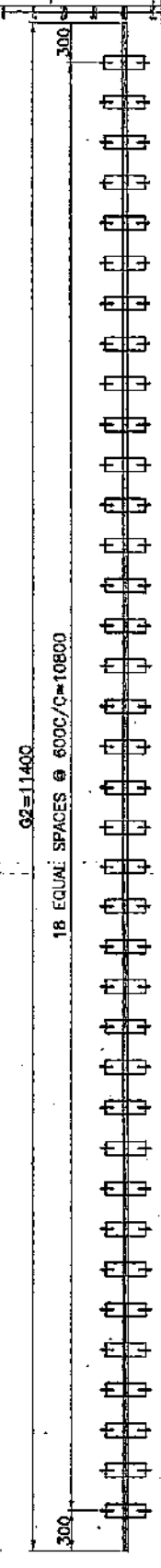
**SLIDE TRACK & SIDE SEAL SEAT**  
(REQ. 2 NOS. ONE AS SHOWN & ONE AS OPPOSITE HAND)



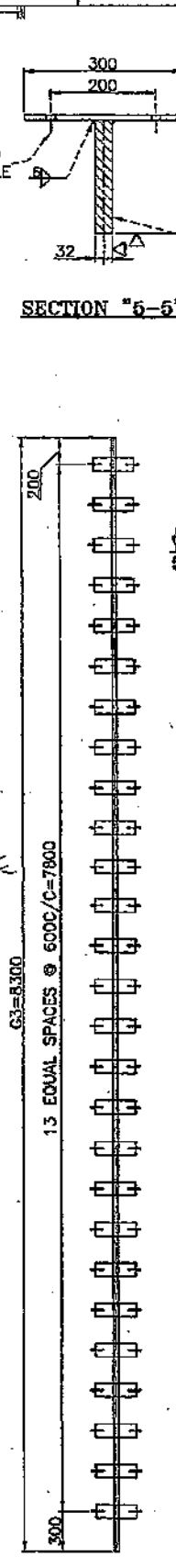
**SECTION "4-4"**



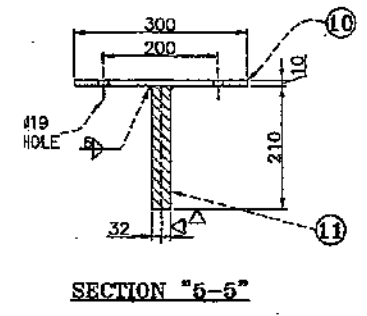
**GUIDE PLATE-G1**  
(REQ. 2 NOS. ONE AS SHOWN & ONE AS OPPOSITE HAND)



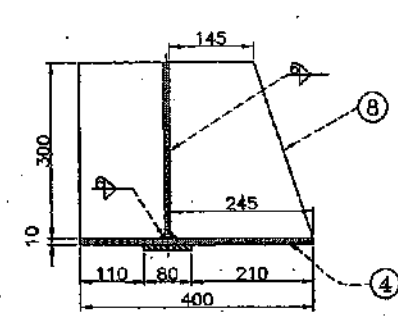
**GUIDE PLATE-G2**  
(REQ. 4 NOS. TWO AS SHOWN & TWO AS OPPOSITE HAND)



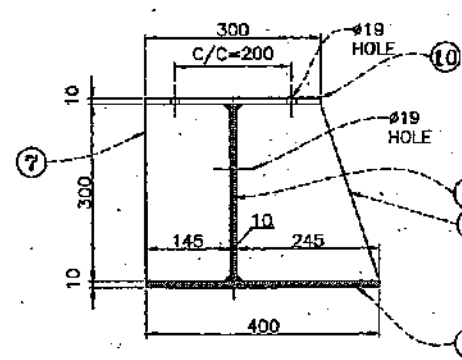
**GUIDE PLATE-G3**  
(REQ. 2 NOS. ONE AS SHOWN & ONE AS OPPOSITE HAND)



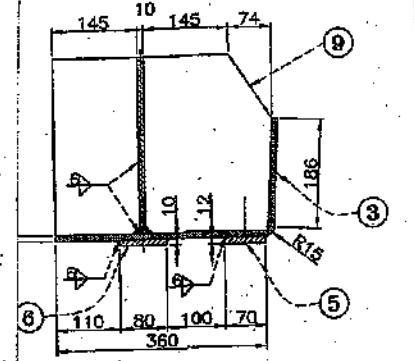
**SECTION "5-5"**



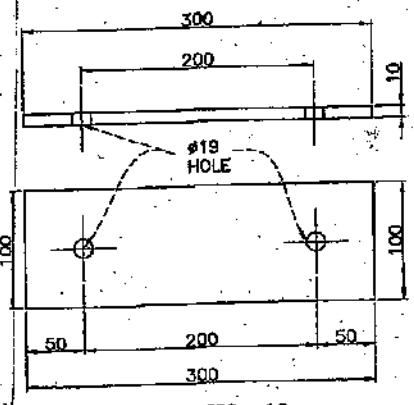
**SECTION "3-3"**



**SECTION "1-1"**



**SECTION "2-2"**



**PART NO.-10**

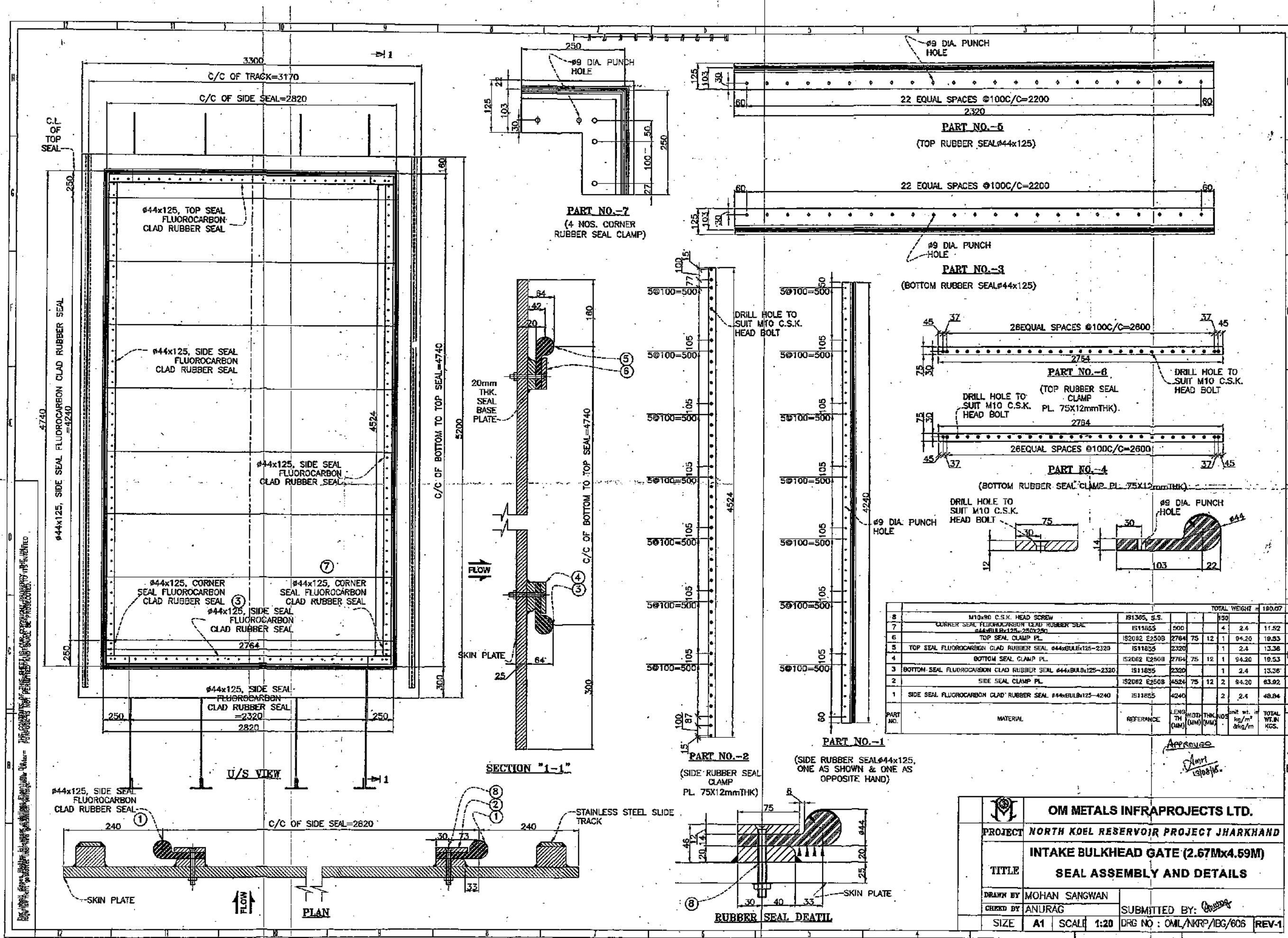
**NOTES:-**

1. ALL DIMENSION ARE IN MM.
2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.

**BILL OF MATERIAL FOR ONE VENT**

| SIDE GUIDE             | NO. | MATERIAL              | REFERENCE    | LENGTH (MM) | WIDTH (MM) | THK (MM) | NOS. | UNIT WT. IN kg/m <sup>2</sup> | TOTAL WT. IN KGS. |
|------------------------|-----|-----------------------|--------------|-------------|------------|----------|------|-------------------------------|-------------------|
|                        |     |                       |              |             |            |          |      |                               |                   |
| SLIDE & SIDE SEAL SEAT | 11  | STR. ST. PLATE        | IS2062 E250B | 42400       | 210        | 32       | 2    | 251.20                        | 7204.25           |
|                        | 10  | STR. ST. PLATE        | IS2062 E250B | 300         | 100        | 10       | 142  | 78.50                         | 4473.37           |
|                        | 10  | STR. ST. PLATE        | IS2062 E250B | 300         | 100        | 10       | 76   | 78.50                         | 178.98            |
|                        | 9   | STR. ST. PLATE        | IS2062 E250B | 300         | 218        | 10       | 32   | 78.50                         | 169.04            |
|                        | 8   | STR. ST. PLATE        | IS2062 E250B | 300         | 245        | 10       | 42   | 78.50                         | 242.33            |
|                        | 7   | STR. ST. PLATE        | IS2062 E250B | 300         | 145        | 10       | 74   | 78.50                         | 252.89            |
|                        | 6   | CR. STEEL PLATE       | AISI420      | 10525       | 80         | 10       | 2    | 78.50                         | 132.19            |
|                        | 5   | STAINLESS STEEL PLATE | AISI304      | 4885        | 70         | 12       | 2    | 94.20                         | 61.79             |
|                        | 4   | STR. ST. PLATE        | IS2062 E250B | 5560        | 400        | 10       | 2    | 78.50                         | 349.17            |
|                        | 3   | STR. ST. PLATE        | IS2062 E250B | 4590        | 560        | 10       | 2    | 78.50                         | 403.55            |
|                        | 2   | STR. ST. PLATE        | IS2062 E250B | 11400       | 300        | 10       | 2    | 78.50                         | 536.94            |
|                        | 1   | STR. ST. PLATE        | IS2062 E250B | 1175        | 400        | 10       | 2    | 78.50                         | 73.79             |

|                                                       |               |               |                    |
|-------------------------------------------------------|---------------|---------------|--------------------|
| <b>OM METALS INFRAPROJECTS LTD.</b>                   |               |               |                    |
| <b>PROJECT NORTH KOEL RESERVOIR PROJECT JHARKHAND</b> |               |               |                    |
| <b>TITLE INTAKE BULKHEAD GATE (2.67Mx4.59M)</b>       |               |               |                    |
| <b>SLIDE TRACK/SIDE SEAL SEAT &amp; GUIDE</b>         |               |               |                    |
| DESIGNED BY                                           | MOHAN SANGWAN | SUBMITTED BY: | <i>[Signature]</i> |
| CHECKED BY                                            | ANURAG        | DRG NO :      | OML/NRGP/IBG/603   |
| SIZE                                                  | A1            | SCALE         | 1:20               |
| REV-0                                                 |               |               |                    |



|          |                                                                   | TOTAL WEIGHT = 180.07 |              |             |     |                                        |                   |  |
|----------|-------------------------------------------------------------------|-----------------------|--------------|-------------|-----|----------------------------------------|-------------------|--|
| 8        | M10x80 C.S.K. HEAD SCREW                                          | IS1305, S.S.          |              |             |     | 100                                    |                   |  |
| 7        | CORNER SEAL FLUOROCARBON CLAD RUBBER SEAL<br>ø44xBLUBx125-250x250 | IS11855               | 500          |             |     | 4                                      | 2.4 11.52         |  |
| 6        | TOP SEAL CLAMP PL                                                 | IS2082 E2508          | 2764         | 75          | 12  | 1                                      | 94.20 19.53       |  |
| 5        | TOP SEAL FLUOROCARBON CLAD RUBBER SEAL ø44xBLUBx125-2320          | IS11855               | 2320         |             |     | 1                                      | 2.4 13.36         |  |
| 4        | BOTTOM SEAL CLAMP PL                                              | IS2082 E2508          | 2764         | 75          | 12  | 1                                      | 94.20 19.53       |  |
| 3        | BOTTOM SEAL FLUOROCARBON CLAD RUBBER SEAL ø44xBLUBx125-2320       | IS11855               | 2320         |             |     | 1                                      | 2.4 13.36         |  |
| 2        | SIDE SEAL CLAMP PL                                                | IS2082 E2508          | 4524         | 75          | 12  | 2                                      | 94.20 63.92       |  |
| 1        | SIDE SEAL FLUOROCARBON CLAD RUBBER SEAL ø44xBLUBx125-4240         | IS11855               | 4240         |             |     | 2                                      | 2.4 48.94         |  |
| PART NO. | MATERIAL                                                          | REFERENCE             | LENG TH (MM) | WID TH (MM) | NOS | UNIT WT. in kg/m <sup>2</sup><br>økg/m | TOTAL WT. IN KGS. |  |

APPROVED

*[Signature]*

FLOW

SECTION "A-A"

PIN ⑥

PIN ⑦

ELEVATION

VIEW "C-C"

TOP OF SKIN PLATE

VIEW "B-B"

SEAL COVER PLATE ⑬

NOTES:-

1. ALL DIMENSION ARE IN MM.
2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.
3. NOS. OF OPENING=2NOS. AND NOS. OF GATE IS ONE.
4. FABRICATION AND ERECTION TOLERANCE TO BE AS IS:4622.

BILL OF MATERIAL FOR ONE FILLING VALVE ASSEMBLY  
TOTAL MATERIAL REQ. = 2x215=430kgs.

|          |                                                  | TOTAL WEIGHT in kgs = |               | 214.01          |       |                               |           |         |
|----------|--------------------------------------------------|-----------------------|---------------|-----------------|-------|-------------------------------|-----------|---------|
| 19       | STR. ST. PL. O.D.250, I.D. 150-20THK.            | S2062 E250E           |               | 1               | 5.00  | 5.00                          |           |         |
| 18       | Ø150-3mm thk. PIPE-1200MM LG.                    | S2062 E250E           |               | 1               | 22.00 | 22.00                         |           |         |
| 17       | STR. ST. PL. O.D.250, I.D. 150-10THK.            | S2062 E250E           |               | 4               | 4.99  | 19.96                         |           |         |
| 16       | STR. ST. PL. O.D.150, I.D. 40-10THK.             | S2062 E250E           |               | 2               | 1.29  | 2.58                          |           |         |
| 15       | O.D.120, I.D.80, 2001A COIL SPRING-500LG         | SPRING STEEL: IS:1570 | IV            | 2               |       |                               |           |         |
| 14       | M40-450N DIA. HEX. HD BOLT                       | IS:1363               |               | 2               | 4.40  | 8.80                          |           |         |
| 13       | STR. ST. RUBBER SEAT PL O.D.250, I.D. 150-10THK. | S2062 E250E           |               | 1               | 1.87  | 1.87                          |           |         |
| 12       | RUBBER SEAL                                      | IS:11855              | 470 100       | 16              | 1     | 39.40                         | 1.80      |         |
| 11       | STR. STEEL SEAL COVER                            | S2062 E250E           | 705 80        | 12              | 1     | 94.20                         | 5.98      |         |
| 10       | CR. RES. STEEL PIN Ø10-50LG.                     | SID.                  |               | 2               |       |                               |           |         |
| 9        | STR. STEEL WASHER O.D.150, I.D. 83-3THK.         | S2062 E250E           |               | 2               | .29   | 0.58                          |           |         |
| 8        | STR. ST. KEEPER PL.                              | S2062 E250E           | 140 50        | 10              | 2     | 78.50                         | 1.10      |         |
| 7        | CR. RES. STEEL PIN Ø40-210LG.                    | IS:1570, V, 20Cr. 13  |               | 2               | 2.07  | 4.14                          |           |         |
| 6        | CR. RES. STEEL PIN Ø80-220LG.                    | IS:1570, V, 20Cr. 13  |               | 1               | 9.15  | 9.15                          |           |         |
| 5        | STR. STEEL WASHER O.D.83, I.D. 43-3THK.          | S2062 E250E           |               | 2               | .09   | 0.18                          |           |         |
| 4        | STR. ST. PLATE                                   | S2062 E250E           | 530 250       | 20              | 1     | 157.00                        | 20.80     |         |
| 3        | STR. ST. PLATE                                   | S2062 E250E           | 278 160       | 18              | 2     | 125.60                        | 11.09     |         |
| 2        | STR. ST. PLATE                                   | S2062 E250E           | 540 300       | 12              | 2     | 94.20                         | 30.52     |         |
| 1        | STR. ST. PLATE                                   | S2062 E250E           | 680 430       | 16              | 2     | 125.60                        | 73.45     |         |
| PART NO. | MATERIAL                                         | REFERENCE             | LENGTH H (mm) | WIDTH THK. (mm) | NOS.  | unit wt. in kg/m <sup>2</sup> | TOTAL KGS | REMARKS |



OM METALS INFRAPROJECTS LTD.

PROJECT NORTH KOEL RESERVOIR PROJECT JHARKHAND

TITLE INTAKE BULKHEAD GATE (2.67Mx4.59M)

TITLE FILLING VALVE ASSEMBLY AND DETAILS

DRAWN BY MOHAN SANGWAN

CHECKED BY ANURAG

SUBMITTED BY: *Anurag*

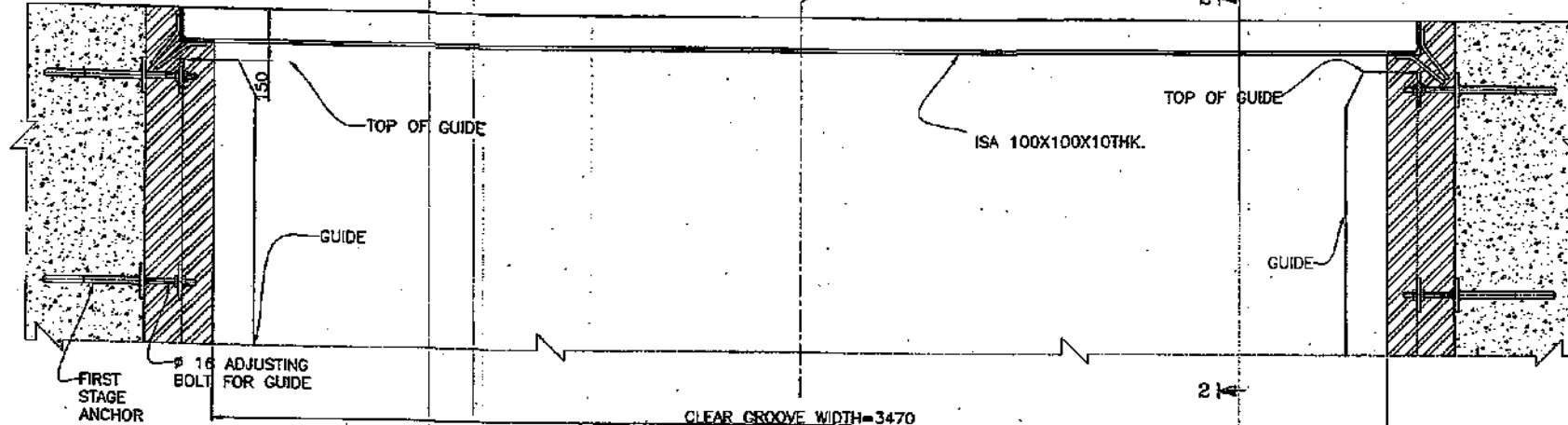
SIZE A1

SCALE 1:20

DRG NO : OML/NKRP/IBG/607

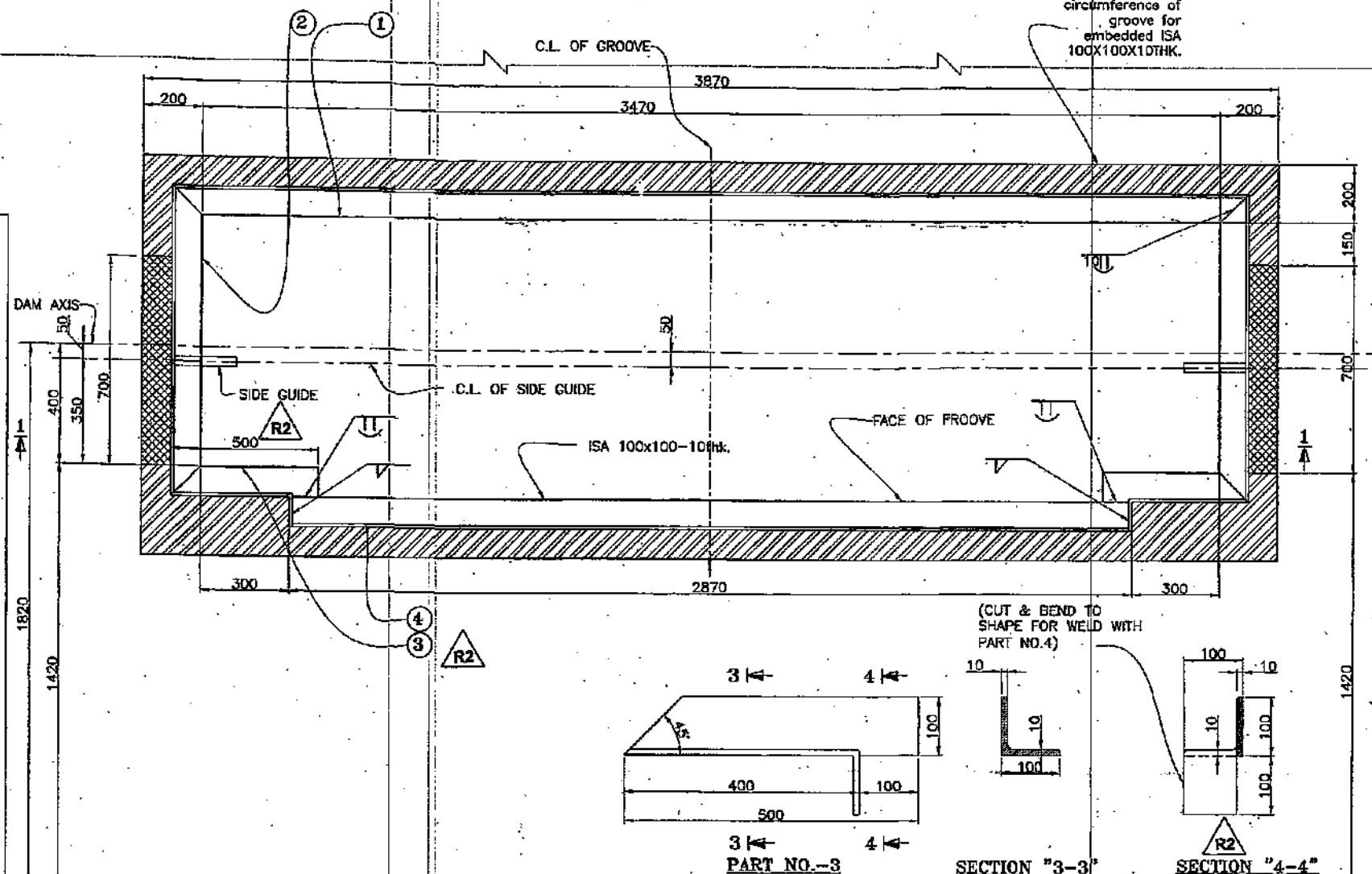
REV-1

TOP OF DECK EL: 372.00M



SECTION "1-1"

200x200 chipping whole circumference of groove for embedded ISA 100X100X10THK.



FLOW

PLAN AT EL: 372.00M

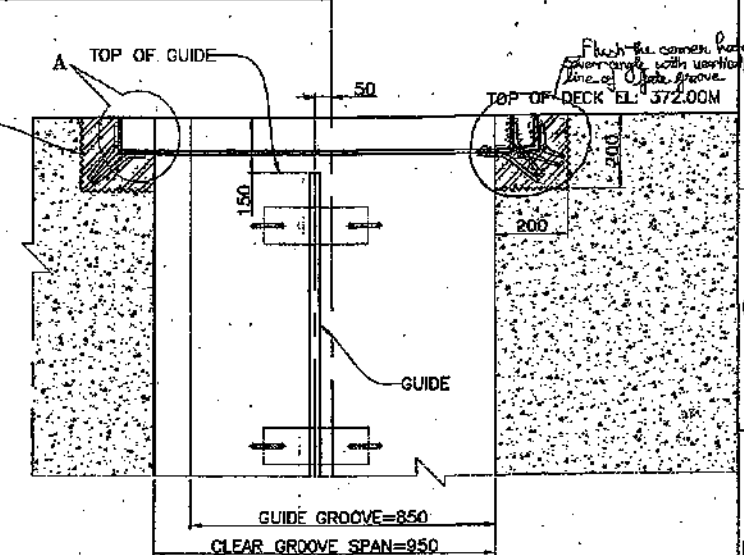
NOTES:-

1. ALL DIMENSION ARE IN MM AND LEVEL IN METERS.
2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.
3. NO. OF OPENING=2.

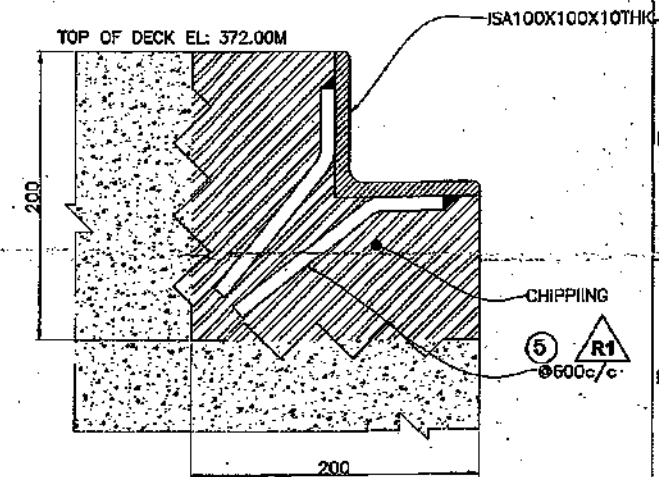
200x200 chipping whole circumference of groove for embedded ISA 100X100X10THK.

FLOW

1820 FROM FACE



SECTION "2-2"

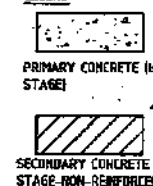


DETAIL OF CHIPPING WORK

APPROVED AS NOTED

13/04/2018

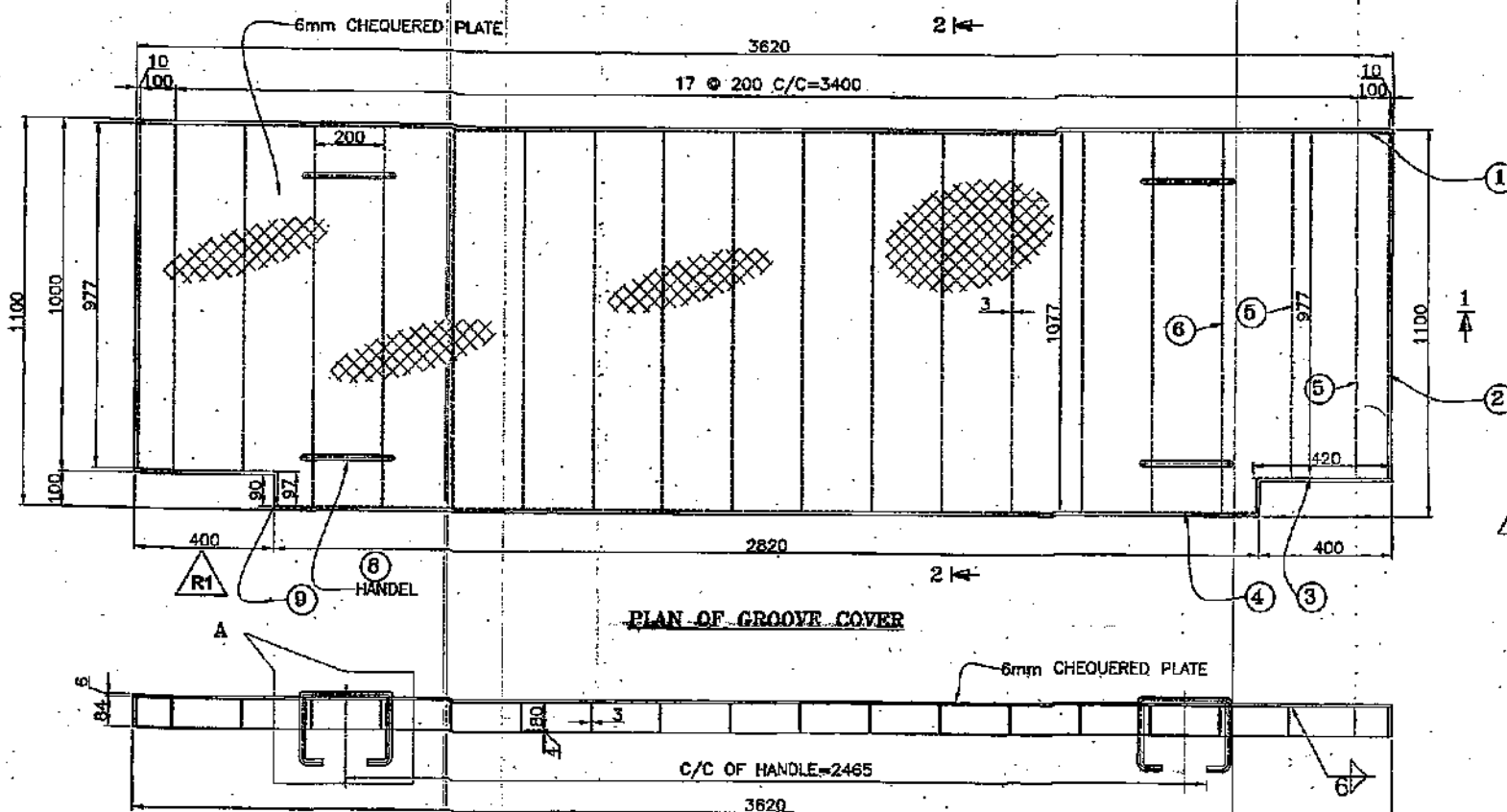
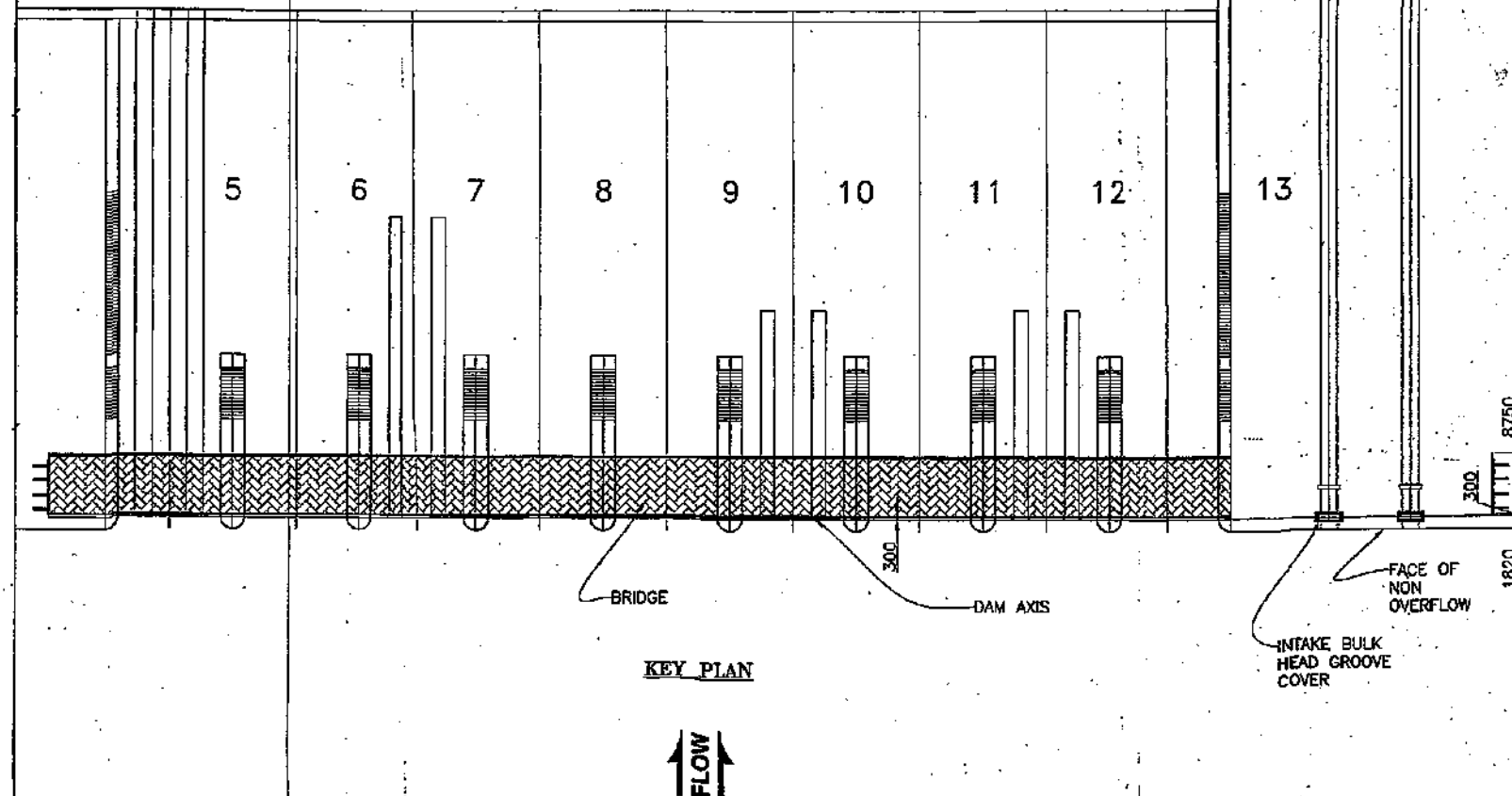
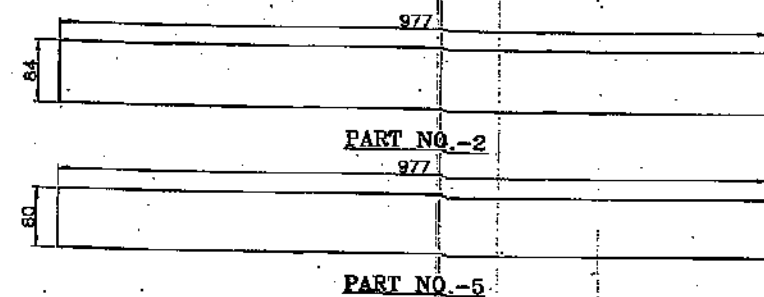
LEGEND



R1 BILL OF MATERIAL FOR ONE OPENING TOTAL NOS. REQ. TWO.

|          |                       |             |             |      |                  |                   |         |  |
|----------|-----------------------|-------------|-------------|------|------------------|-------------------|---------|--|
|          | TOTAL WEIGHT = 204.07 |             |             |      |                  |                   |         |  |
| 5        | STR. PL50x200x10THK.  | S2062 E250B |             | 32.  |                  | 25.12             |         |  |
| 4        | ISA 100X100X10THK.    | S2062 E250A | 2870        | 2    | 14.9             | 85.53             |         |  |
| 3        | ISA 100X100X10THK.    | S2062 E250A | 500         | 1    | 14.9             | 7.45              |         |  |
| 2        | ISA 100X100X10THK.    | S2062 E250A | 1050        | 2    | 14.9             | 31.29             |         |  |
| 1        | ISA 100X100X10THK.    | S2062 E250A | 3670        | 1    | 14.9             | 54.68             |         |  |
| PART NO. | MATERIAL              | REFERENCE   | LENGTH (MM) | QOS. | UNIT WT. IN KG/M | TOTAL WT. IN KGS. | REMARKS |  |

DETAIL "A"



### PLAN OF GROOVE COVER

SECTION "1-1"

**R1** BILL OF MATERIAL FOR ONE  
OPENING TOTAL NOS. REQ. TWO.

|          |                 |                  |             |            |          |      | TOTAL WEIGHT                                      | 153.12           |         |
|----------|-----------------|------------------|-------------|------------|----------|------|---------------------------------------------------|------------------|---------|
| 9        | STR. PL.        | IS2062 E250B     | 97          | 84         | 3        | 2    | 23.55                                             | 0.38             |         |
| 8        | W/B DIA.<br>500 | RHIL DNE<br>1018 | 770         |            |          | 4    | 1.5                                               | 4.93             |         |
| 7        | CHQ. PL         | IS2062 E250B     | 3620        | 1100       | 3        | 1    | 23.55                                             | 93.78            | C/S     |
| 6        | STR. PL         | IS2062 E250B     | 1077        | 80         | 3        | 14   | 23.55                                             | 28.41            |         |
| 5        | STR. PL         | IS2062 E250B     | 977         | 80         | 3        | 4    | 23.55                                             | 7.36             |         |
| 4        | STR. PL         | IS2062 E250B     | 2820        | 84         | 3        | 1    | 23.55                                             | 5.58             |         |
| 3        | STR. PL         | IS2062 E250B     | 420         | 84         | 3        | 2    | 23.55                                             | 1.66             |         |
| 2        | STR. PL         | IS2062 E250B     | 977         | 84         | 3        | 2    | 23.55                                             | 3.87             |         |
| 1        | STR. PL         | IS2062 E250B     | 3620        | 84         | 3        | 1    | 23.55                                             | 7.16             |         |
| PART NO. | MATERIAL        | REFERENCE        | LENGTH (MM) | WIDTH (MM) | THK (MM) | NOS. | unit wt. in kg/m <sup>2</sup> & kg/m <sup>2</sup> | TOTAL WT.IN KGS. | REMARKS |

**R1** NOTES:-

1. ALL DIMENSION ARE IN MM AND LEVEL IN METERS.
2. ALL WELDS ARE 6MM FILLET WELDS UNLESS OTHERWISE SPECIFIED.
3. NO. OF OPENING=2.

APPROVED

Amr  
13/08/18.

|                                                                                       |                              |                                                            |       |                             |          |                  |       |
|---------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------|-------|-----------------------------|----------|------------------|-------|
|  | OM METALS INFRAPROJECTS LTD. |                                                            |       |                             |          |                  |       |
|                                                                                       | PROJECT                      | NORTH KOEL RESERVOIR PROJECT JHARKHAND                     |       |                             |          |                  |       |
|                                                                                       | TITLE                        | INTAKE BULKHEAD GATE (2.67Mx4.59M)<br>GROOVE COVER DETAILS |       |                             |          |                  |       |
|                                                                                       | DRAWN BY                     | MOHAN SANGWAN                                              |       | SUBMITTED BY: <i>Anurag</i> |          |                  |       |
| CHECKED BY                                                                            | ANURAG                       |                                                            |       |                             |          |                  |       |
| REV                                                                                   | SIZE                         | A1                                                         | SCALE | 1:20                        | DRG NO : | OML/NKRP/IBG/609 | REV-1 |

# Photographs of Fabricated Gates

(A) Intake Service Gate (2.4 m x 3.066 m)



(B) Low Level Sluice Gate (2 m x 3 m)



(C) Irrigation Sluice Gate (2 m x 3 m)



(D) Irrigation Emergency Slide Type (3.32 m x 5 m)



(E) Intake Bulk Head (2.67 m x 4.59 m)



