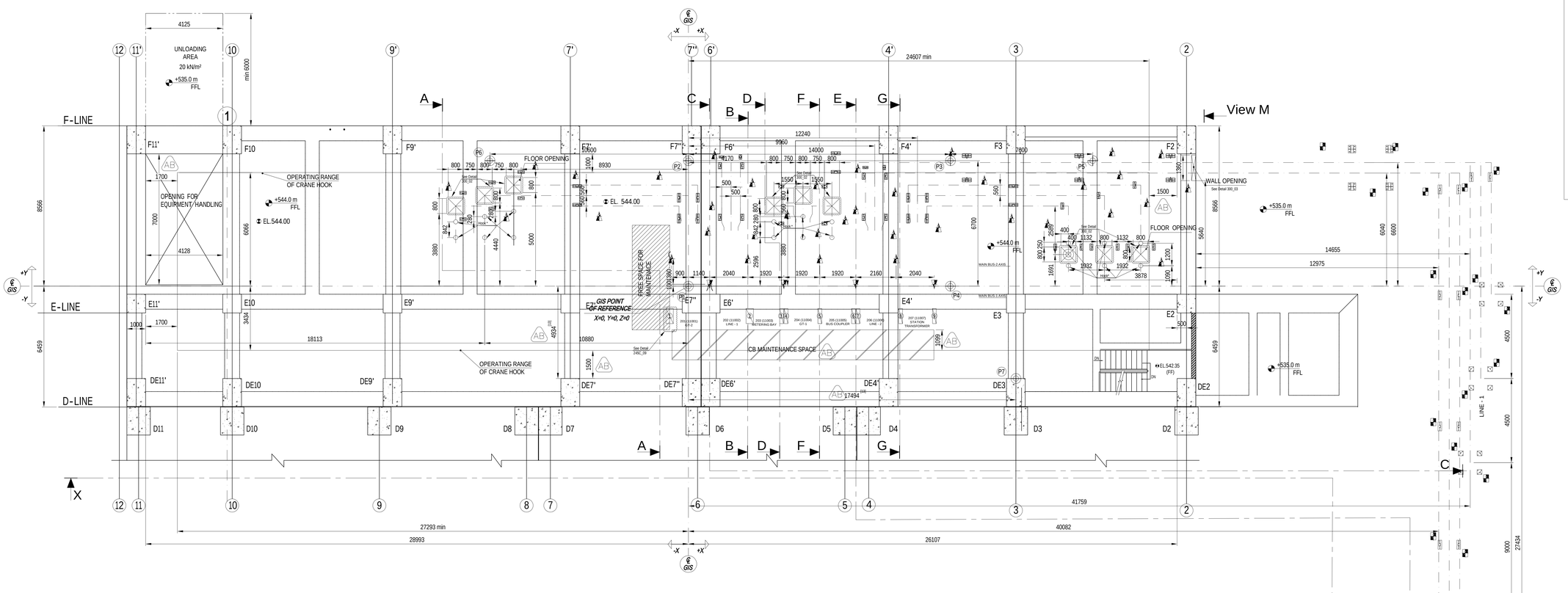

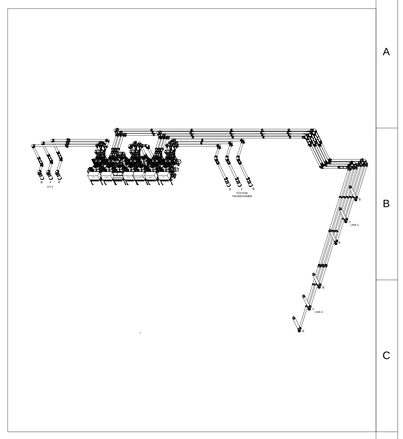

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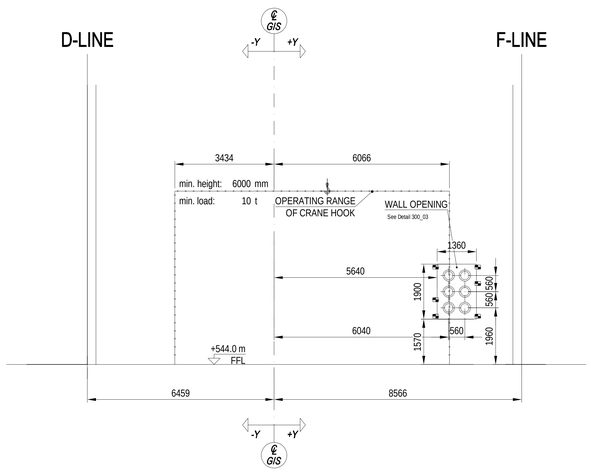

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. CUSTOMER/ CIVIL CONTRACTOR SHOULD INFORM ABB ABOUT OTHER INSTALLATION (SUCH AS AIR CONDITIONING, LIGHTING, PANELS, ETC) IN GIS HALL, IN ORDER TO AVOID COLLISION WITH GIS / GIS SUPPORT STRUCTURES.
3. ALL THE DETAILS OF THE SUPPORT STRUCTURE & ASSOCIATED FOOTING PERTAINING TO GIS WILL BE INDICATED IN SEPARATE DRAWING NAMED "SUPPORT LAYOUT"
4. ALL THE DETAILS OF GIS EARTHING & ITS ASSOCIATED STRUCTURE EARTHING WILL BE INDICATED IN SEPARATE DRAWING NAMED "EARTHING LAYOUT".
5. ALL THE CIVIL INPUTS PROVIDED HERE ARE MINIMUM REQUIREMENTS WHICH SHOULD BE FULFILLED BY CIVIL CONTRACTOR.
6. THE DIMENSION OF THE UNLOADING PLATFORM IS EXCLUDING CANOPY. IN CASE THE CANOPY IS REQUIRED, EITHER THE LENGTH OF THE UNLOADING PLATFORM SHOULD BE INCREASED CORRESPONSINGLY OR THE CANOPY SHOULD BE FIXED AFTER GIS INSTALLATION.
7. DIMENSION OF THE CABLE OPENING GIVEN ARE MINIMUM AS PER GIS REQUIREMENT AND FURTHER CUSTOMER TO EVALUATE THE CABLE OPENING SIZE AS PER THE ADDITIONAL CABLES TO BE TAKEN TO CRP ROOM FROM GIS LCC.
8. CONTROL CABLE TRENCH SHALL BE COVERED WITH CHEQUERED PLATES / CABLE TRENCH FURTHER, TRENCH COVERS SHALL BE ABLE TO WITHSTAND 2.0 T OF LOAD DURING INSTALLATION & MAINTENANCE ACTIVITIES.
9. CUSTOMER & CIVIL CONTRACTOR TO TAKE CARE THAT THERE IS NO COLLISION OR OVERLAPPING OF CABLE TRENCH ANY OTHER CIVIL WORK WITH THE GIS SUPPORT STRUCTURE FOOTING AREA.
10. EARTHING POINTS FOR GIS BAY AND ALL THE INDOOR SUPPORT STRUCTURES ARE SHOWN IN THE DOCUMENT. THE RISER LOCATIONS FOR SUPPORT STRUCTURE INDICATED IN THE CIVIL LAYOUT ARE TENTATIVE. HOWEVER SAME SHOULD LIE IN THE VICINITY OF THE SUPPORT STRUCTURE FOR EFFECTIVE EARTHING.
11. * - HOOK SHOULD BE FIXED ON THE CEILING OF TRANSFORMER ROOM DURING REINFORCEMENT OF THE SLAB. THE LENGTH OF THIS HOOK SHALL BE 100MM BELOW THE SLAB WITH 1T MIN. LOAD BEARING CAPACITY.
12. FOLLOWING IS THE RECOMMENDATIONS OF USING THE CUT OUTS FOR THE CORRESPONDING BAY LCC'S. THE FINAL SIZE AND USAGE OF THE OPENINGS TO BE DECIDED BY CUSTOMER.

NO.	CUT OUTS NUMBER	BAY LCC
1	1	201: GT-2 (11001)
2	2	202: LINE-1 (11002)
3	3 AND 4	204: GT-1 (11004)
4	5	205: BUS COUPLER (11005)
5	6 AND 7	206: LINE-2 (11006)
6	8 AND 9	207: ST (11007)

13. P7 IS THE REFERENCE POINT FOR THE COMPLETE GIS INSTALLATION.

LEGEND

- EARTHING POINT INDOOR
- EARTHING POINT OUTDOOR
- COORDINATE POINT
- FLOOR / WALL OPENING
- STRUCTURE FOOTINGS

REV	DATE	NAME	MODIFICATION
AB	03.04.2020	DHRUVI S	LCC TO CRP CUTOUTS MODIFIED, UPDATED BUILDING ARCHITECTURE (TOP VIEW) SUPERIMPOSED, CRANE RANGE MODIFIED
AA	24.05.2019	DHRUVI S	FIRST ISSUE

CLIENT:	M/S BHARAT HEAVY ELECTRICAL LIMITED
END CUSTOMER:	UTTARAKHAND JAL VIDHYUT NIGAM LIMITED (UJVNL)
PROJECT:	220 kV GIS for 2 x 60 MW VYASI HEP AT VYASI, DIST DEHRADHUN, UK
NOA No:	**136/E & M DESIGN-I/Vy-EPC(6) (FOR SUPPLY) dt 15.04.2014 & 137/E & M DESIGN-I/Vy-EPC(6) (FOR SERVICES) dt15.04.2014**
BHEL Doc No:	TB-4-398-607-105

Draft: 03.04.2020 DHRUVI S	Derived from: -	Separate BOM: -	Scale: 1:85	Doc.type DW1	Format: A0
Approved: 03.04.2020 DEBASISH M	Replaces: -	SF6 SWITCHGEAR ELK-14-245C 220 kV GIS for 2 x 60 MW VYASI HEP.			
Released: 03.04.2020 DHRUVI S	Responsible department: PGHV- GIS PASS			Language EN	
Order number: 3100094055	Revision: AB	TOPVIEW CIVIL WORKS REQUIREMENT		No. Sheets: 006	
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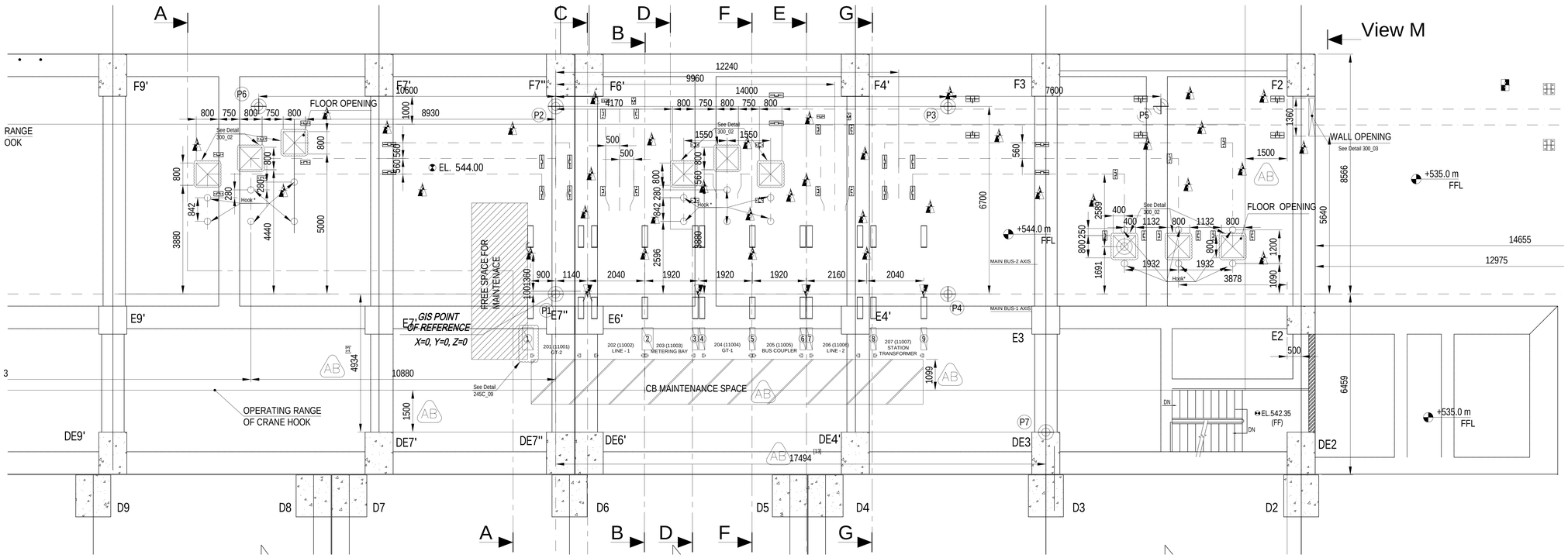
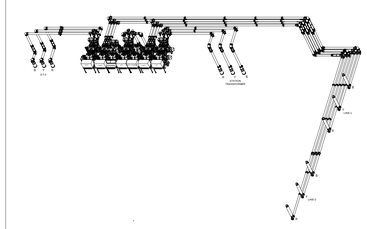
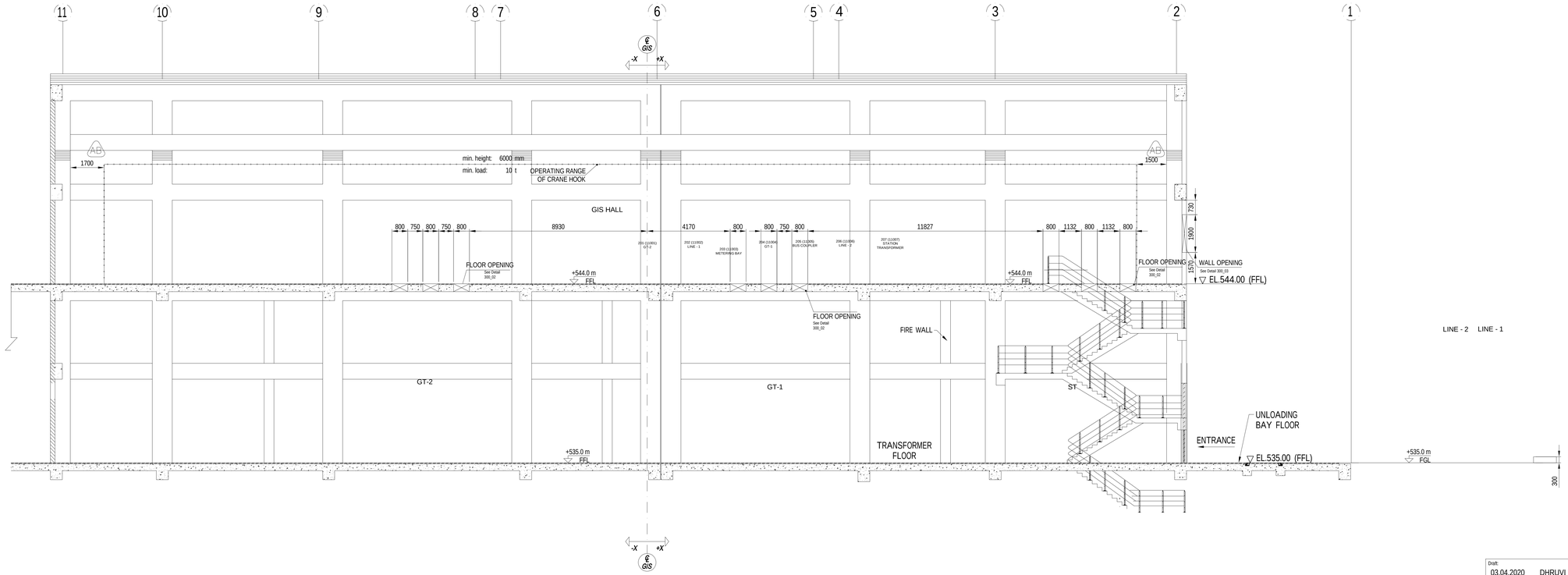
GIS BUILDING TOP VIEW



KEY PLAN



SECTION X-X



NOTES (AB)

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NO.	CUT OUTS NUMBER	BAY LCC
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3	3 AND 4	204: GT-1 (11004)
4	5	205: BUS COUPLER (11005)
5	6 AND 7	206: LINE-2 (11006)
6	8 AND 9	207: ST (11007)

13. P7 IS THE REFERENCE POINT FOR THE COMPLETE GIS INSTALLATION.

LEGEND (AB)

- EARTHING POINT INDOOR
- EARTHING POINT OUTDOOR
- COORDINATE POINT
- FLOOR / WALL OPENING
- STRUCTURE FOOTINGS

REV	DATE	NAME	MODIFICATION
AB	03.04.2020	DHRUVI S	LCC TO CRP CUTOUTS MODIFIED, UPDATED BUILDING ARCHITECTURE (TOP VIEW) SUPERIMPOSED, CRANE RANGE MODIFIED
AA	24.05.2019	DHRUVI S	FIRST ISSUE

CLIENT:	M/S BHARAT HEAVY ELECTRICAL LIMITED
END CUSTOMER:	UTTARAKHAND JAL VIDHYUT NIGAM LIMITED (UJVNL)
PROJECT:	220 kV GIS for 2 x 60 MW VYASI HEP AT VYASI, DIST DEHRADHUN, UK
NOA No:	**136/E & M DESIGN-I/Vy-EPC(6) (FOR SUPPLY) dt 15.04.2014 & 137/E & M DESIGN-I/Vy-EPC(6) (FOR SERVICES) dt15.04.2014**
BHEL Doc No:	TB-4-398-607-105

Draft: 03.04.2020 DHRUVI S	Derived from: -	Separate BOM: -	Scale: 1:60	Doc.type: DW1	Format: A0
Approved: 03.04.2020 DEBASISH M	Replaces: -	SF6 SWITCHGEAR ELK-14-245C 220 kV GIS for 2 x 60 MW VYASI HEP.			
Released: 03.04.2020 DHRUVI S	Responsible department: PGHV- GIS PASS				Language: EN
Order number: 3100094055	Revision: AB	TOPVIEW CIVIL WORKS REQUIREMENT			No. Sheets: 006
ABB India Ltd under license of ABB Technology Ltd		Document number: 1HYG900036-3			Sheet no. 002

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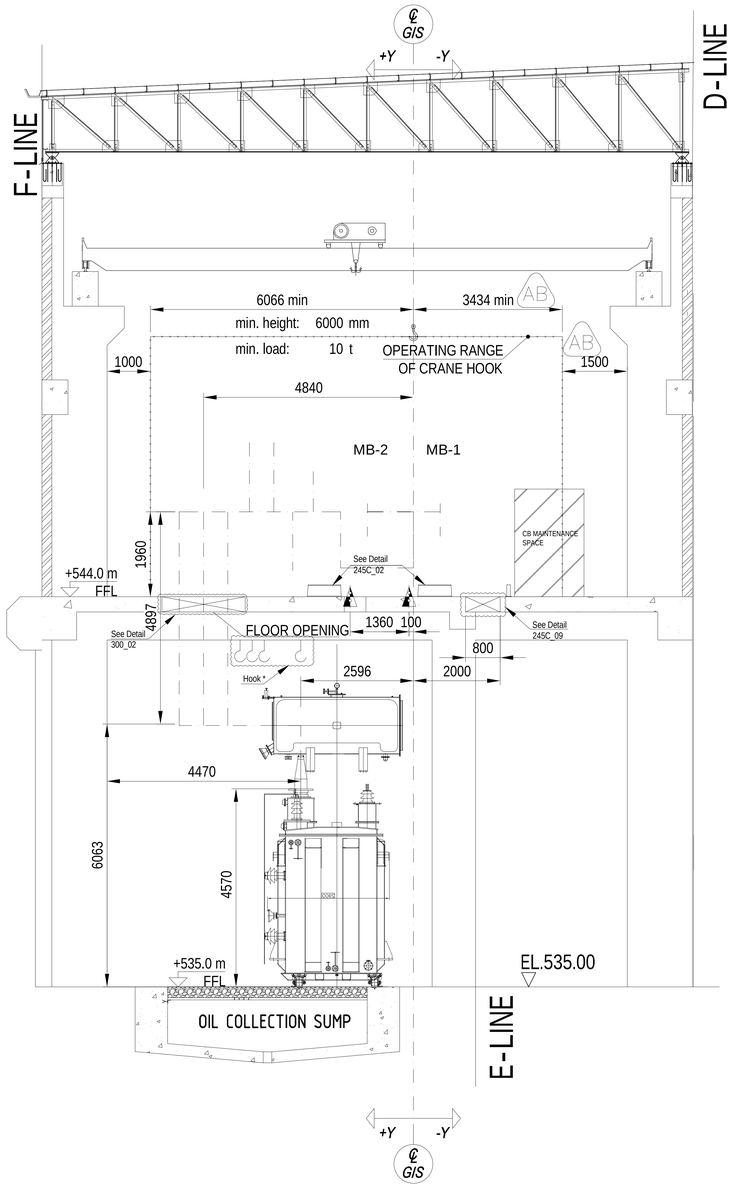
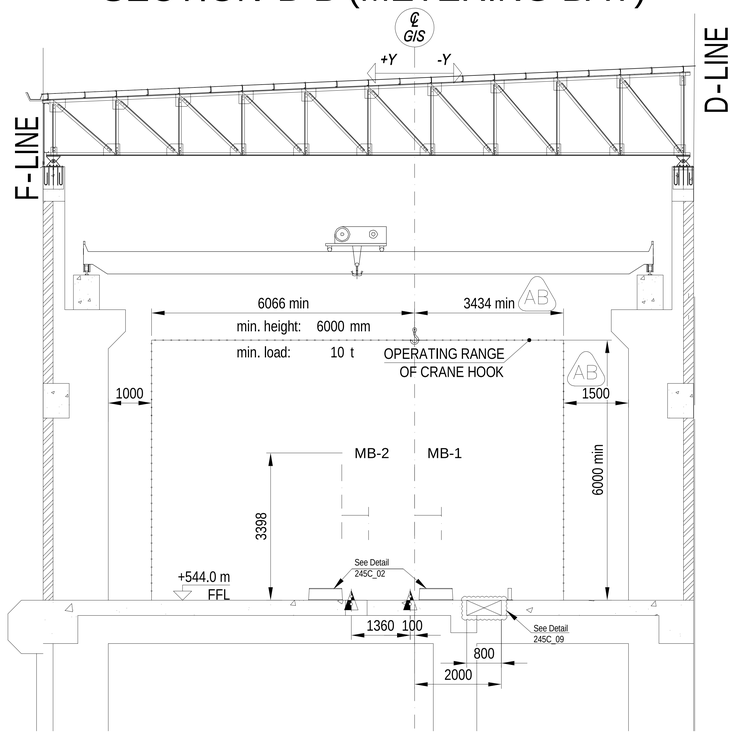
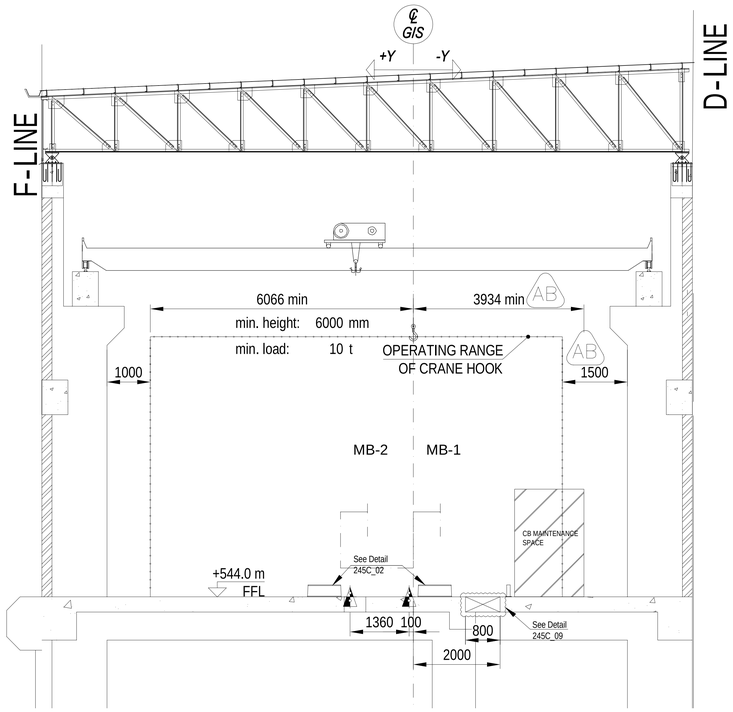
SECTION A-A (GT-2 BAY)



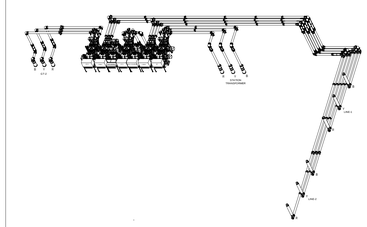
SECTION B-B (METERING BAY)



SECTION F-F (BUS COUPLER BAY)



KEY PLAN



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2	2	202: LINE-1 (11002)
3	3 AND 4	204: GT-1 (11004)
4	5	205: BUS COUPLER (11005)
5	6 AND 7	206: LINE-2 (11006)
6	8 AND 9	207: ST (11007)

13. P7 IS THE REFERENCE POINT FOR THE COMPLETE GIS INSTALLATION.

LEGEND (AB)

- EARTHING POINT INDOOR
- EARTHING POINT OUTDOOR
- COORDINATE POINT
- FLOOR / WALL OPENING
- STRUCTURE FOOTINGS

REV	DATE	NAME	MODIFICATION
AB	03.04.2020	DHRUVI S	LCC TO CRP CUTOUTS MODIFIED. UPDATED BUILDING ARCHITECTURE (TOP VIEW) SUPERIMPOSED. CRANE RANGE MODIFIED
AA	24.05.2019	DHRUVI S	FIRST ISSUE

CLIENT:	M/S BHARAT HEAVY ELECTRICAL LIMITED
END CUSTOMER:	UTTARAKHAND JAL VIDHYUT NIGAM LIMITED (UJVNL)
PROJECT:	220 kV GIS for 2 x 60 MW VYASI HEP AT VYASI, DIST DEHRADHUN, UK
NOA No:	**136/E & M DESIGN-I/Vy-EPC(6) (FOR SUPPLY) dt 15.04.2014 & 137/E & M DESIGN-I/Vy-EPC(6) (FOR SERVICES) dt15.04.2014**
BHEL Doc No:	TB-4-398-607-105

Draft: 03.04.2020 DHRUVI S	Derived from: -	Separate BOM: -	Scale: 1:50	Doc.type: DW1	Format: A0
Approved: 03.04.2020 DEBASISH M	Replaces: -	SF6 SWITCHGEAR ELK-14-245C 220 kV GIS for 2 x 60 MW VYASI HEP.			Language: EN
Released: 03.04.2020 DHRUVI S	Responsible department: PGHV- GIS PASS	SECTIONS CIVIL WORKS REQUIREMENT			No. Sheets: 006
Order number: 3100094055	Revision: AB				Sheet no.: 003

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Document number: 1HYG900036-3

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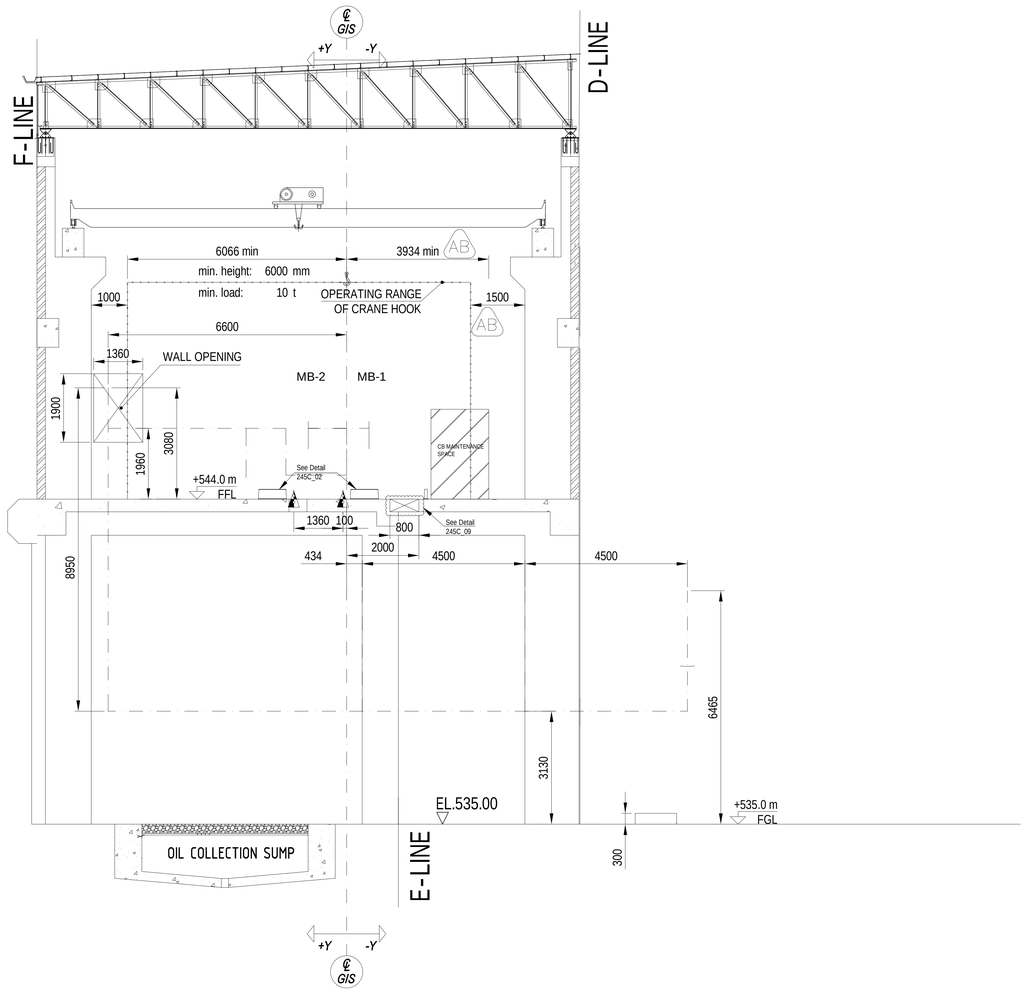
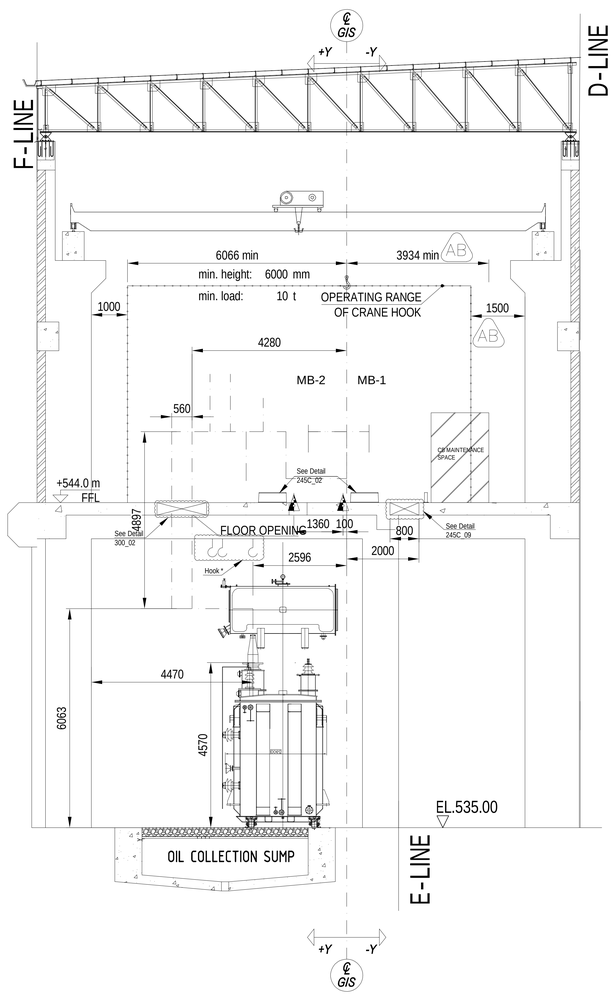
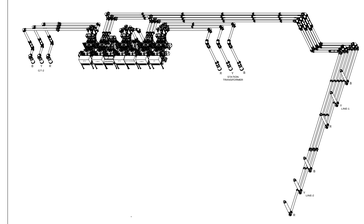
SECTION C-C (LINE-1 BAY)



SECTION D-D(GT-1 BAY)



KEY PLAN



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LEGEND

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REV	DATE	NAME	MODIFICATION
AB	03.04.2020	DHRUVI S	LCC TO CRP CUTOUTS MODIFIED, UPDATED BUILDING ARCHITECTURE (TOP VIEW) SUPERIMPOSED, CRANE RANGE MODIFIED
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CLIENT:	M/S BHARAT HEAVY ELECTRICAL LIMITED
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PROJECT:	220 kV GIS for 2 x 60 MW VYASI HEP AT VYASI, DIST DEHRADHUN, UK
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Draft: 03.04.2020 DHRUVI S	Derived from: -	Separate BOM: -	Scale: 1:60	Doc.type: DW1	Format: A0
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Released: 03.04.2020 DHRUVI S	Responsible department: PGHV- GIS PASS	SECTIONS CIVIL WORKS REQUIREMENT			No. Sheets: 006
Order number: 3100094055	Revision: AB				Sheet no.: 004

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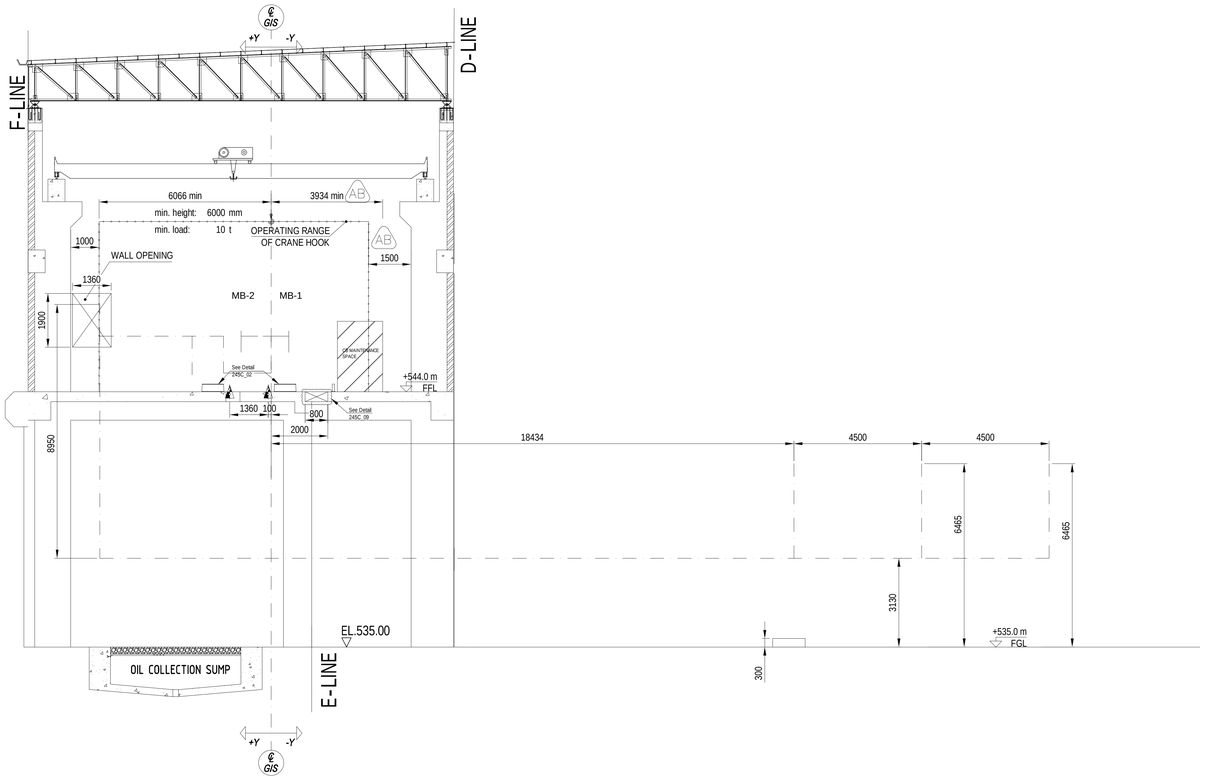
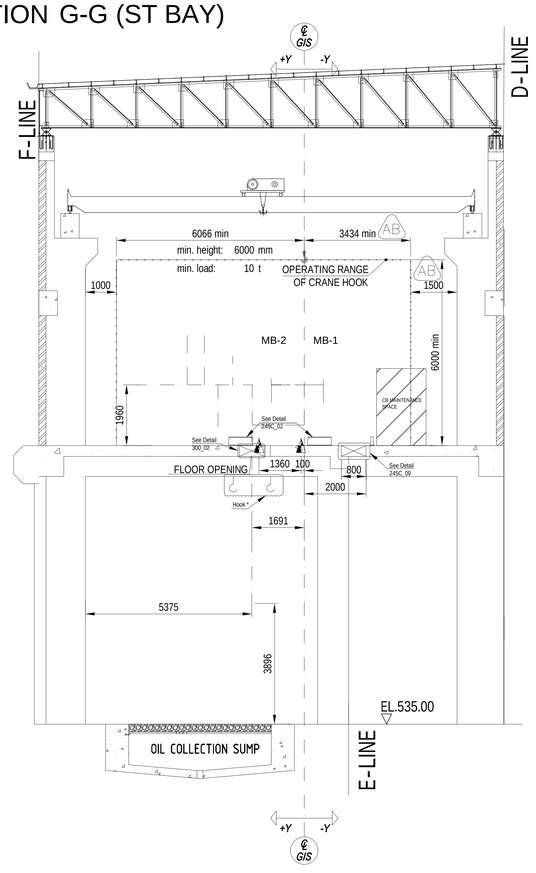
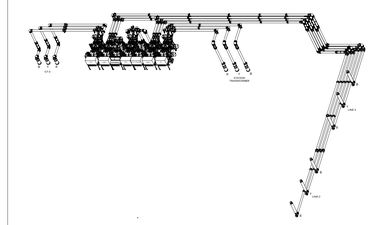
SECTION E-E (LINE-2 BAY)



SECTION G-G (ST BAY)



KEY PLAN



NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. CUSTOMER/ CIVIL CONTRACTOR SHOULD INFORM ABB ABOUT OTHER INSTALLATION (SUCH AS AIR CONDITIONING, LIGHTING, PANELS, ETC) IN GIS HALL, IN ORDER TO AVOID COLLISION WITH GIS / GIS SUPPORT STRUCTURES.
3. ALL THE DETAILS OF THE SUPPORT STRUCTURE & ASSOCIATED FOOTING PERTAINING TO GIS WILL BE INDICATED IN SEPARATE DRAWING NAMED "SUPPORT LAYOUT"
4. ALL THE DETAILS OF GIS EARTHING & ITS ASSOCIATED STRUCTURE EARTHING WILL BE INDICATED IN SEPARATE DRAWING NAMED "EARTHING LAYOUT".
5. ALL THE CIVIL INPUTS PROVIDED HERE ARE MINIMUM REQUIREMENTS WHICH SHOULD BE FULFILLED BY CIVIL CONTRACTOR.
6. THE DIMENSION OF THE UNLOADING PLATFORM IS EXCLUDING CANOPY. IN CASE THE CANOPY IS REQUIRED, EITHER THE LENGTH OF THE UNLOADING PLATFORM SHOULD BE INCREASED CORRESPONSINGLY OR THE CANOPY SHOULD BE FIXED AFTER GIS INSTALLATION.
7. DIMENSION OF THE CABLE OPENING GIVEN ARE MINIMUM AS PER GIS REQUIREMENT AND FURTHER CUSTOMER TO EVALUATE THE CABLE OPENING SIZE AS PER THE ADDITIONAL CABLES TO BE TAKEN TO CRP ROOM FROM GIS LCC.
8. CONTROL CABLE TRENCH SHALL BE COVERED WITH CHEQUERED PLATES / CABLE TRENCH FURTHER. TRENCH COVERS SHALL BE ABLE TO WITHSTAND 2.0 T OF LOAD DURING INSTALLATION & MAINTENANCE ACTIVITIES.
9. CUSTOMER & CIVIL CONTRACTOR TO TAKE CARE THAT THERE IS NO COLLISION OR OVERLAPPING OF CABLE TRENCH ANY OTHER CIVIL WORK WITH THE GIS SUPPORT STRUCTURE FOOTING AREA.
10. EARTHING POINTS FOR GIS BAY AND ALL THE INDOOR SUPPORT STRUCTURES ARE SHOWN IN THE DOCUMENT. THE RISER LOCATIONS FOR SUPPORT STRUCTURE INDICATED IN THE CIVIL LAYOUT ARE TENTATIVE, HOWEVER SAME SHOULD LIE IN THE VICINITY OF THE SUPPORT STRUCTURE FOR EFFECTIVE EARTHING.
11. * - HOOK SHOULD BE FIXED ON THE CEILING OF TRANSFORMER ROOM DURING REINFORCEMENT OF THE SLAB. THE LENGTH OF THIS HOOK SHALL BE 100MM BELOW THE SLAB WITH 1T MIN. LOAD BEARING CAPACITY.
12. FOLLOWING IS THE RECOMMENDATIONS OF USING THE CUT OUTS FOR THE CORRESPONDING BAY LCC'S. THE FINAL SIZE AND USAGE OF THE OPENINGS TO BE DECIDED BY CUSTOMER.

NO.	CUT OUTS NUMBER	BAY LCC
1	1	201: GT-2 (11001)
2	2	202: LINE-1 (11002)
3	3 AND 4	204: GT-1 (11004)
4	5	205: BUS COUPLER (11005)
5	6 AND 7	206: LINE-2 (11006)
6	8 AND 9	207: ST (11007)

13. P7 IS THE REFERENCE POINT FOR THE COMPLETE GIS INSTALLATION.

LEGEND

- EARTHING POINT INDOOR
- EARTHING POINT OUTDOOR
- COORDINATE POINT
- FLOOR / WALL OPENING
- STRUCTURE FOOTINGS

REV	DATE	NAME	MODIFICATION
AB	03.04.2020	DHRUVI S	LCC TO CRP CUTOUTS MODIFIED, UPDATED BUILDING ARCHITECTURE (TOP VIEW) SUPERIMPOSED, CRANE RANGE MODIFIED
AA	24.05.2019	DHRUVI S	FIRST ISSUE

CLIENT:	M/S BHARAT HEAVY ELECTRICAL LIMITED
END CUSTOMER:	UTTARAKHAND JAL VIDHYUT NIGAM LIMITED (UJVNL)
PROJECT:	220 kV GIS for 2 x 60 MW VYASI HEP AT VYASI, DIST DEHRADHUN, UK
NOA No:	**136/E & M DESIGN-I/Vy-EPC(6) (FOR SUPPLY) dt 15.04.2014 & 137/E & M DESIGN-I/Vy-EPC(6) (FOR SERVICES) dt15.04.2014**
BHEL Doc No:	TB-4-398-607-105

Draft: 03.04.2020 DHRUVI S	Derived from: -	Separate BOM: -	Scale: 1:70 / Doc.type: DW1 / Format: A0
Approved: 03.04.2020 DEBASISH M	Replaces: -	SF6 SWITCHGEAR ELK-14-245C 220 kV GIS for 2 x 60 MW VYASI HEP.	
Released: 03.04.2020 DHRUVI S	Responsible department: PGHV- GIS PASS		Language: EN
Order number: 3100094055	Revision: AB	SECTIONS CIVIL WORKS REQUIREMENT	No. Sheets: 006
ABB India Ltd under license of ABB Technology Ltd		Document number: 1HYG900036-3	Sheet no.: 005

1HYG900036-3

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000_01 NOTES

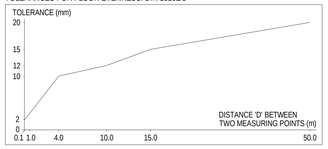
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. THE FINAL DESIGN OF THE GIS BUILDING IS WITHIN THE RESPONSIBILITY OF THE CIVIL CONTRACTOR. STRUCTURAL ELEMENTS SHALL BE IN ACCORDANCE WITH THE GIS REQUIREMENTS.
3. THE GIS REQUIRES A CLOSE-MESHED EARTHING GRID UNDER THE EQUIPMENT, WHICH IS INTEGRATED INTO THE GENERAL STATION EARTHING SYSTEM.
4. ALL REINFORCING STEEL IN THE GIS FLOOR SLAB SHALL BE GALVANICALLY CONNECTED AT LEAST EVERY 3 m TO THE EARTHING SYSTEM.
5. ALL METALLIC PARTS OF THE BUILDING (SUCH AS CRANES, STEEL SUPPORTS, WALL SEALINGS, DOORS ETC.) SHALL BE EARTHED.
6. FOR TECHNICAL INFORMATION CONCERNING GIS EARTHING REQUIREMENTS REFER TO DOCUMENT 1HC0011786.
7. THE FOUNDATION DIMENSIONS CONSIDER THE MINIMUM REQUIREMENTS FOR FIXATION OF THE SUPPORTS. FINAL DESIGN TO BE DECIDED BY CIVIL CONTRACTOR CONSIDERING LOADS AND FORCES FOR FOUNDATION.
8. CRANE HOOK HEIGHT AND OPERATING RANGE OF CRANE DEPENDS ON GIS CONFIGURATION.
   REFER TO PROJECT SPECIFIC GIS LAYOUT OR CIVIL REQUIREMENTS DRAWING.
9. TWO CRANE SPEEDS (HORIZONTALLY AND VERTICALLY) ARE REQUIRED, A SLOWER ONE ≤ 3 m/min AND A FASTER ONE ~ 15 m/min (RADIO CONTROLLED).
10. FOR COVER OF FLOOR OPENINGS POINT LOADS OF 5 kN HAVE TO BE CONSIDERED.
11. PRIOR TO START OF GIS INSTALLATION THE FLOOR SURFACE TO BE SEALED UP WITH CONCRETE PAINT OR RESIN LAYER.
12. KEEP A CLEAN AND DUST-FREE ENVIRONMENT DURING INSTALLATION OF THE GIS.
13. ON SITE INSTALLATION LIGHTS OF MIN. 200 LUX ON THE FLOOR ARE REQUIRED (ONLY NEEDED DURING GIS INSTALLATION).
14. GIS SHALL BE LOCATED IN A FENCED AREA TO PREVENT UNAUTHORIZED PEOPLE FROM ENTERING HAZARDOUS SITES. FENCES AND NECESSARY SAFETY PROVISIONS ARE NOT IN GIS SUPPLIER'S SCOPE OF SUPPLY.

000_02 TOLERANCES AND FOUNDATION SETTLEMENTS

TOLERANCES FOR MEASURES: DIN 18202/1

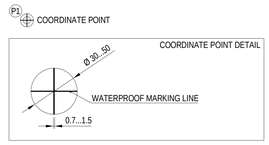
DISTANCE 'D' BETWEEN TWO POINTS (m)	D≤3	3<D≤6	6<D≤15	15<D≤30	30<D
	ALLOWED TOLERANCE (mm)				
MEASURES IN TOP VIEW (LENGTHS, WIDTHS, AXES, GRIDS, ...)	±12	±16	±20	±24	±30
MEASURES IN FRONT VIEW (FLOOR LEVELS, PLATFORM HEIGHTS, ...)	±16	±16	±20	±30	±30
OPENINGS (DOORS, WALL OPENINGS, ...)	±12	±16	-	-	-

TOLERANCES FOR FLOOR EVENNESS: DIN 18202/3



1. PRIOR TO START OF GIS INSTALLATION ACTUAL FLOOR ELEVATION SHALL BE MEASURED AT COORDINATE POINTS.
   VALUES TO BE PROVIDED TO THE GIS INSTALLATION SUPERVISOR.

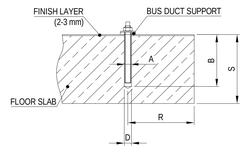
000_03 COORDINATE POINTS



COORDINATE POINT	DISTANCE FROM GIS ℄ REFERENCE POINT		
	X-DIRECTION (mm)	Y-DIRECTION (mm)	Z-DIRECTION (mm)
P1	0	0	0
P2	0	6700	0
P3	14000	6700	0
P4	14000	0	0
P5	21600	6700	0
P6	-10600	6700	0
P7	17494	-4934	0

1. PRIOR TO START OF GIS INSTALLATION ALL COORDINATE POINTS SHALL BE MARKED.
2. PRIOR TO START OF GIS INSTALLATION ACTUAL FLOOR ELEVATION SHALL BE MEASURED AT COORDINATE POINTS.
   VALUES TO BE PROVIDED TO THE GIS INSTALLATION SUPERVISOR.
3. P7 IS THE REFERENCE POINT FOR THE COMPLETE GIS INSTALLATION.

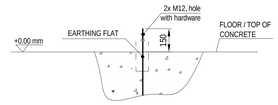
000_04 FIXATION OF BUS DUCT SUPPORT



ANCHORAGE: ADHESIVE ANCHORING SYSTEM			
A: THREAD DIAMETER	M16	M20	M24
B: DRILL HOLE DEPTH	125 mm	170 mm	210 mm
D: DRILL HOLE DIAMETER	18 mm	24 mm	28 mm
S: MINIMUM FLOOR THICKNESS	170 mm	220 mm	270 mm
R: MINIMUM EDGE DISTANCE	155 mm	210 mm	260 mm

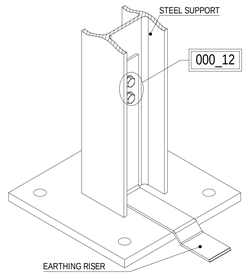
1. STRENGTH CLASS OF CONCRETE TO BE MIN. C20/25 (EN 206).
2. NO EMBEDDED BOLTS OR PARTS IN CONCRETE ARE REQUIRED.
   GIS FIXATION WILL BE DONE DURING GIS INSTALLATION.

000_05 EARTHING POINTS NEAR CIRCUIT BREAKERS



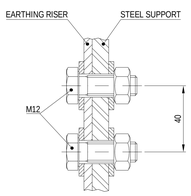
1. THE EARTHING POINTS SHALL BE CONNECTED TO THE EARTHING GRID IN THE GIS FLOOR SLAB.
2. EARTHING POINTS IN FLOOR OPENINGS SHALL BE ORIENTATED VERTICALLY.
3. CROSS SECTION: 300 mm² COPPER OR STEEL WITH AN EQUIVALENT CONDUCTIVITY
4. CONNECTION TO GIS AND STEEL SUPPORTS ACCORDING TO DETAIL 000_11 & 000_12.

000_11 EARTHING OF STEEL SUPPORTS WITH EARTHING BAR



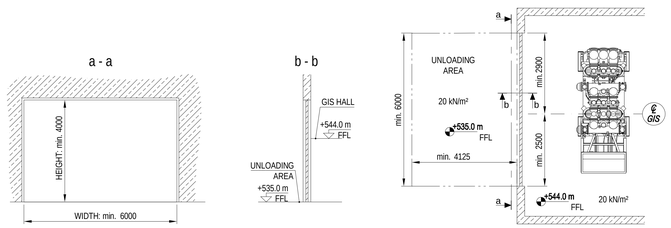
1. EARTHING RISER SHALL BE MIN. 150 mm LONG (FROM TOP OF PLINTH OR FLOOR SLAB).
2. EARTHING RISER SHALL BE CONNECTED TO THE EARTHING GRID IN THE GIS FLOOR SLAB (IN CLIENT'S SCOPE OF SUPPLY).
3. PROJECT SPECIFIC LOCATION OF EARTHING RISERS REFER TO TOPVIEW AND SECTIONS.

000_12 CONNECTION TO STEEL SUPPORT (BAR)



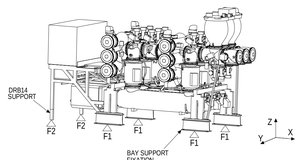
1. SCREWING MATERIAL IS GIS SUPPLIER'S SCOPE OF SUPPLY.

245C_01 BUILDING GATE & UNLOADING AREA



1. GIVEN DIMENSIONS FOR BUILDING GATE ARE MINIMUM REQUIREMENTS. HEIGHT DEPENDS ON BAY MOVING METHOD.
2. UNLOADING AREA SHALL BE AT LEAST 4.125 m x 6 m.
3. AN UNIFORMLY DISTRIBUTED LOAD OF 20 kN/m² HAS TO BE CONSIDERED FOR THE GIS BUILDING FOUNDATION.
4. STRENGTH CLASS OF CONCRETE: C20/25 (EN 206)

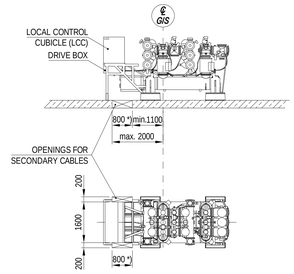
245C STATIC, TEMPERATURE, DYNAMIC (CB OPERATION) AND SEISMIC LOADS



	STATIC LOADS (kN)			TEMPERATURE LOADS (kN)			OPERATION LOADS (kN)			SEISMIC LOADS (kN) EARTHQUAKE: 0.3g		
	x	y	z	x	y	z	x	y	z	x	y	z
F1	4	10	-44	34	1	0	±29	± 5	±26	±22.2	±16.2	±29.4
F2	0	0	-7.5	0	0	0	0	0	0	±0.4	±0.4	±3.4

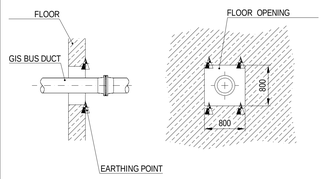
1. AN UNIFORMLY DISTRIBUTED LOAD OF 20 kN/m² HAS TO BE CONSIDERED FOR THE FOUNDATION FOR LIVE LOADS (UNLESS OTHERWISE NOTED).
2. FOUNDATION LOADS FOR ADDITIONAL GIS SUPPORTS WILL BE CALCULATED DURING DETAIL DESIGN STAGE.
3. INDICATED LOADS ARE LOADS PER ANCHOR PLATE (F1 & F2).
4. DYNAMIC AND SEISMIC LOADS NEED TO BE CONSIDERED WITH OPPOSITE SIGN TOO (+ / -).

245C_09 CUSTOMER SECONDARY CABLES FLOOR OPENINGS



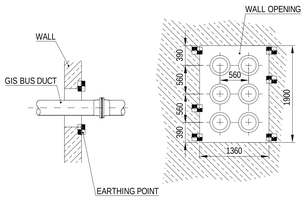
1. FOR CUSTOMER SECONDARY CABLES.
2. FOR CABLES FROM GIS PRIMARY EQUIPMENT TO LCC, NO FLOOR OPENINGS NEEDED (ROUTED ALONG THE GIS BAY).
3. *) FINAL SIZE OF THE OPENINGS TO BE DECIDED BY CUSTOMER.
4. AFTER INSTALLATION OF CABLES, FLOOR OPENINGS CAN BE CLOSED WITH CHEQUER PLATES.

300_02 FLOOR OPENING FOR GIS BUS DUCT (1 PHASE)



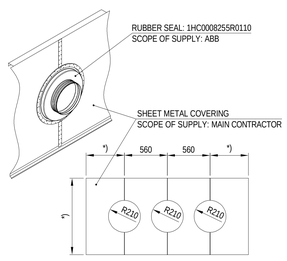
1. GIVEN DIMENSIONS FOR FLOOR OPENING ARE MINIMUM REQUIREMENTS.
2. COVERING AND SEALING OF OPENING SHALL BE DONE AFTER GIS INSTALLATION.
3. 4 EARTHING POINTS (MIN. 35 mm²) TO BE PROVIDED ABOVE THE FLOOR FOR EARTHING OF FLOOR SEALING.
4. THE EARTHING POINTS HAVE TO BE CONNECTED TO THE NEAREST EARTHING RISER.

300_03 WALL OPENING FOR GIS BUS DUCT (3 PHASES FOR 2 EXITS BUS DUCTS)



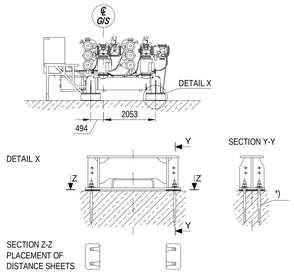
1. GIVEN DIMENSIONS FOR WALL OPENING ARE MINIMUM REQUIREMENTS.
2. COVERING AND SEALING OF WALL OPENING SHALL BE DONE AFTER GIS INSTALLATION.
3. IN CASE OF A BRICK BUILDING, 6 EARTHING POINTS (MIN. 35 mm²) TO BE PROVIDED AT OUTDOOR SIDE OF BUILDING FOR EARTHING OF WALL SEALING.
4. THE EARTHING POINTS HAVE TO BE CONNECTED TO THE REINFORCEMENT OF THE BUILDING WALL.

300_04 SEALING OF WALL OPENING



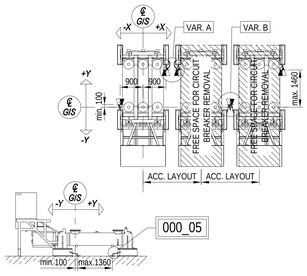
1. SHEET METAL COVERING TO BE CONNECTED TO THE REINFORCEMENT OR STEEL BUILDING FRAME TO REDUCE TRANSIENT ENCLOSURE VOLTAGE.
   (SEE ALSO DETAIL 300_02 / 300_03)
2. MEASURES WITH *) DEPENDS ON LOCAL SITUATION.

245C_17 BAY SUPPORT FIXATION



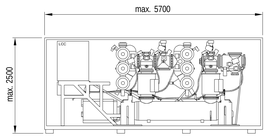
1. PROPOSAL FOR BAY SUPPORT FIXATION BY GIS SUPPLIER. FOR FURTHER INFORMATION PLEASE REFER TO THE DOCUMENT 2GHV041970 'BAY SUPPORT FIXATION'.
2. ALL THE BAY SUPPORTS SHOULD BE ADJUSTED ACCORDING TO BAY DISTANCES.
3. * - HILTY ANCHORS

245C_18 GIS BAY EARTHING



1. EARTHING POINTS ACCORDING TO DETAIL 000_05.
2. CROSS SECTION: 300 mm² COPPER OR STEEL WITH AN EQUIVALENT CONDUCTIVITY
3. PER BAY TWO DIAGONALLY LOCATED SUPPORT STRUCTURES MUST BE CONNECTED TO THE BUILDING EARTHING GRID.

245C_19 TYPICAL BAY TRANSPORTATION UNIT



WIDTH:	2300 mm
MAX. WEIGHT WITHOUT PACKING:	7800 kg
MAX. WEIGHT WITH PACKING:	8900 kg

1. ABOVE MENTIONED CRATE DIMENSIONS AND WEIGHTS ARE TYPICAL. VARIATIONS MAY BE POSSIBLE (DEPENDING ON PROJECT SPECIFIC GIS CONFIGURATION, TRANSPORTATION FACILITIES, SITE CONDITIONS, ECT.)

CLIENT:	M/S BHARAT HEAVY ELECTRICAL LIMITED
END CUSTOMER:	UTTARAKHAND JAL VIDHYUT NIGAM LIMITED (UJVNL)
PROJECT:	220 kV GIS for 2 x 60 MW VYASI HEP AT VYASI, DIST DEHRADHUN, UK
NOA No:	**136/E & M DESIGN-I/Vy-EPC(6) (FOR SUPPLY) dt 15.04.2014 & 137/E & M DESIGN-I/Vy-EPC(6) (FOR SERVICES) dt15.04.2014**
BHEL Doc No:	TB-4-398-607-105

Draft: 03.04.2020 DHRUVI S	Derived from: -	Separate BOM: -	Scale: NTS	Doc.type: DW1	Format: A0
Approved: 03.04.2020 DEBASISH M	Replaces: -	SF6 SWITCHGEAR ELK-14-245C 220 kV GIS for 2 x 60 MW VYASI HEP.			
Released: 03.04.2020 DHRUVI S	Responsible department: PGHV- GIS PASS			Language: EN	
Order number: 3100094055	Revision: AB	DETAILS CIVIL WORKS REQUIREMENT		No. Sheets: 006	
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