

## **CENTRAL U.P. GAS LIMITED** (CITY GAS PROJECT IN KANPUR & BAREILLY)

**BID DOCUMENT FOR THE ANNUAL RATE CONTRACT FOR ENGAGING CONTRACTOR FOR STEEL & MDPE PIPELINE SHIFTING AND OTHER AGENCIES CONSTRUCTION WORK IN KANPUR FOR 02 YEARS** 

BID DOCUMENT NO : <u>CUGL/C&P/TEN2425/48</u>

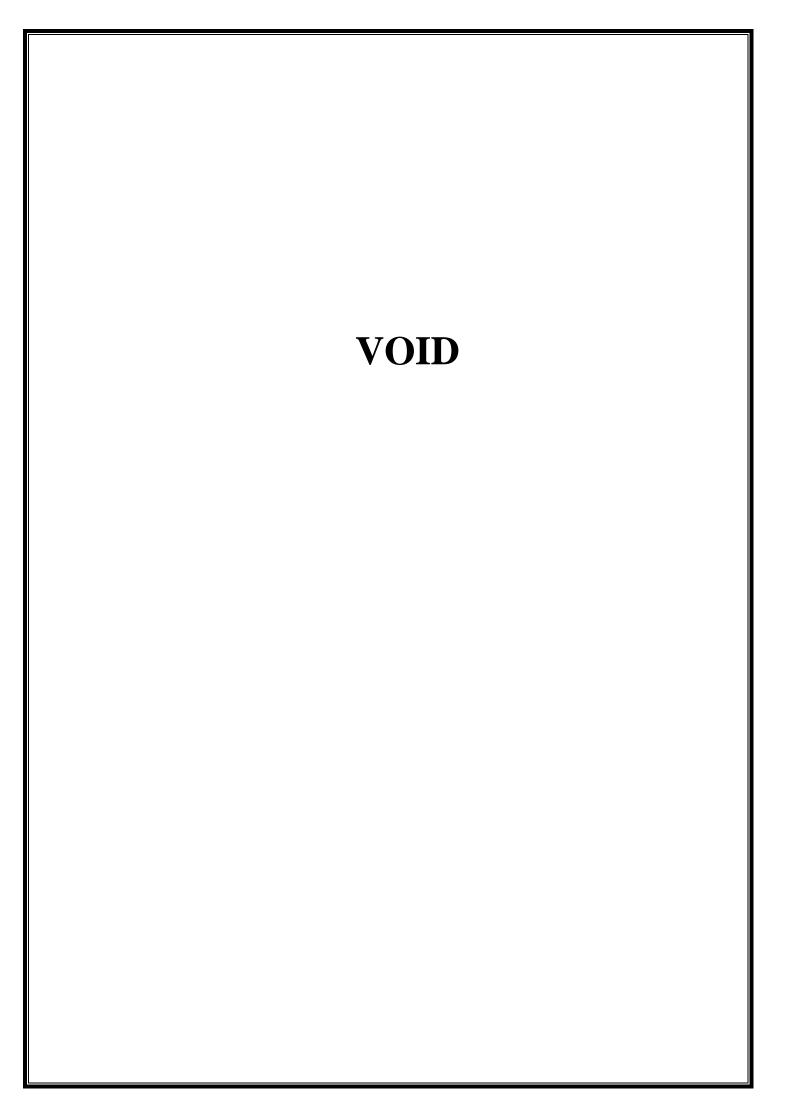
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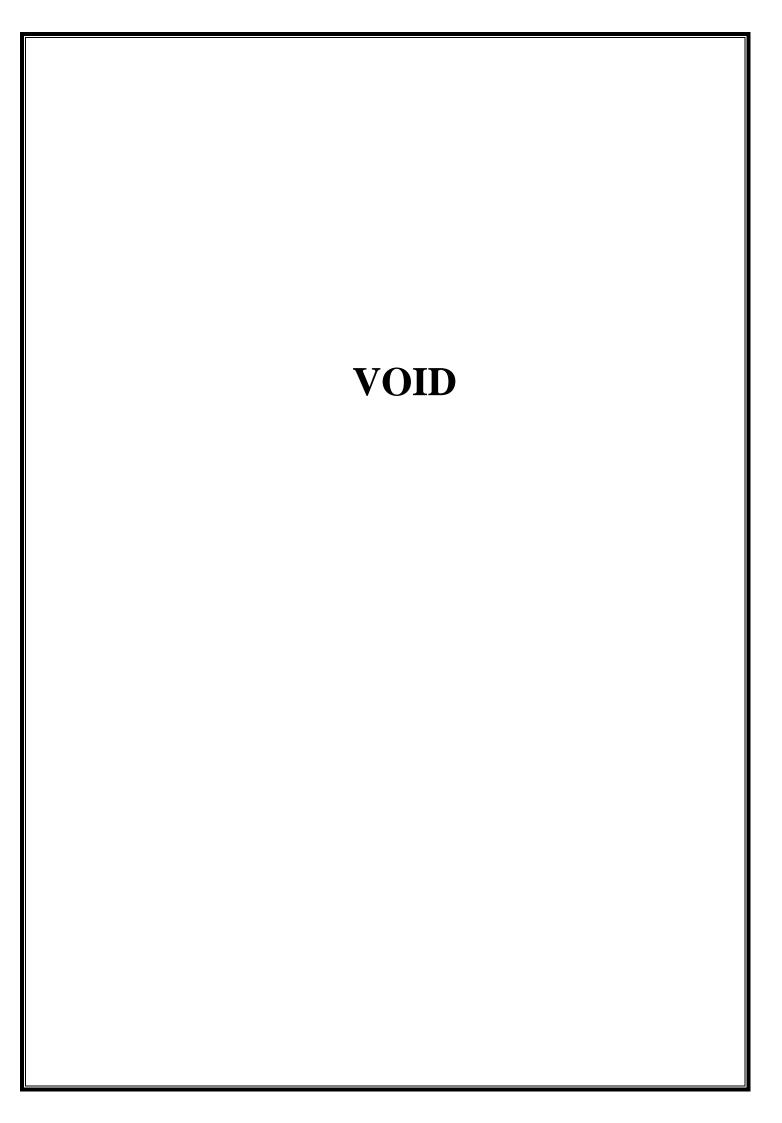
**OPEN DOMESTIC COMPETITIVE BIDDING** 

TECHNICAL DOCUMENTATION TECHNICAL, VOL II OF II A

		LAYING OF 3 LPE COATED CARBON STEEL PIPELINE IN BA The state of	REILLY, KANPUR & UNNAO AN	D J HANS	I GA IN	
S.NO.	DESCRIPTION		DOCUMENT / DRAWING No.	REV. No.	PAGES	PAGE No.
п	SECTION A- TECHNICAL (VOLUME IIB OF I	0)				
31	STANDARD / PROJECT DRAWING					
31.1	TYPICAL TRENCH DETAILS		GGNG-D-20707-002	0	1	319
31.2	TYPICAL ROAD CASED CROSSING ( B + C) - TY	PE I	GGNG-D-20707-004-A	0	1	320
31.3	TYPICAL ROAD CASED CROSSING ( B + C) - TY	PE II	GGNG-D-20707-004-B	0	1	321
31.4	TYPICAL MECHANICAL PROTECTION CONCRET	SLAB DETAILS	GGNG-D-20707-007	0	1	322
31.5	TYPICAL UNDERGROUND CABLE CROSSING DE	rails	GGNG-D-20707-008	0	1	323
31.6	TYPICAL OVERHEAD POWER LINE CROSSING D	ETAILS	GGNG-D-20707-009	0	1	324
31.7	TYPICAL CONCRETE COATING		GGNG-D-20707-010	0	1	325
31.8	TYPICAL RAILWAY CASED CROSSING ( B + C) -	TYPE I	GGNG-D-20707-012-A	0	1	326
31.9	TYPICAL RAILWAY CASED CROSSING ( B + C) -	ТҮРЕ ІІ	GGNG-D-20707-012-B	0	1	327
31.10	TYPICAL EXISTING PIPE LINE CROSSING		GGNG-D-20707-014	0	1	328
31.11	POLE MARKER WITH FOUNDATION		GGNG-D-20707-053	0	1	329
31.12	PIPING GENERAL ARRANGEMENT DRAWING FO EXTENDED ACTUATED VALVES)	R SV STATION WITHOUT VENTING ARRANGEMENT (LONG STEM	G 20749 004	0	2	330
31.13	GENERAL ARRANGEMENT DRAWING FOR FUTU	RE TAP - OFF POINTS	G 20749 001	0	1	332
31.14	STANDARD SKETCH FOR TRENCH CROSS STEE	AND MDPE PIPE	G 20728 010	0	1	333
31.15	PIPING GENERAL ARRANGEMENT DRAWING FC	R CONNECTIVITY TO RO / CNG STATIONS	G 20749 002	0	1	334
31.16	PIPING GENERAL ARRANGEMENT DRAWING FO ARRANGEMENT FOR BAREILLY, KANPUR & UNI	R 4" SV VALVE CHAMBER WITH VENT AND WITH TAP OFF AO AND JHANSI Gas	G 20749 M151	0	1	335
31.17	PIPING GENERAL ARRANGEMENT DRAWING FC BAREILLY, KANPUR & UNNAO AND JHANSI Gas	R 4" SV VALVE CHAMBER WITH VENT ARRANGEMENT FOR	G 20749 M151	0	1	336
31.18	PIPING GENERAL ARRANGEMENT DRAWING FO UNNAO AND JHANSI Gas	R 4" TAP OFF CHAMBER ARRANGEMENT FOR BAREILLY, KANPUR &	G 20749 M151	0	1	337
31.19	PIPING GENERAL ARRANGEMENT DRAWING FO ARRANGEMENT FOR BAREILLY, KANPUR & UNI	R 6° SV VALVE CHAMBER WITH VENT AND WITH TAP OFF AO AND JHANSI Gas	G 20749 M151	0	1	338
31.20	PIPING GENERAL ARRANGEMENT DRAWING FC BAREILLY, KANPUR & UNNAO AND JHANSI Gas	R 6° SV VALVE CHAMBER WITH VENT ARRANGEMENT FOR	G 20749 M151	0	1	339
31.21	PIPING GENERAL ARRANGEMENT DRAWING FO UNNAO AND JHANSI Gas	R 6° TAP OFF CHAMBER ARRANGEMENT FOR BAREILLY, KANPUR &	G 20749 M151	0	1	340
31.22	TYPICAL DETAIL OF FENCING		G 21028 004	0	1	341

31.23	TYPICAL DETAILS OF GATE	G 21028 005	0	1	342
31.24	TYPICAL DETAILS OF PIPE SUPPORT	G 21028 006	0	1	343
31.25	TYPICAL DETAILS OF RCC ROUTE MARKER	G 21028 007	0	1	344
31.26	TYPICAL DETAILS OF BARRICADING	G 21028 009	0	1	345
31.27	TYPICAL DETAILS OF CAUTION BOARD	G 21028 008	0	1	346
31.28	TYPICAL DETAILS FOR 4° SV VALVE CHAMBER WITH VENT & WITH TAP-OFF ARRANGEMENT FOR BAREILLY, KANPUR & UNNAO AND JHANSI Gas	G 20730 010	A	1	347
31.29	TYPICAL DETAILS FOR 4" SV VALVE CHAMBER WITH VENT ARRANGEMENT FOR BAREILLY, KANPUR & UNNAO AND JHANSI Gas	G 20730 011	A	1	348
31.30	TYPICAL DETAILS FOR 4" TAP-OFF CHAMBER ARRANGEMENT FOR BAREILLY, KANPUR & UNNAO AND JHANSI GAS	G 20730 012	A	1	349
31.31	TYPICAL DETAILS FOR 6° SV VALVE CHAMBER WITH VENT & WITH TAP-OFF ARRANGEMENT FOR BAREILLY, KANPUR & UNNAO AND JHANSI Gas	G 20730 013	A	1	350
31.32	TYPICAL DETAILS FOR 6° SV VALVE CHAMBER WITH VENT ARRANGEMENT FOR BAREILLY, KANPUR & UNNAO AND JHANSI Gas	G 20730 014	A	1	351
31.33	TYPICAL DETAILS FOR 6" TAP-OFF CHAMBER ARRANGEMENT FOR BAREILLY, KANPUR & UNNAO AND JHANSI GAS	G 20730 015	A	1	352
31.34	IMPRESSED CURRENT CATHODIC PROTECTION SCHEMATIC	GGNG-E-20712-321	0	1	353
31.35	FABRICATION & INSTALLATION DETAILS OF CUCUSO4 REFERENCE ELECTRODES	GGNG-E-20712-322	0	1	354
31.36	FABRICATION & INSTALLATION DETAILS OF CABLE LAYING (TYPICAL) FOR CATHODIC PROTECTION	GGNG-E-20712-323	0	1	355
31.37	FABRICATION & INSTALLATION DETAILS OF DEEP ANODE GROUND BED	GGNG-E-20712-324	0	1	356
31.38	TEST LEAD POINTS & JUNCTION BOX WITH FOUNDATION DETAILS	GGNG-E-20712-325	0	1	357
31.39	TEST STATION CONNECTION SCHEME (TYPICAL) DETAILS	GGNG-E-20712-326	0	5	358
31.4	FABRICATION & INSTALLATION DETAILS OF CABLE ROUTE MARKER	GGNG-E-20712-327	0	1	363
31.41	TEMPORARY CATHODIC PROTECTION SCHEMATIC	GGNG-E-20712-328	0	1	364
31.42	TYPICAL CATODIC PROTECTION SCHEME FOR CASED CROSSINGS	GGNG-E-20712-329	0	1	365
31.43	INSTALLATION DETAILS OF VERTICAL SHALLOW ANODE BED	GGNG-E-20712-330	0	1	366
31.44	CABLE TO PIPE CONNECTION BY PIN BRAZING	GGNG-E-20712-331	0	1	367
31.45	SPARK GAP ARRESTOR INSTALLATION	GGNG-E-20712-332	0	1	368
31.46	TYPICAL INSTALLATION DETAILS OF SHALLOW HORIZONTAL ANODE BED	GGNG-E-20712-333	0	1	369
31.47	THERMIT WELDINF DETAILS	GGNG-E-20712-334	0	1	370
31.48	CONSTRUCTION DETAILS OF ZINC GROUNDING CELL (20KG)	GGNG-E-20712-335	0	1	371
31.49	TYPICAL INSTALLATION AND CONNECTION DETAILS OF EXTERNAL ER PROBE WITH TEST STATION	GGNG-E-20712-336	0	1	372
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SUBJECT

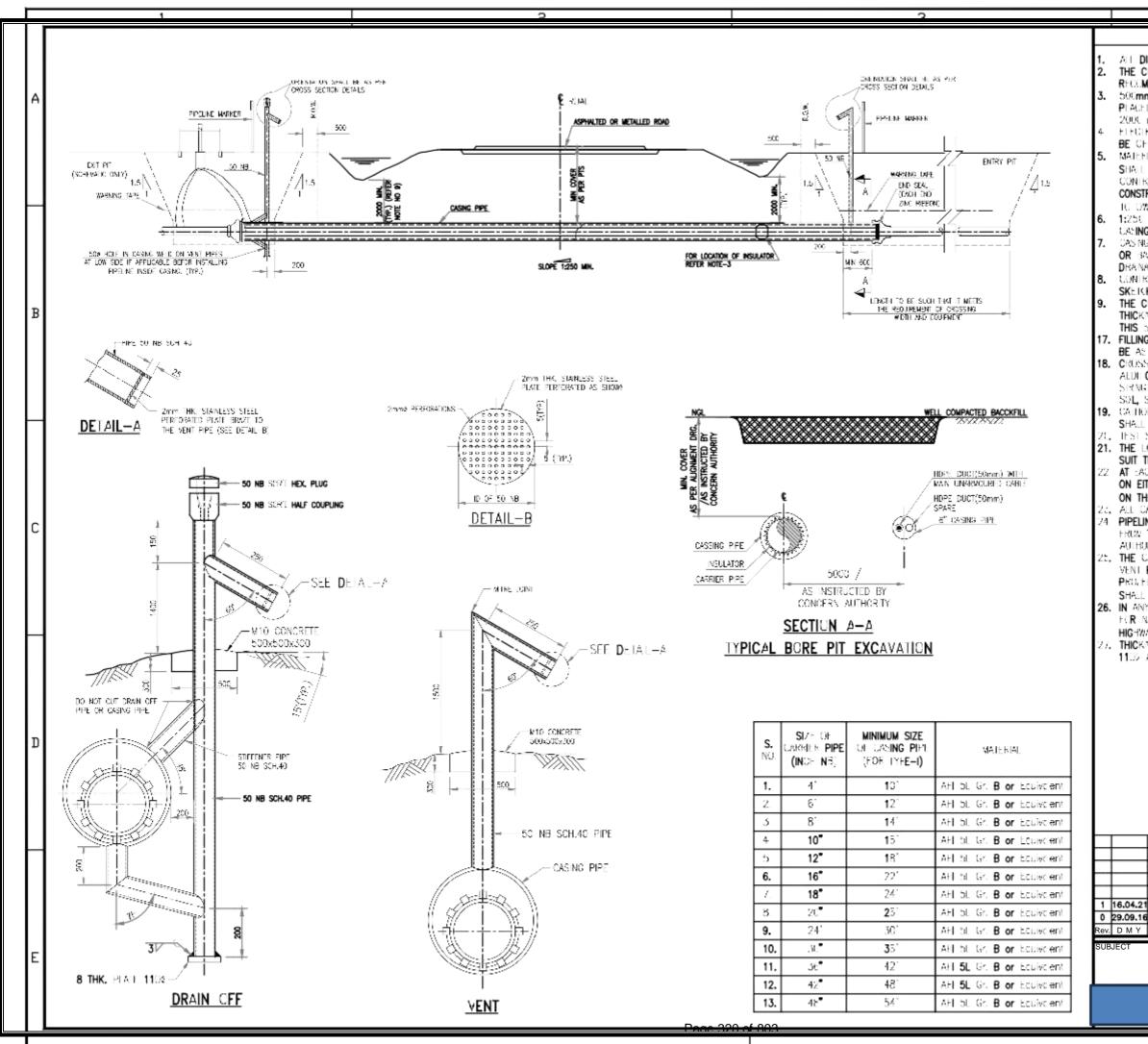
Rev. D M Y

Modifications

Drawn Checked Approved Validated

TYPICAL TRENCH DETAILS Sheet 01 of 01 Rev. 0

Size Scale Sheet A3 NTS 01 Drawing No. GGNG-D-20707-002



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NOTES	
DIMENSIONS ANE IN MM UNLESS NOTED OTHERWISE. CROSSING WORKS SHALL BE EXECUTED IN ACCORDANCE WITH ART MMENDED PRACTICE 1102 LATEST ELITION. IM AWAY FROM BOTH ENDS, TWO NOS, INSULATORS SHALL BE	
EC. IN BALANCE LENGTE MAX, SPACING OF INSULATORS SHALL BE - mm.	
INCAL INSCLATON REIVERN THE CASING AND CARRER PIPE SHALL. Fecked with a suitable megger.	
HAL OF THE CASING INSCLATORS SHALL BE HOPE, END SEALS	

SHALL BE HEAT SHRINKAPLE TYPE (MAKE RAYCHEM OR EQUIVALENT), CONTRACTOR SHOULD TAKE PRIOR APPROVAL FOR VATERIAL OF CONSTRUCTION FOR FRD SEAL & SHALL SUBMIT MATERIAL CERTEICATES TO OWNER/ CONSULTANT FOR APPROVAL

1:250 SLOPE TO BE PROVDED FOR DRAINING DURING INSTALLATION OF CASING PIPE

CASING PIPE SHOULD EXTEND MIN, 600mm BEYOND THE TOE OF THE SLOPE OR BASE GRALE, OR MIN SOURCE BLYOND THE BUILD OF THE DRANAGE DITCH, WHICHEVER IS MORE.

CONTRACTOR SHOULD SUBMIT DETAILED WORK PROCEDURE ALONG WITH SKETCHES AND MATERIAL TEST CERTIFICATES FOR APEROVAL

THE CROSSING SHALL BE CARRIEL OUT WITH PIPE SIZE AND MINIMUM THICKNESS GIVEN IN THE PIS & DESIGN BASIS, THE SIZES GIVEN IN THIS SHEET ANE MINIMUM INDICATIVE ONLY.

 FILLING OF ANNULAR SPACE RELWEEN CASING AND CARRIER PIPE SHALL BE AS PER PROJECT SPECIFICATION.

18. CROSSING MAY BE CARRED OUT PRIOR TO MAINLINE ACTIVITES

ALDE ONAL BOLL IF RECURED. FOR APPROACH TO GROSSING, PPELINE Stringing, **Hydrotesting**, wurking pit for Grossing, to avod gaving of Sol, shall be produced by contractor without any cost implication. 19. Catholic Protection :- all casing PIPEs for ralway crossing Shall be C.P. Protected, USING Sachificiae anode.

. TEST STATION ON HOTE SIDE OF CRUSSING

 THE LOCATION OF ENERY AND EXIT PIT SHALL BE DECIDED AT SITE TO SUIT THE SITE REQUIREMENT.

AT EACH CROSSING, PIPELINE CROSSING WARNING SIGN SHALL BE INSTALLED ON EITHEN SIDE OF CROSSING, THE WARNING PLATE WAY BE MOUNTED ON THE VENT/ORAN OFF PIPE.

ALL CARRIER PIPELNE JOINTS SHALL BE RADOGRAPHED.

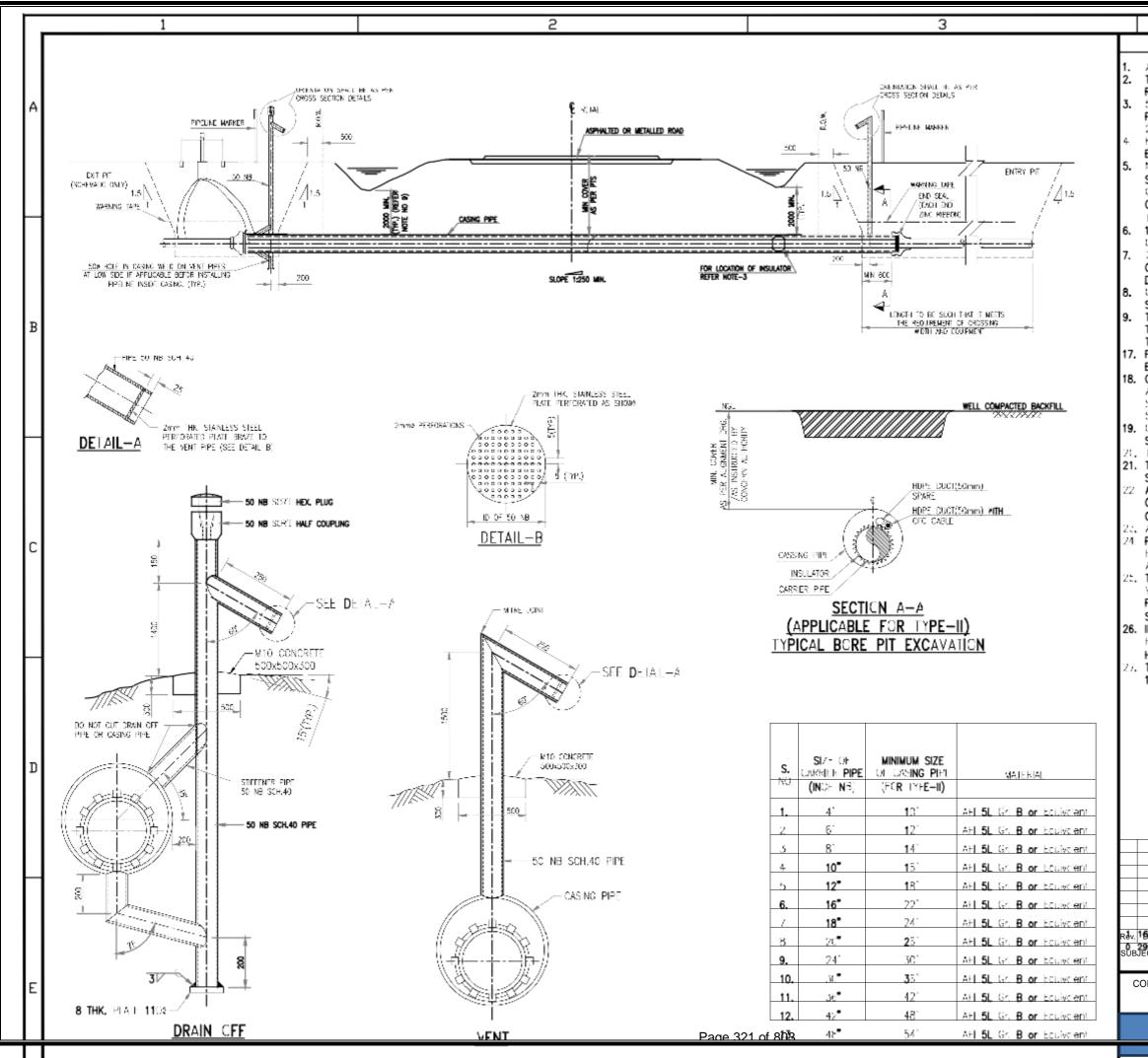
24. PIPELINE SECTION SHALL BE PRETECTED HYDROSTAL CALLY SEPARATELY FROM THE MAN LINE TESTING WEEN REQUIRED BY CONCERNED AUTHORITES OR AS DIRECTED BY CLENT.

25. THE CASING PIPE SHALL BE PROVIDED WITH MINIMUM 50 MM DIAMETER VENT PIPE FOR FILLING THE FILLER MATERIAL IF REQUIRED AS PER PROJECT SECONDATION, AFTER FILLING, VENT PIPE AT HOTE FINDS SHALL DE DIAMETER DIAL DE DIALOGNE (SECONDATION DE DIALOGNE)

SHALL BE TRIMMED AND PLUGGED/SEALED WITH END CAPS.
 26. IN ANY CASE, THE MINIMUM LENGTH OF CASING PLPE SHALL BE 72M FOR NATIONAL HIGHWAY CROSSING, AND BOM FOR ALL STATE HIGHWAY/NDF CROSSING.

THICKNESS OF CARING PIPE SHALL BE CALCULATED AS PER AP RP. 1102 AND SUBMITTED FOR APPROVAL.

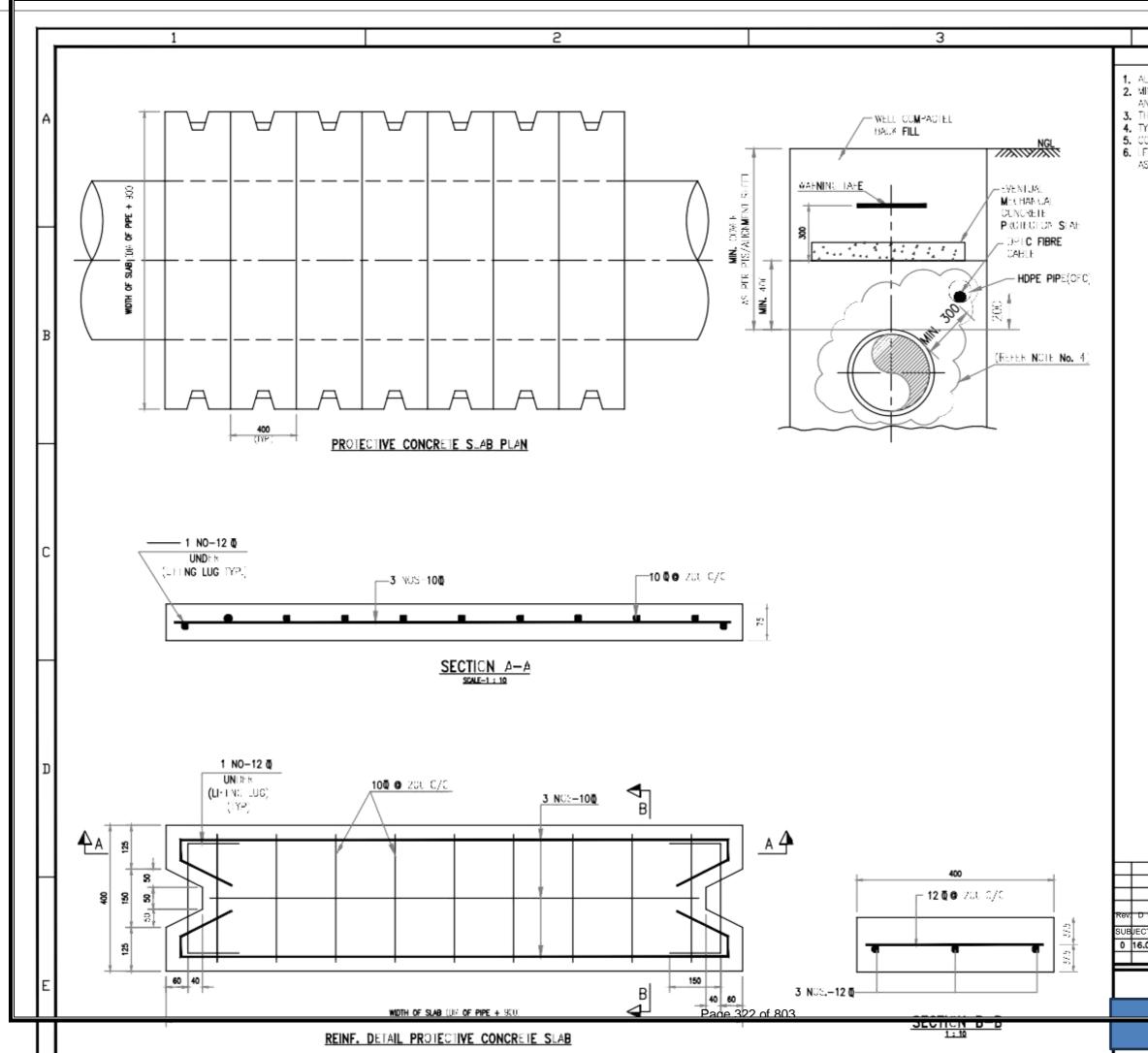
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ΜΥ	Modifications	5	Drawn	Checked	Approved	Validated		
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	SEPARATE CASI	NG FOR CAR	RIER AN	ND OFC				
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ALL DIMENSIONS AND IN MIN UN ESSINOT THE CROSSING WORKS SHALL BE EXECUTE RECOMMENDED PRACTICE 1102 TATESTIELT SOUTH AWAY FROM BOTH ENDS, TWO NOS PLACED, IN BALANCE TENDIE MAX, SPACIN 2000 mm. ELECTRICAL INSCLATON RETWHEN THE CAS BE CHECKED WITH A SUITABLE MEGGER. MATEMAT OF THE CASING INSCLATORS SHA SHALL BE HEAT SHRINKAFLE TYPE (MAKE CONTRACTOR SHOULD TAKE PRIOR APPROVA CONSTRUCTION FOR FAD SEAL & SHALL SUI TO OWNER? CONSULTANT FOR APPROVAL 1:250 SEOFE TO BE PROVIDED FOR DRANT CASING PIPE. OASING PIPE. OASING PIPE. OASING PIPE. OASING PIPE. OASING PIPE. OASING PIPE. OASING PIPE. CONTRACTOR SHOULD EXTEND MIN. BOOMMER CONTRACTOR SHOULD EXTEND MIN. BOOMMER CONTRACTOR SHOULD SUBMIT DETALED WO SKETCHES AND MATEMAL TEST CERTIFICATE WITHICKNESS GIVEN IN THE PIS & DESGN F	LE IN ACCORDANCE WITH ART HEON, S. INSULATORS SHALL BE IG OF INSULATORS SHALL BE ING AND CARRIER PIPE SHALL NUE BE HORE, END SCALS RAYCHEN OR EQUIVALENT), AL FOR VATERAL OF BMIT MATCHAE OF CHILDRATTS ING DURING INSTALLATION OF BEYOND THE TOE OF THE SLOP OF THE BUTTOM OF THE DRK PROCEDURE ALONG WITH STROP APEROVAL HE PIPE SIZE AND MINIMUM	
THIS SPEET ARE MINIMUM INDICATIVE ONLY		
FILLING OF ANNULAR SPACE BETWEEN CAS		
BE AS PER PROJECT SPECIFICATION. CROSSING MAY BE CARRED OUT PRIOR TO	MANLINE ACCIVILIES	
AUDITONAL ROLL IF REQUIRED FOR APPROACE	TC CROSSING. PIPELINE	
STRINGING, <b>hydrotesting, w</b> orking pit for o So <b>l,</b> shall be produred by contractor v		.
CATHOLIC PROTECTION :- ALL CASING PIPE	ES FOR RALWAY CROSSING	1
SHALL BE C.P. PROTECTED, USING SACHIFT TEST STATION ON BOTH SIDE OF CROSSING	GIAL ANCDE. G	
THE LOCATION OF ENTRY AND EXIT PIT SH		
SUIT THE SITE REQUIREMENT. AT EACH CROSSING, PIPELINE CROSSING WAR	NING SIGN SHALL BE INSTALLED	;
on either side of excessing the warni		
ON THE VENT/ORAN OFF PIME. All carrier pipelne Joints Shall be b	(AD OCRAPHED	
PIPELINE SECTION SHALL BE PRETESTED H	IYDROSTAF CALLY SEPARATELY	
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VENT PIPE FOR <b>Filling the Fi</b> ller Mater Project spectroation, After <b>Fillin</b> g, ve	RAL, IF REQUIRED AS PER INT PIPE AT HOLE HADS	
SHALL BE TRIMMED AND PLUGGED/SEALED	WHE END CAPS.	
IN ANY CAS <mark>e, the minimum</mark> lengfife of C FCR national <b>hig</b> hway crossing, and bi		
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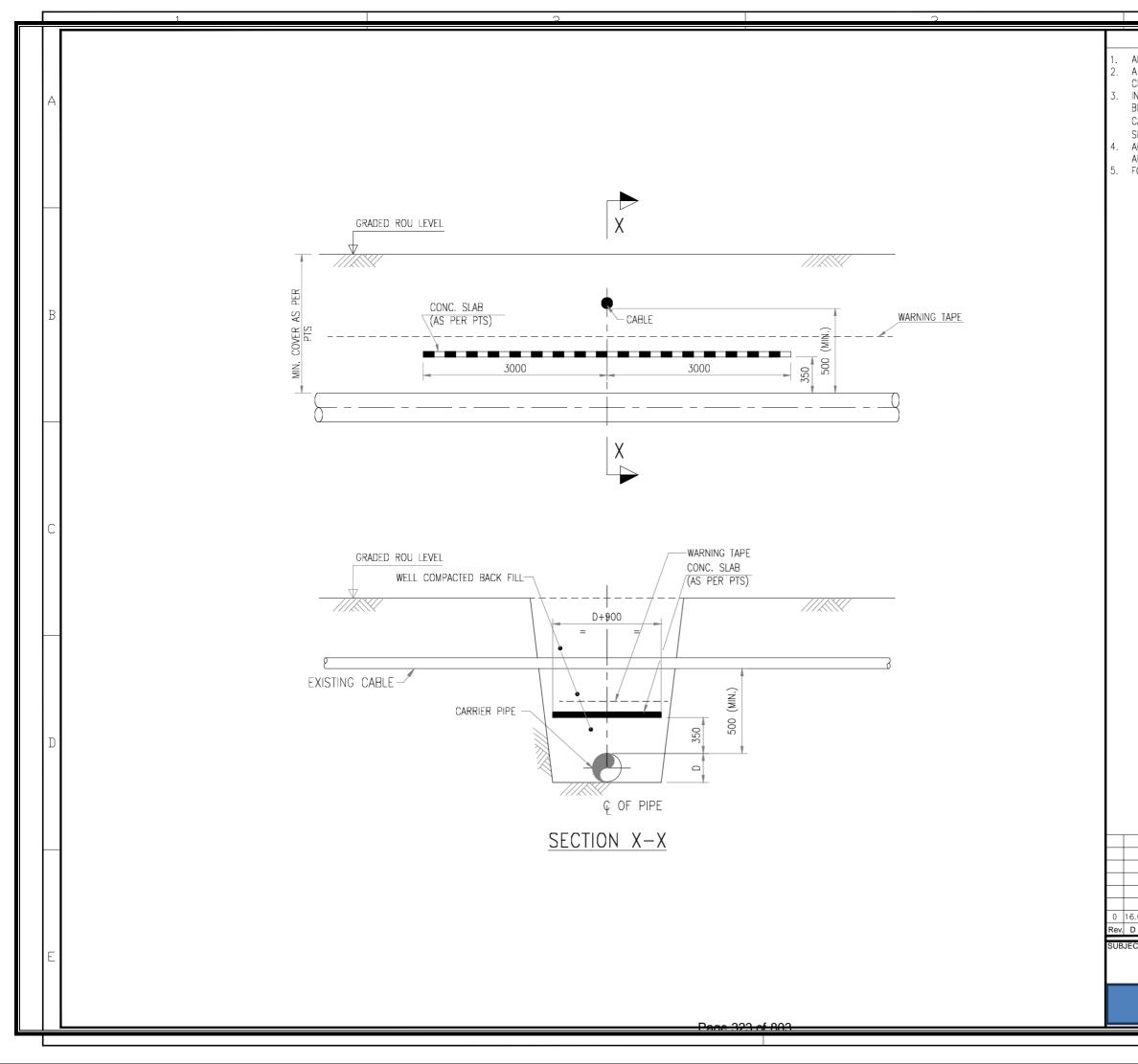
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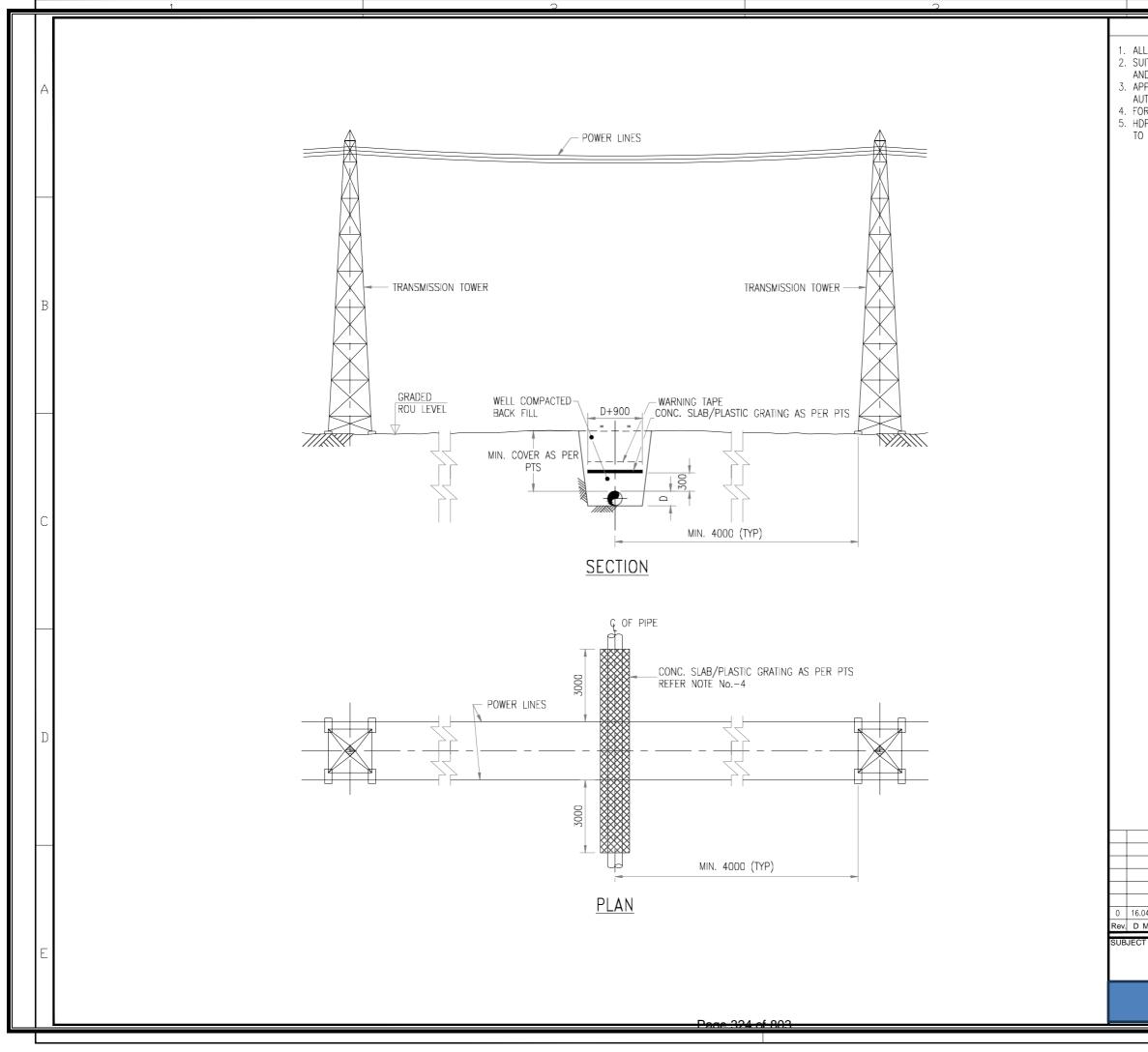
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NOTES
L DIMENSIONS ARE IN AM UNLESS NOTED OTHERWISE.

- 2. MINIMUM COVER OVER LINE PIPE SHALL BE AS PER SPECIFICATIONS AND REQUIREMENT OF CONCERNED AUTHORITIES. 3. THIS SKETCH IS INDICATIVE ONLY.
- 4. TYPE OF TRENCHING SHALL BE AS PER PTS AND APPROVED PROCEDURE. CONCRETE MIX M20 SHALL BE USED.
   LENGTH OF THE MECHANICAL PROTECTION SLAB REQUIREMENT SHALL BE
  - AS PER SITE REQUIREMENT,

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ECT	TYPICAL MEC	HANIC	AL I	ROTE	CTION		
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	NOTES				
ALL DIMENSIONS ARE IN MM A MODIFIED PIPELINE WARNIN				CLOSE	TO THE
CROSSING. IN CASE OF UNARMOURED C. BETWEEN PIPELINE AND CABI					
CABLE, ARRANGEMENT FOR S SIDE OF THE PIPELINE OR C APPROVAL OF THE CROSSING	HIELDING (BY ABLE) SHALL E	PROVIDI BE CONS	NG CASI SIDERED.	NG ON	EITHER
AUTHORITIES. FOR CONCRETE SLAB, REFER	STD. DRG No	. GGNG-	-D-2070	07–007.	,
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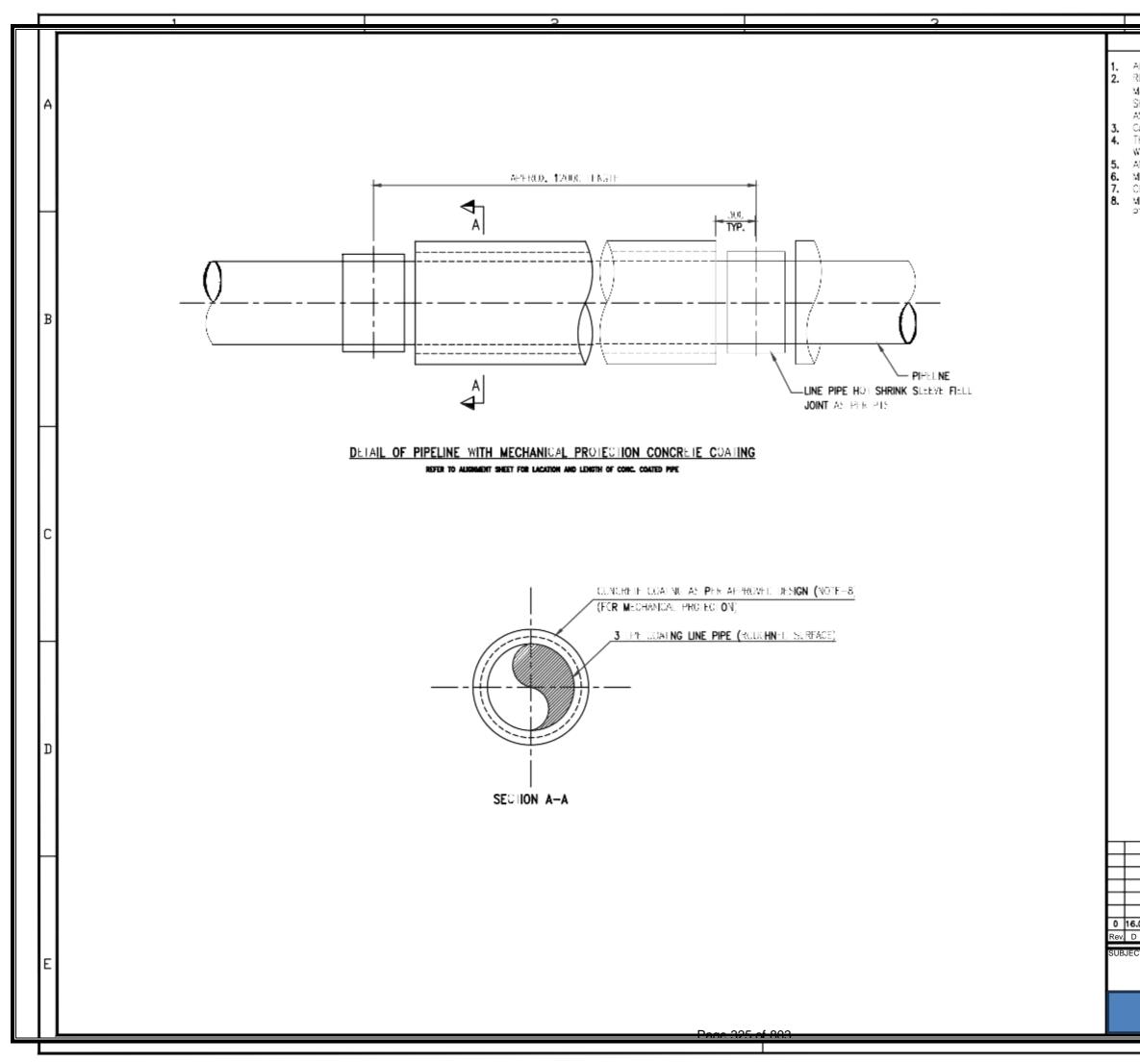


NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. SUITABLE MEASURES SHALL BE TAKEN FOR THE PROTECTION OF THE LINE
AND SECURITY OF PERSONNEL WHEREVER FOUND NECESSARY.
3. APPROVAL OF THE CROSSING SHALL BE OBTAINED FROM CONCERNED
AUTHORITIES.

 FOR CONCRETE SLAB REFER STD DWG NO. GGNG-D-20707-007.
 HDPE SHEET SHALL BE PROVIDED FOR HIGH VOLTAGE LINES FROM 11KV TO 66KV. FOR 66KV AND ABOVE CONCRETE SLAB SHALL BE PROVIDED.

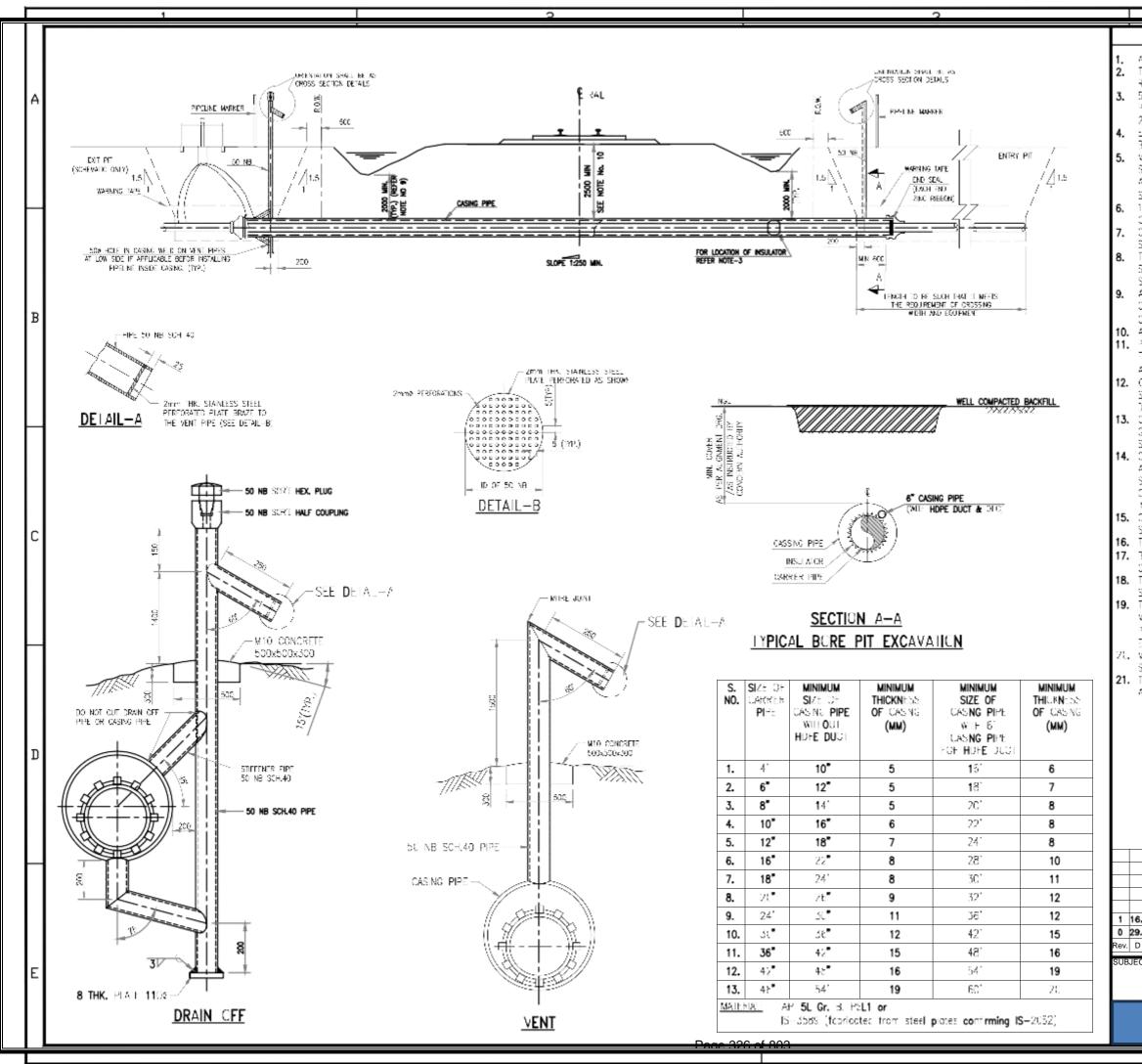
6.04.21	APPROVED FOR CONSTRUCTION.	KS	MKS	MS	KNS		
DMY	Modifications	Drawn	Checked	Approved	Validated		
CT OVERHEAD POWER LINE CROSSING DETAILS							
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NOTES
ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE. REINFORCEMENT SHALL CONSIST OF WELDED STEEL WIRE FABRIC MANUFACTURED IN SLOT SHEETS OR IN ROLLS (RIBBON MESH) AND SHALL CONFORM TO ASTM A-135. WIRES SHALL CONFORM TO ASTM A-82.
CALVANIZING OF STEEL WIRE SHALL BE AS PER ASTM. THICKNESS OF STEEL WIRE SIZE SHALL BE 2.4mm AND SPACING OF WIRE SHALL BE 50mm × 100 mm. ANTIBUCYANCY CALCULATION SHALL BE SUBMITTED FOR APPROVAL.

- ANTIGUCTARICY CALCULATION SHALL BE SUBMITTED FOR APPROVAL.
   MINIMUM THICKNESS OF CONCRETE COATING SHALL BE 75mm.
   CONCRETE COATING SHALL BE W20 USED.
   MINIMUM THICKNESS OF CONCRETE COATING SHALL BE AS MAINTANED IN PTS & ALIGNMENT SHEFTS.

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ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.

THE CROSSING WORKS SHALL BE EXECUTED IN ACCORDANCE WITH AH RECOMMENCED PRACTICE 1102 LATEST EDITION.

NOTES

 $500\mathrm{mm}$  AWAY FROM BOTH ENDS, TWO NOS. INSULATORS SHALL BE PLACED, IN BALANCE LENGTH MAX. SPACING OF INSULATORS SHALL BE 2000 mm.

ELECTRICAL INSULATION BETWEEN THE CASING AND CARRIER PIPE SHALL BE CHECKED WITH A MEGGER.

MATERIAL OF THE CASING INSULATORS SHALL BE HDPE, END SEALS SHALL BE HEAT SHRINKABLE TYPE, CONTRACTOR SHOULD TAKE PRIOR APPROVAL FOR MATERIAL OF CONSTRUCTION FOR END SEAL & SHALL SUBMIT MATERIAL CERTIFICATES TO OWNER/CONSULTANT FOR APPROVAL. 1:250 SLOPE TO BE PROVIDED TOWARDS DRAIN DURING INSTALLATION OF CASING PIPE.

CONTRACTOR SHOULD SUBMIT DETAILED WORK PROCEDURE ALONG WITH SKETCHES AND MATERIAL TEST CERTIFICATES FOR APPROVAL.

THE MINIMUM 2.5M COVERAGE SHALL BE MAINTAINED BETWEEN TOP SURFACE OF CASING PIPE AND BOTTOM OF RAIL UNLESS OTHERWISE STATED IN PTS OR REQUIRED BY RAILWAY AUTHORITIES.

AT EACH CROSSING, PIPELINE CROSSING WARNING SIGN SHALL BE INSTALLED ON EITHER SIDE OF CROSSING, THE WARNING PLATE WAY BE MOUNTED ON THE VENT/DRAIN OFF PIPE.

10. ALL CARRIER PIPELINE JOINTS SHALL BE RADIOGRAPHED.

 PIPELINE SECTION SHALL BE PRETESTED HYDROSTATICALLY SEPARATELY FROM THE MAIN UNE TESTING WHEN REQUIRED BY CONCERNED AUTHORITIES/OR AS DIRECTED BY CLIENT.

12. CASING PIPE SHOULD EXTEND A MIN OF 600MM BEYOND THE TOE OF THE SLOPE OR BASE GRADE, OR 900MM BYOND THE BOTTOM OF THE DRAINAGE DITCH WHICHEVER IS GREATER.

CROSSING SHALL BE CARRIED OUT WITH CASING PIPE SIZE & THICKNESS GIVEN IN PTS & DESIGN BASIS, THE SIZES & THICKNESS GIVEN IN THIS SHEET ARE MINIMUN REQUIREMENT AND INDICATIVE ONLY.

14. CROSSING MAY BE CARRIED OUT PRIOR TO MAINLINE ACTIVITIES ADDITIONAL ROU, IF REQUIRED, FOR APPROACH TO CROSSING, PIPELINE STRING, HYDROTESTING, WORKING PIT FOR CROSSING, TO AVOID CAVING OF SOIL, SHALL BE PROCURED BY CONTRACTOR WITHOUT ANY COST MPLICATION.

 CATHODIC PROTECTION :- ALL CASING PIPES FOR RAILWAY CROSSING SHALL BE C.P. PROTECTED.

TEST STATION ON BOTH SIDE OF CROSSING.

 3ENTONITE FILLING PROCEDURE SHALL BE DONE AS PER OWNER/ CONSULTANTS INSTRUCTIONS.

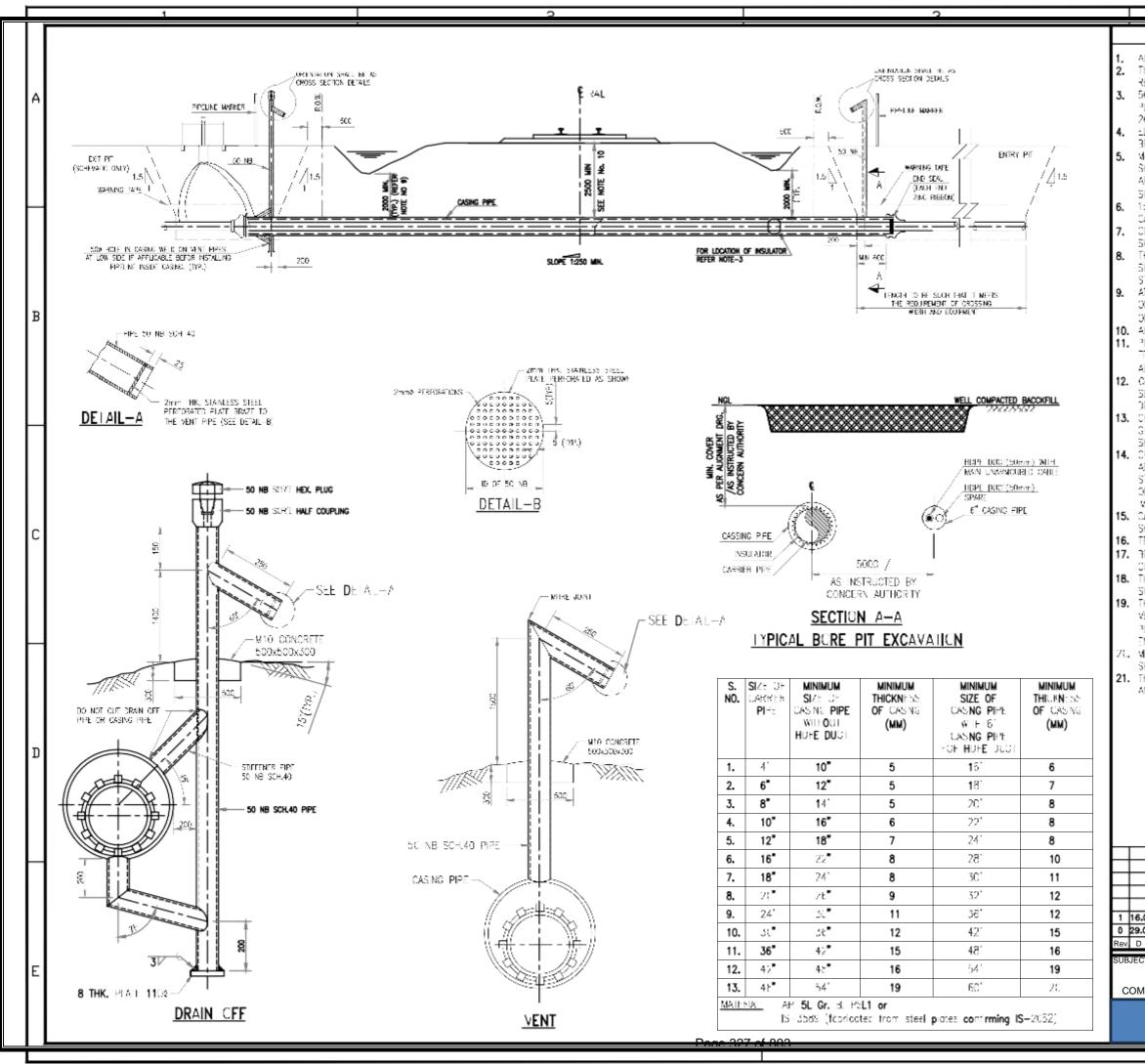
THE LOCATION OF ENTRY AND EXIT PIT SHALL BE DECIDED AT SITE TO SUIT THE SITE REQUIREMENT.

THE CASING PIPE SHALL BE PROVIDED WITH MINIMUM 50 MM DIAMETER VENT PIPE FOR FILLING BENTONITE, AFTER FILLING OF BENTONITE, VENT PIPE AT BOTH ENDS SHALL BE TRIMMED AND PLUGGED/SEALED WITH FND CAPS.

21. MINIMUM LENGTH OF THE CASING SHALL BE AS INDICATED IN ALIGNMENT SHEET OR SOM WHICHEVER IS MORE.

 THIKNESS OF CARING PIPE SHALL BE CALCULATED AS PER API RP 1102 AND SUBMITTED FOR APPROVAL.

ED.	KS	MKS	MS	KNS			
RUCTION.	JV	MS	NC	SKH			
IS	Drawn	Checked	Approved	Validated			
TYPICAL RAILWAY CASED CROSSING (B+C) TYPE-I SEPARATE CSING FOR CARRIER AND OFC							
Drawing No.	-	-		01 Rev.			
	RUCTION. IS Y CASED C TYPE-I NG FOR CARF Size Scale A3 N Drawing No.	RUCTION.         JV           is         Drawn           Y         CASED         CROSS           TYPE-I         VICARRIER AN           Size         Scale           A3         NTS           Drawing No.         NTS	RUCTION.         JV         NS           is         Drawn         Checked           Y         CASED         CROSSING         (I           TYPE-I         V         G         FOR         CARRIER         AND OFC           Size         Scale         Sheet         A3         NTS         0           Drawing No.         V         O         C         C         C	RUCTION.         JV         NS         NC           is         Drawn         Checked         Approved           Y         CASED         CROSSING         (B+C)           TYPE-I         Image: Comparison of the provided         Image: Comparison of the provided           IS FOR CARRIER AND OFC         Sheet         Sheet           A3         NTS         01         of			



ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.

THE CROSSING WORKS SHALL BE EXECUTED IN ACCORDANCE WITH AH RECOMMENDED PRACTICE 1102 LATEST EDITION.

NOTES

500mm AWAY FROM BOTH ENDS, TWO NOS, INSULATORS SHALL BE PLACED, IN BALANCE LENGTH MAX, SPACING OF INSULATORS SHALL HE 2000 mm.

ELECTRICAL INSULATION BETWEEN THE CASING AND CARRIER PIPE SHALL BE CHECKED WITH A MEGGER.

MATERIAL OF THE CASING INSULATORS SHALL BE HDPE, END SEALS SHALL BE HEAT SHRINKABLE TYPE, CONTRACTOR SHOULD TAKE PRIOR APPROVAL FOR MATERIAL OF CONSTRUCTION FOR END SEAL & SHALL SUBMIT MATERIAL CERTIFICATES TO OWNER/CONSULTANT FOR APPROVAL, 1:250 SLOPE TO BE PROVIDED TOWARDS DRAIN DURING INSTALLATION OF CASING PIPE.

CONTRACTOR SHOULD SUBMIT DETAILED WORK PROCEDURE ALONG WITH SKETCHES AND MATERIAL TEST CERTIFICATES FOR APPROVAL.

THE MINIMUM 2.5M COVERAGE SHALL BE MAINTAINED BETWEEN TOP SURFACE OF CASING PIPE AND BOTTOM OF RAIL UNLESS OTHERWISE STATED IN PTS OR REQUIRED BY RAILWAY AUTHORITIES.

AT EACH CROSSING, PIPELINE CROSSING WARNING SIGN SHALL BE INSTALLED ON EITHER SIDE OF CROSSING, THE WARNING PLATE WAY BE MOUNTED ON THE VENT/DRAIN OFF PIPE.

10. ALL CARRIER PIPELINE JOINTS SHALL BE RADIOGRAPHED.

 PIPELINE SECTION SHALL BE PRETESTED HYDROSTATICALLY SEPARATELY FROM THE MAIN UNE TESTING WHEN REQUIRED BY CONCERNED AUTHORITIES/OR AS DIRECTED BY CLIENT.

12. CASING PIPE SHOULD EXTEND A MIN OF GOOMM BEYOND THE TOE OF THE SLOPE OR BASE GRADE, OR 900MM BYOND THE BOTTOM OF THE DRAINAGE DITCH WHICHEVER IS GREATER.

CROSSING SHALL BE CARRIED OUT WITH CASING PIPE SIZE & THICKNESS GWEN IN PTS & DESIGN BASIS, THE SIZES & THICKNESS GWEN IN THIS SHEET ARE MINIMUN REQUIREMENT AND INDICATIVE ONLY.

14. CROSSING MAY BE CARRIED OUT PRIOR TO MAINLINE ACTIVITIES ADDITIONAL ROU, IF REQUIRED, FOR APPROACH TO CROSSING, PIPELINE STRING, HYDROTESTING, WORKING PIT FOR CROSSING, TO AVOID CAVING OF SOIL, SHALL BE PROCURED BY CONTRACTOR WITHOUT ANY COST MPLICATION.

 CATHODIC PROTECTION :- ALL CASING PIPES FOR RAILWAY CROSSING SHALL BE C.P. PROTECTED.

TEST STATION ON BOTH SIDE OF CROSSING.

 BENTONITE FILLING PROCEDURE SHALL BE DONE AS PER OWNER/ CONSULTANTS INSTRUCTIONS.

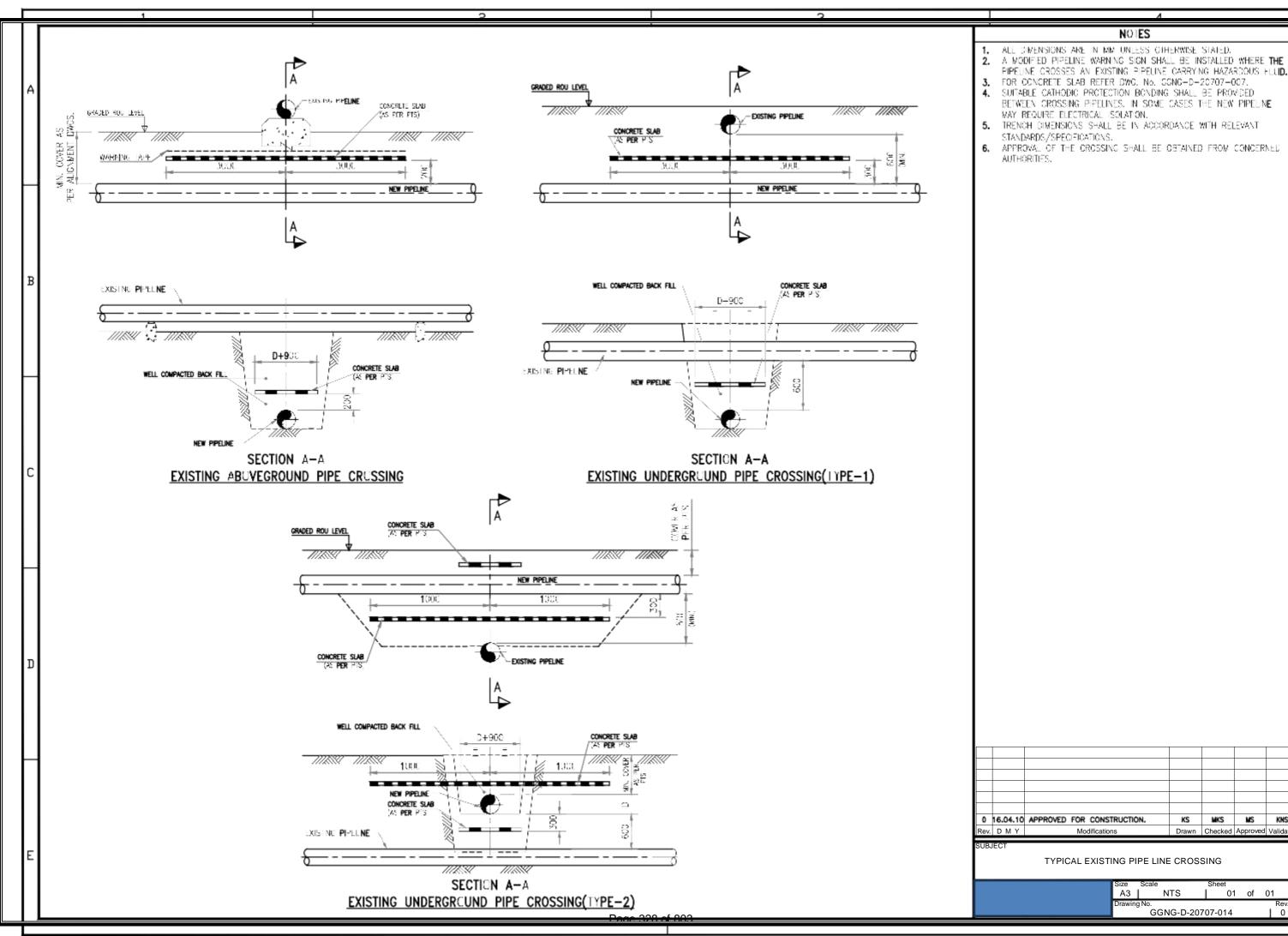
THE LOCATION OF ENTRY AND EXIT PIT SHALL BE DECIDED AT SITE TO SUIT THE SITE REQUIREMENT.

THE CASING PIPE SHALL BE PROVIDED WITH MINIMUM 50 MM DIAMETER. VENT PIPE FOR FILLING BENTONITE, AFTER FILLING OF BENTONITE, VENT PIPE AT BOTH ENDS SHALL BE TRIMMED AND PLUGGED/SEALED WITH END CAPS.

21. MINIMUM LENGTH OF THE CASING SHALL BE AS INDICATED IN ALIGNMENT SHEET OR SOM WHICHEVER IS WORE.

 THIKNESS OF CARING PIPE SHALL BE CALCULATED AS PER API RP 1102 AND SUBMITTED FOR APPROVAL.

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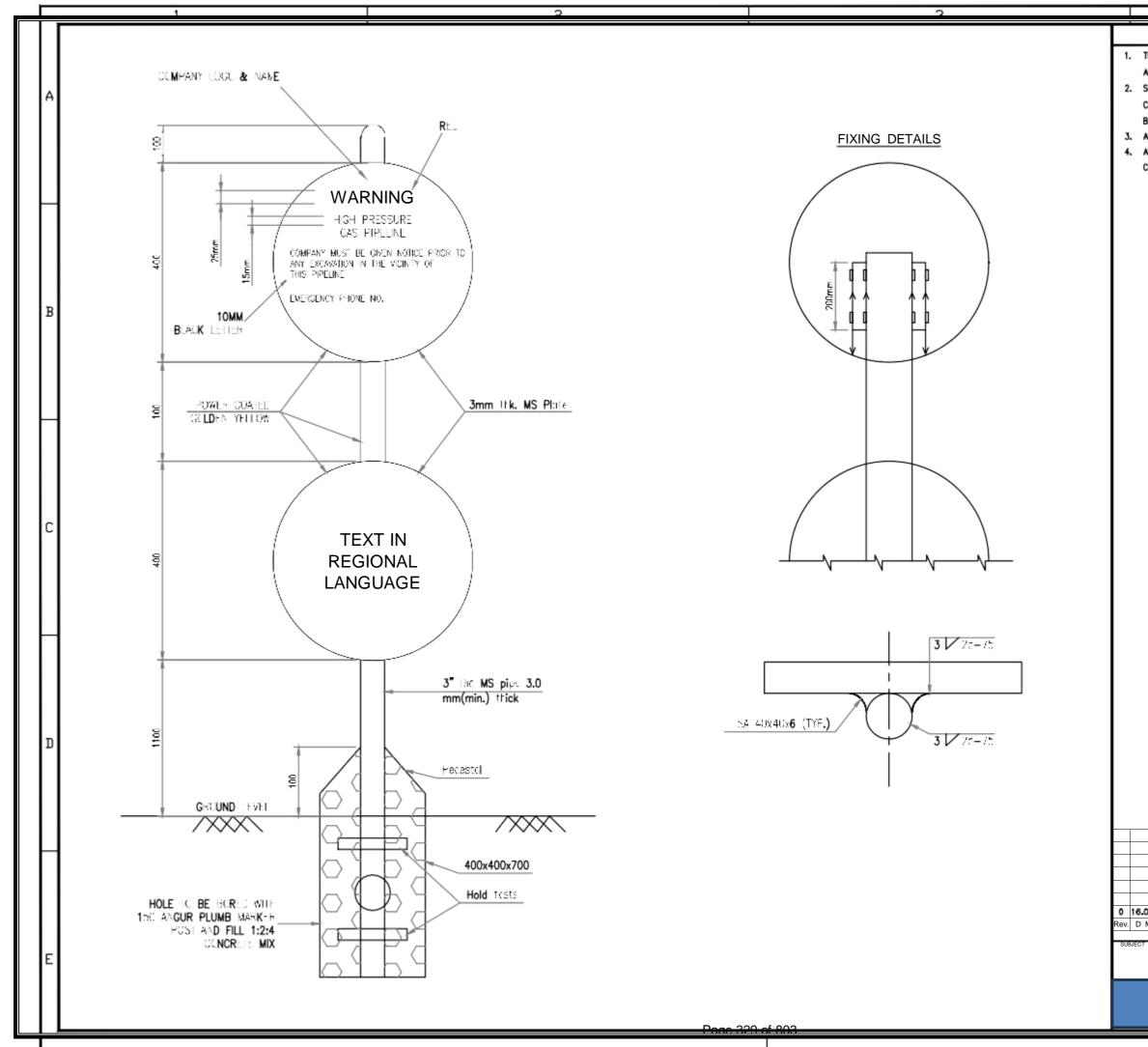


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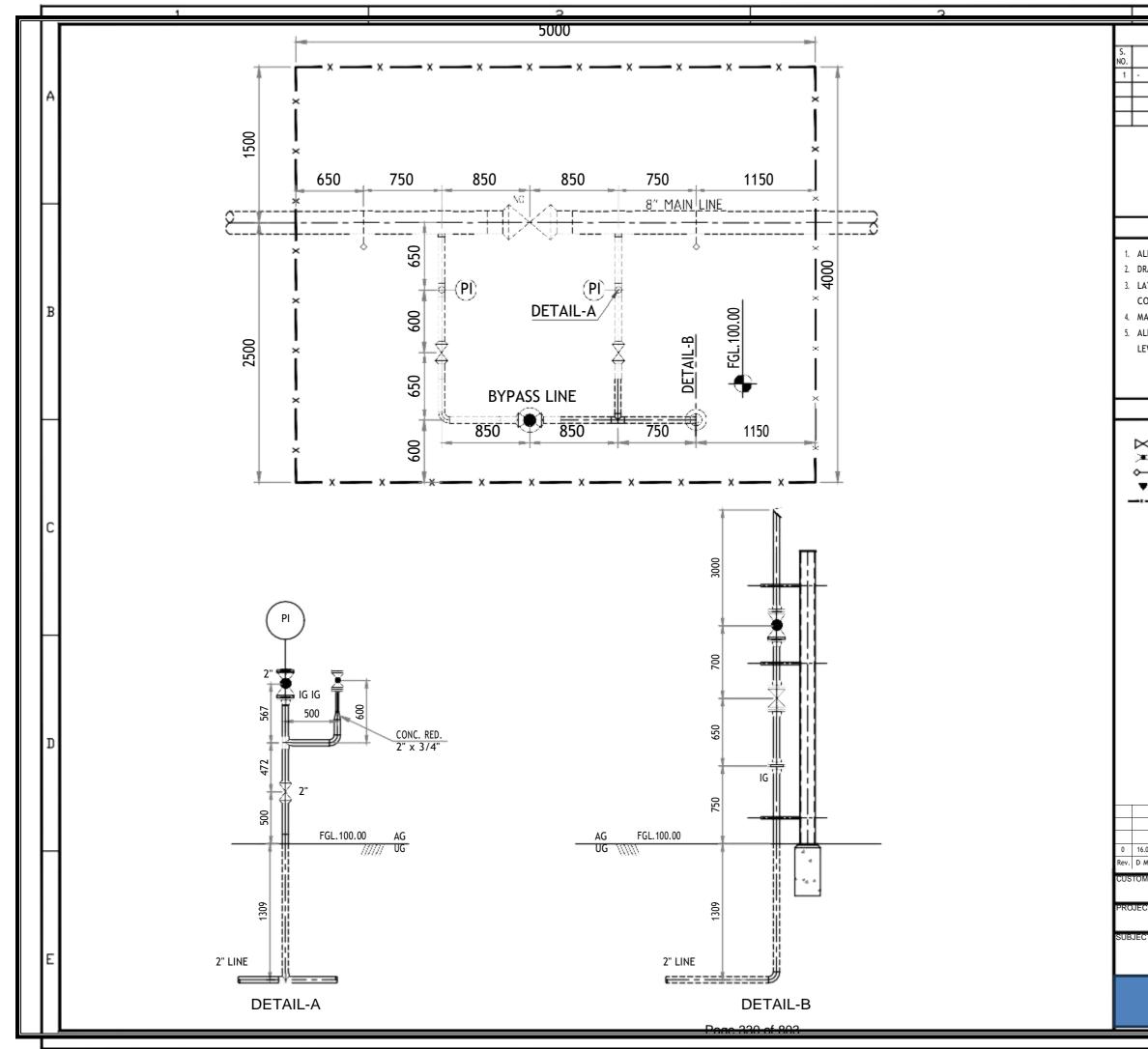
FOR CONCRETE SLAB REFER DWG. No. CONG-D-20707-007. SUITABLE CATHODIC PROTECTION BONDING SHALL BE PROVIDED BETWEEN CROSSING PIPELINES. IN SOME CASES THE NEW PIPELINE MAY REQUIRE ELECTRICAL ISOLATION. TRENCH DIMENSIONS SHALL BE IN ACCORDANCE WITH RELEVANT STANDARDS/SPECIFICATIONS. 6. APPROVAL OF THE CROSSING SHALL BE OBTAINED FROM CONCERNED AUTHORITIES.

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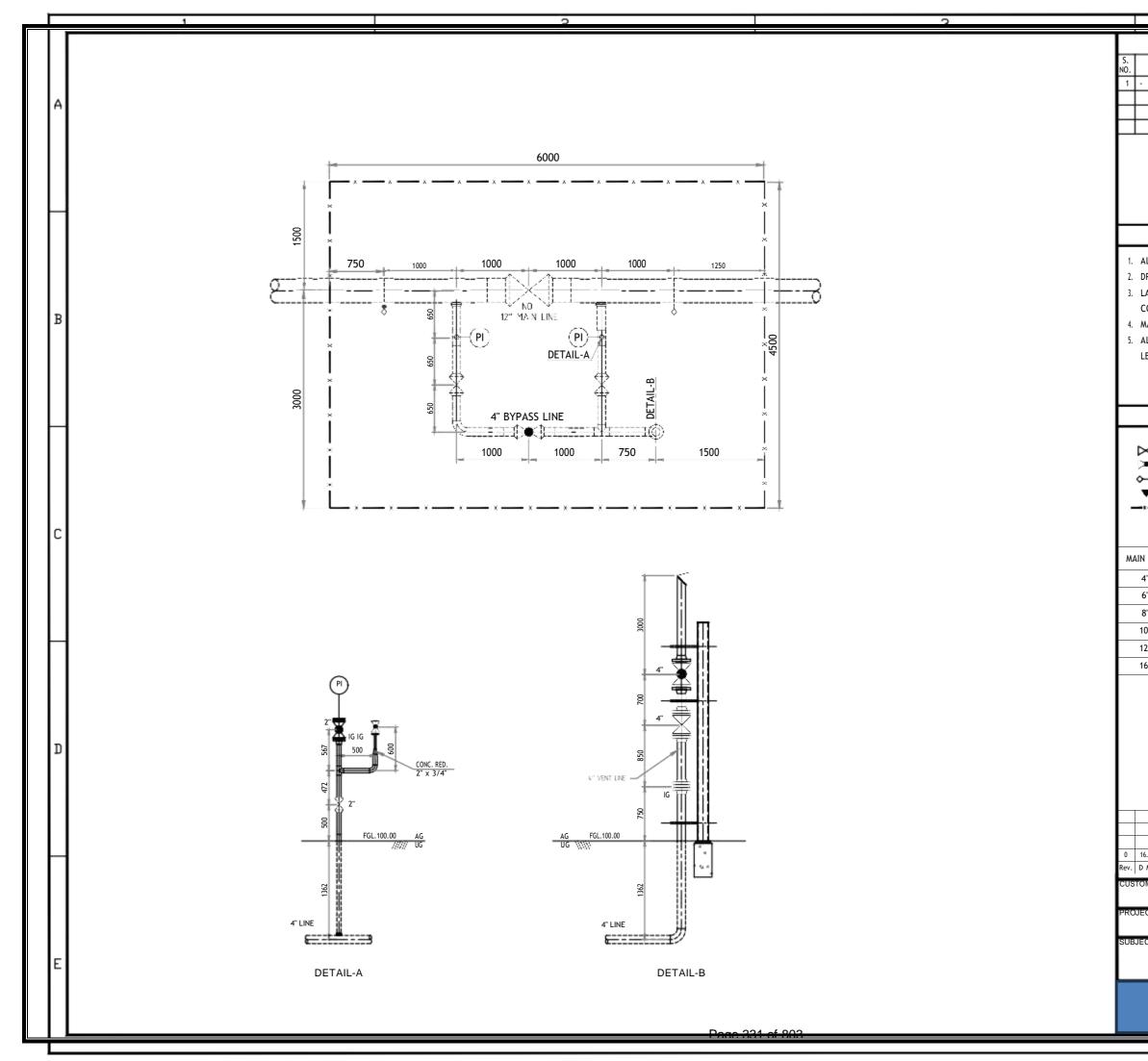


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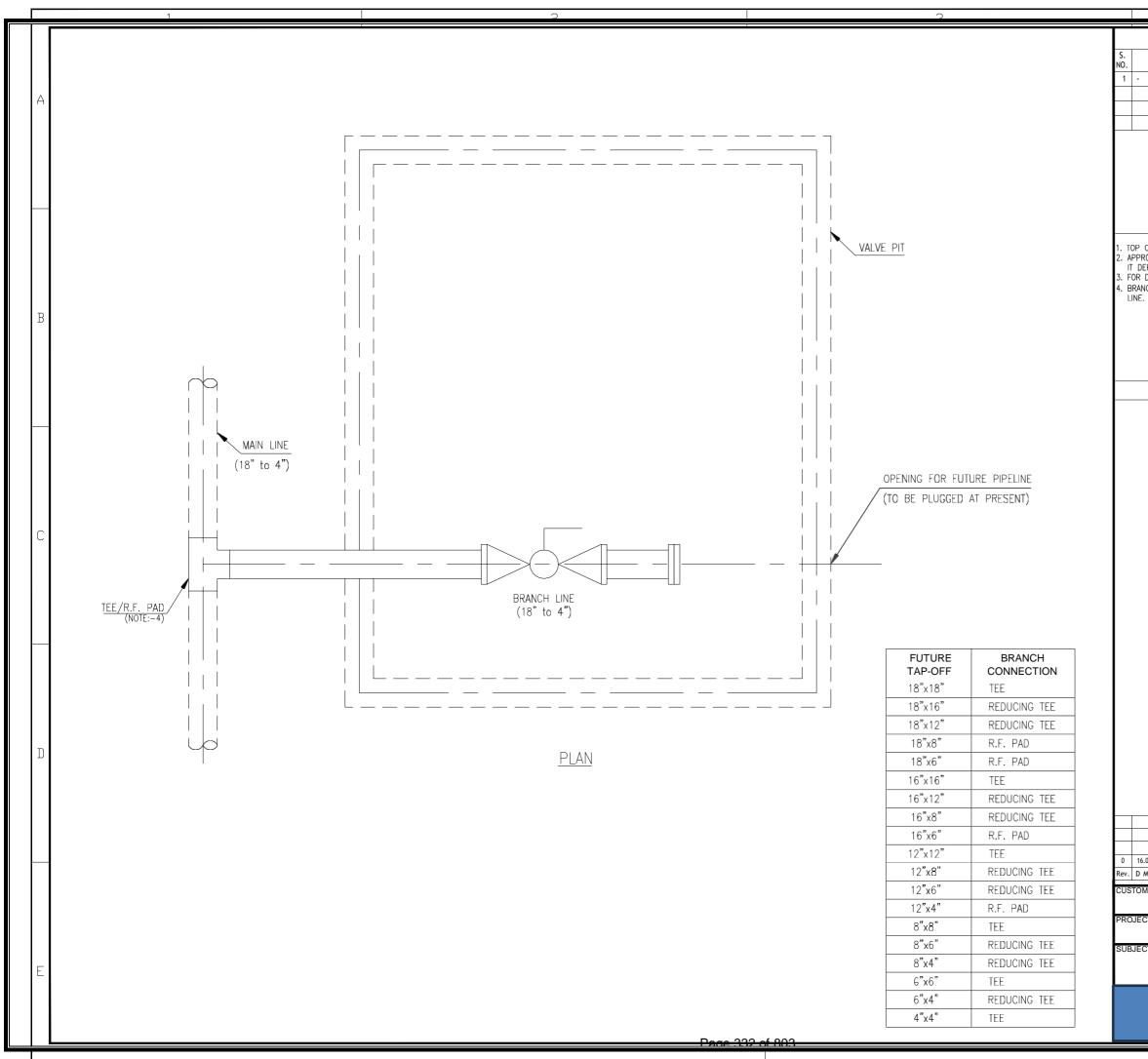
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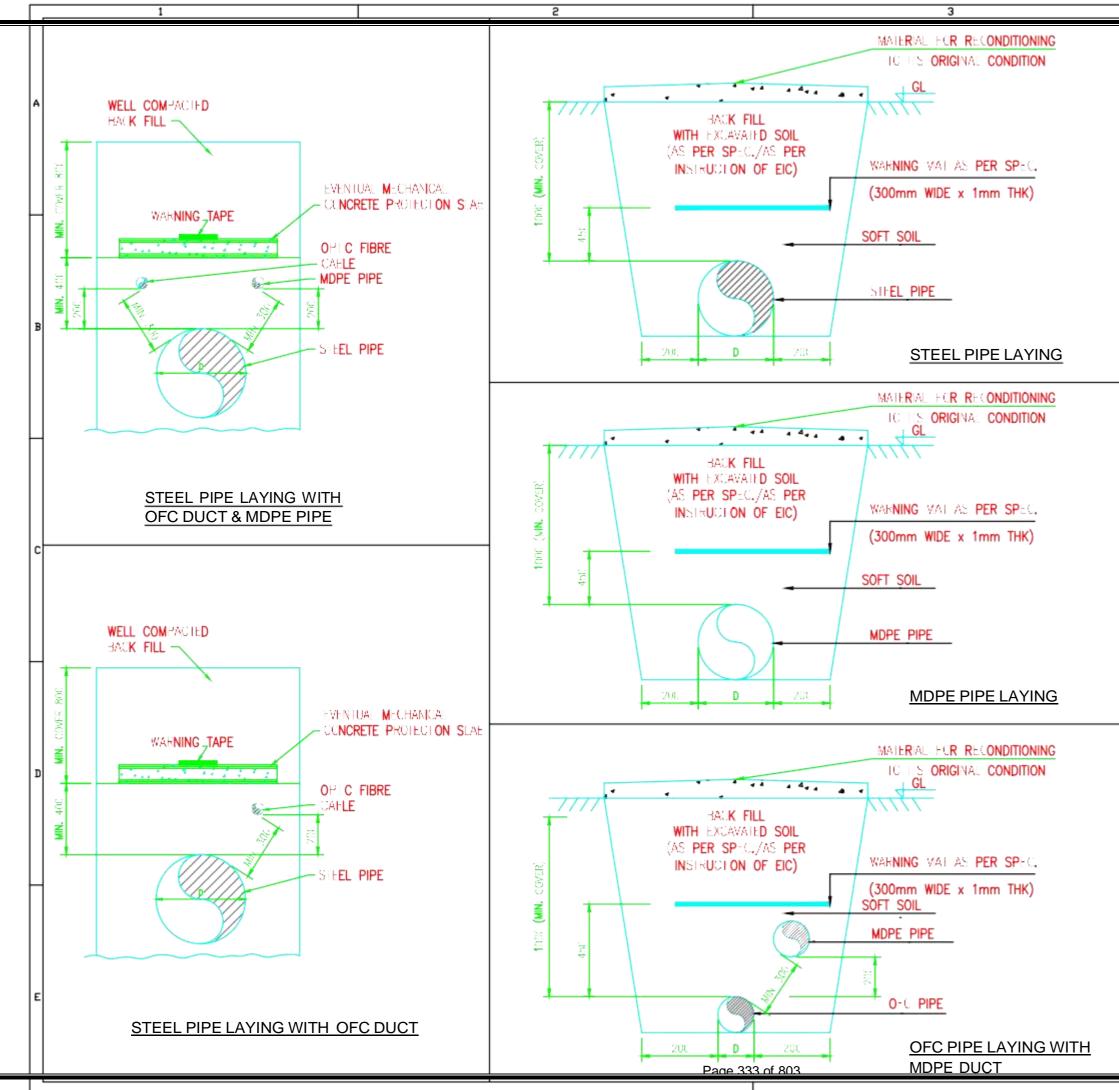
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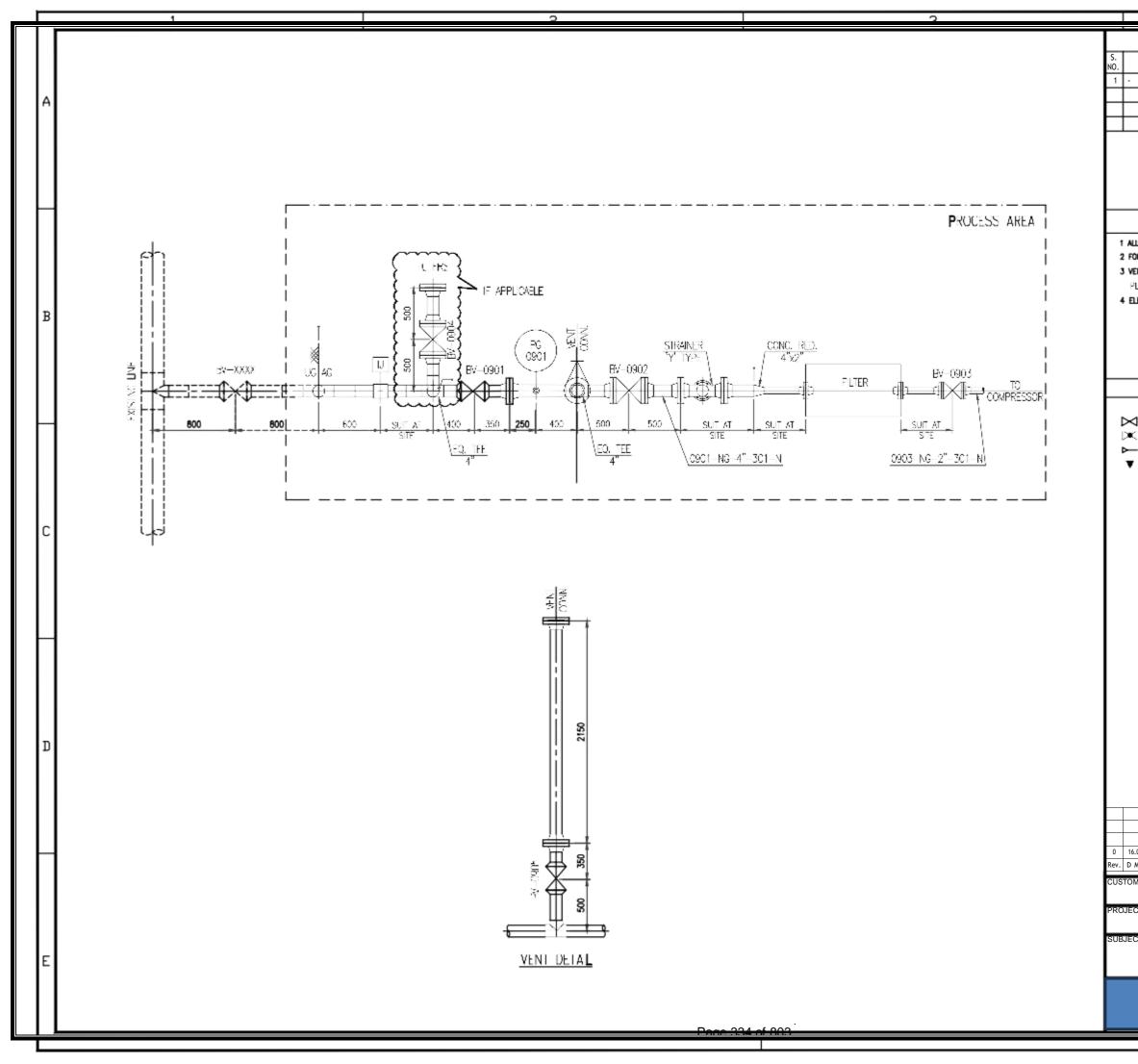
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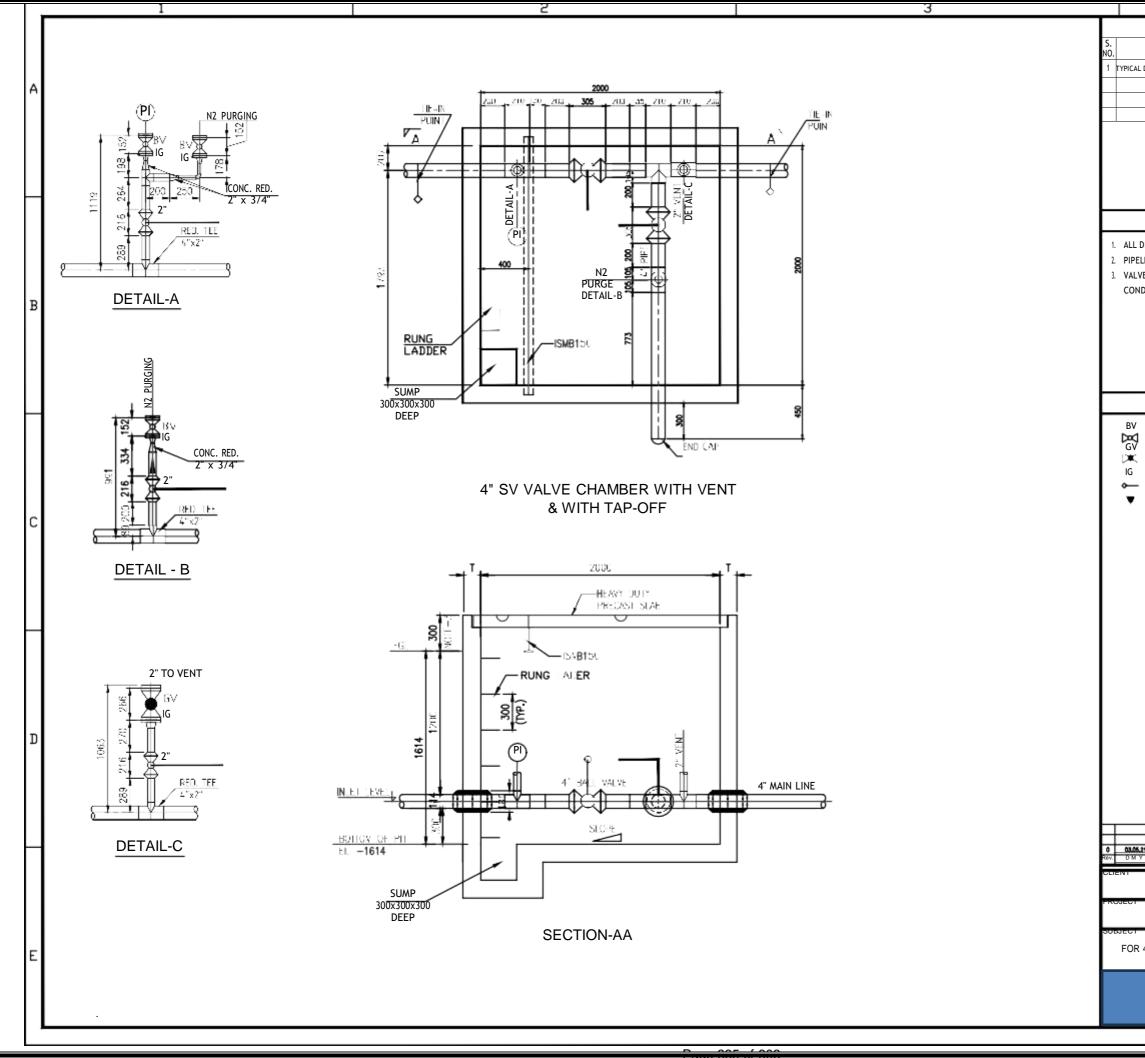
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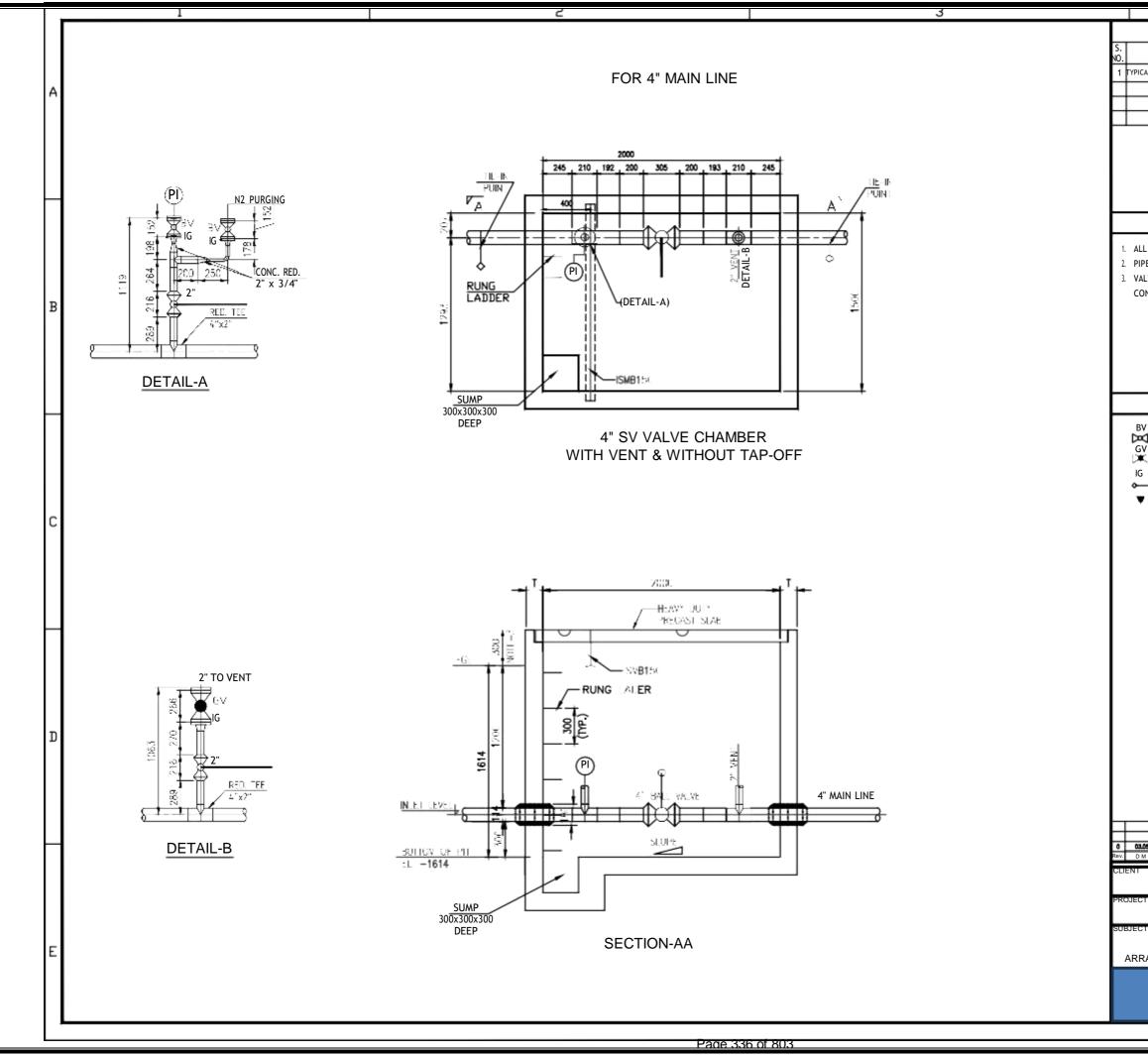
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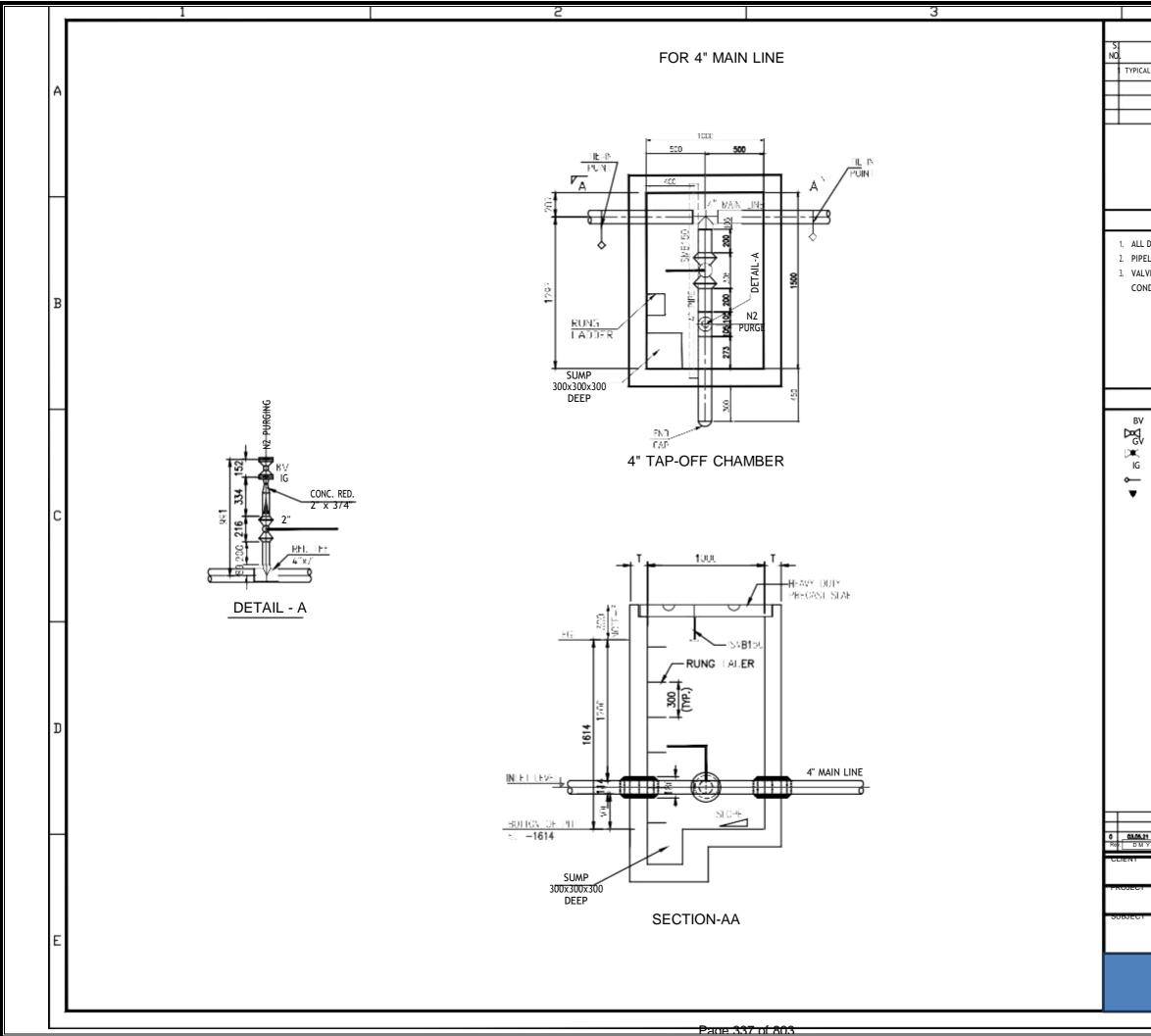
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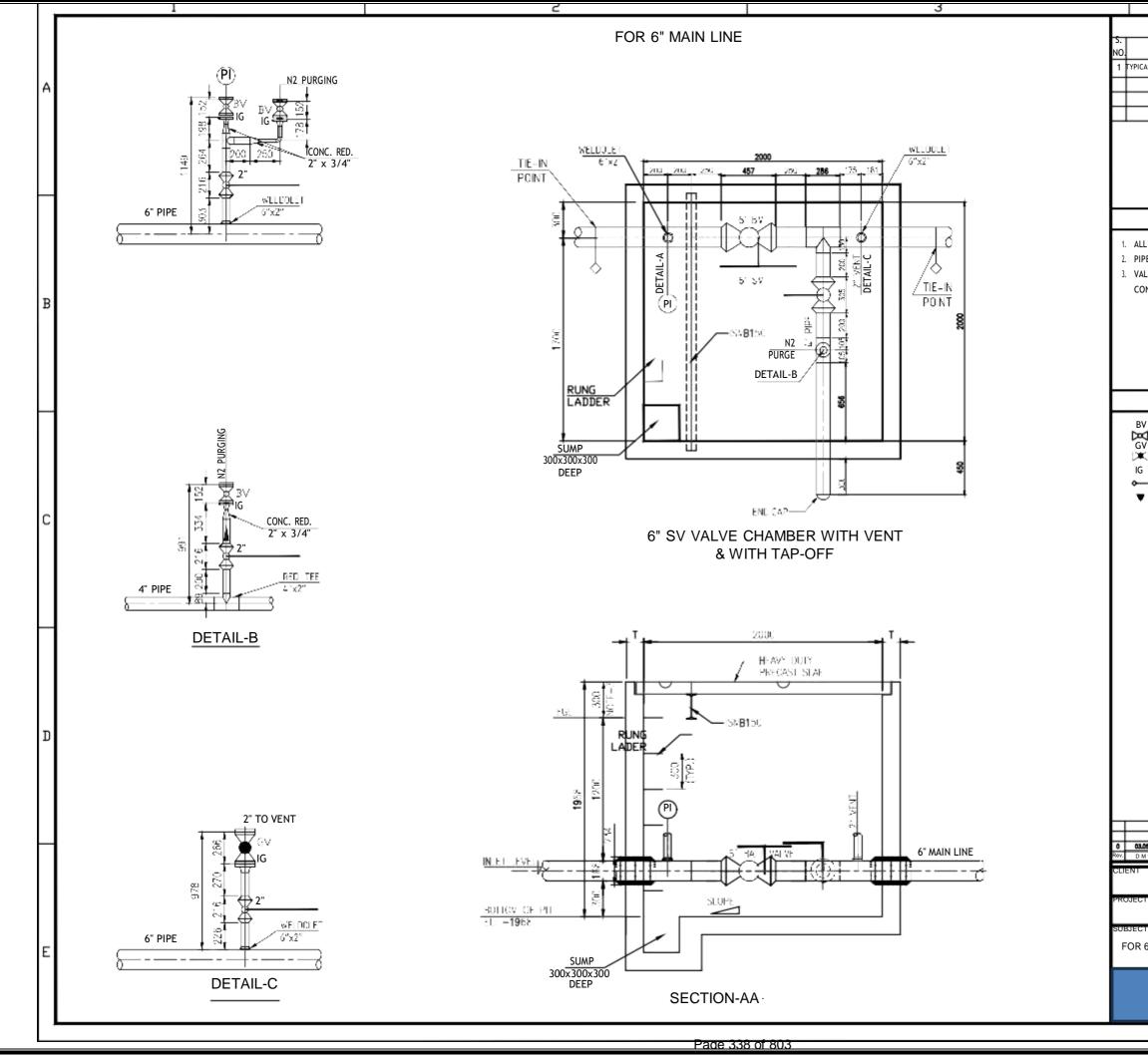
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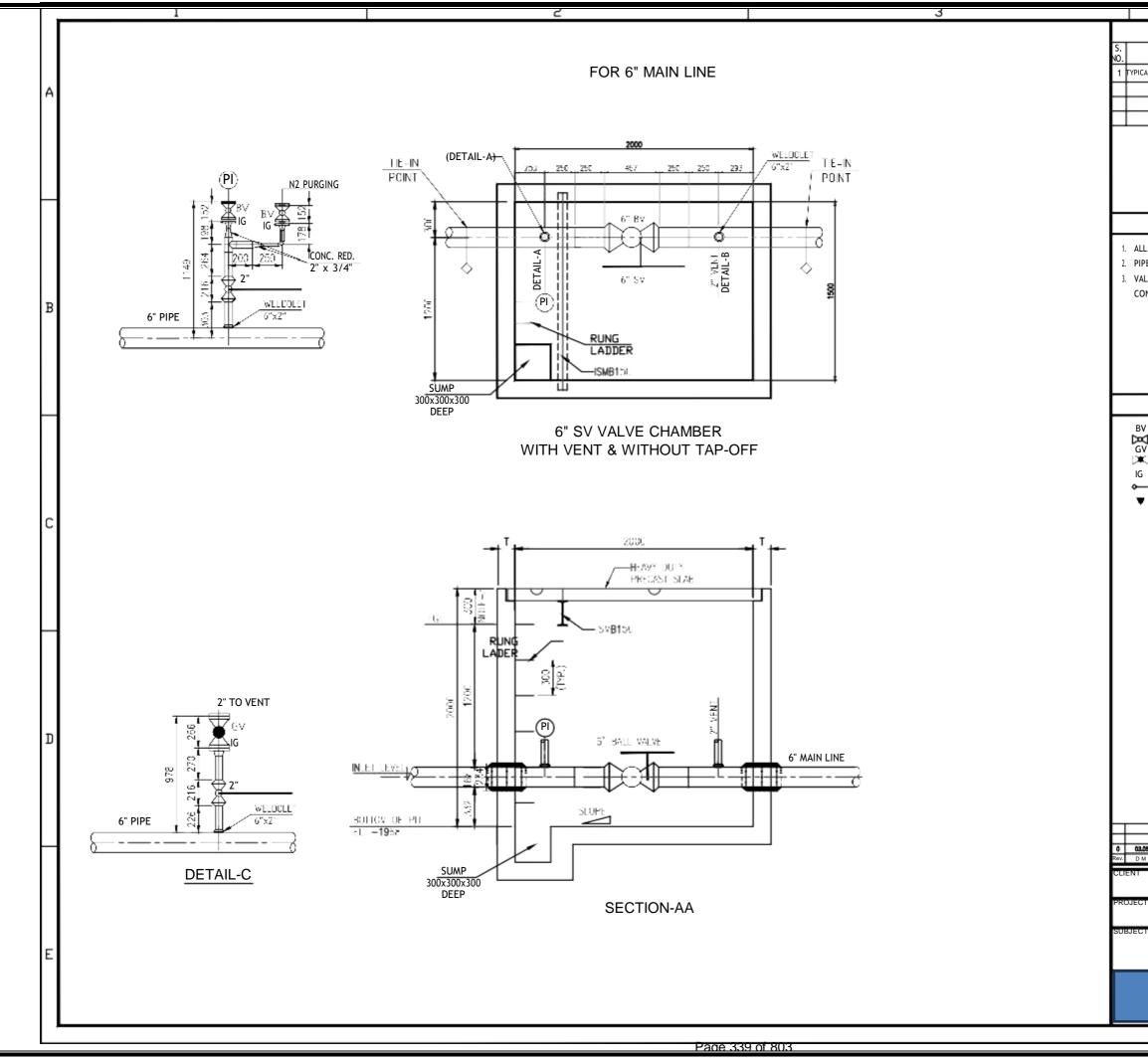
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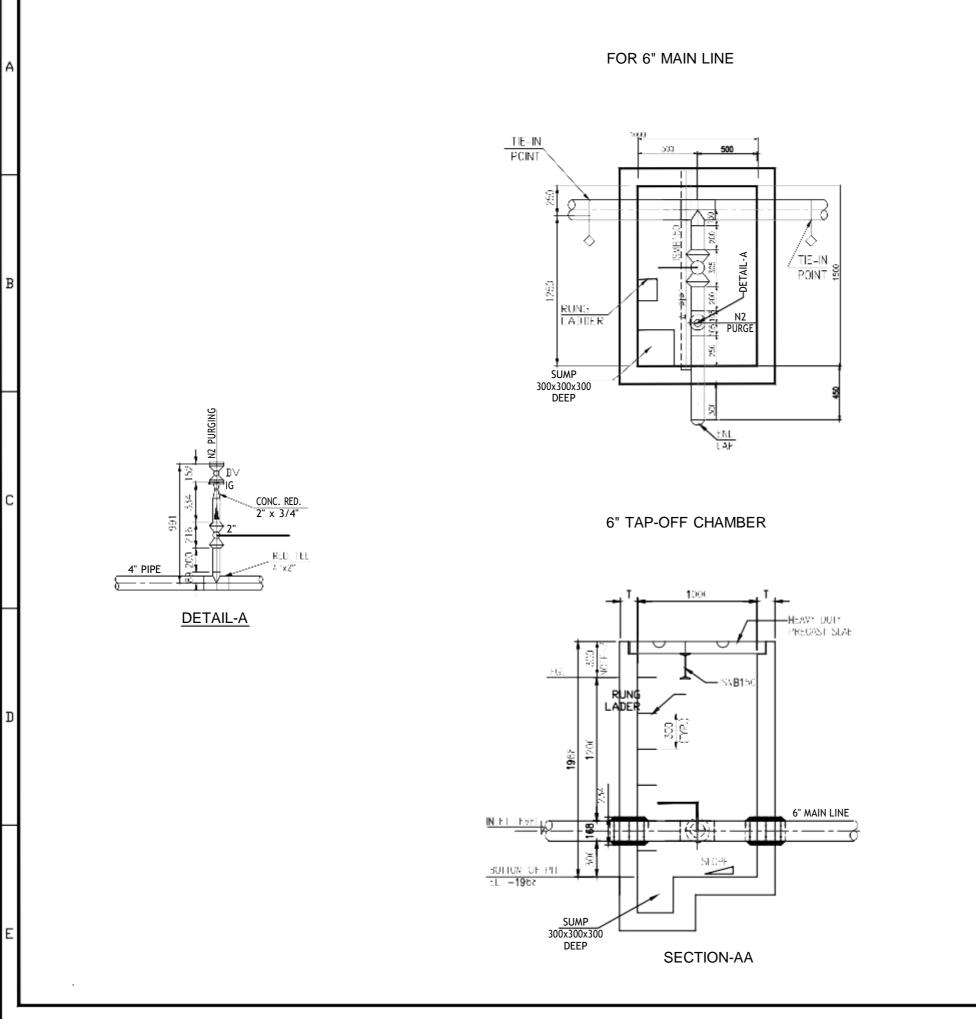
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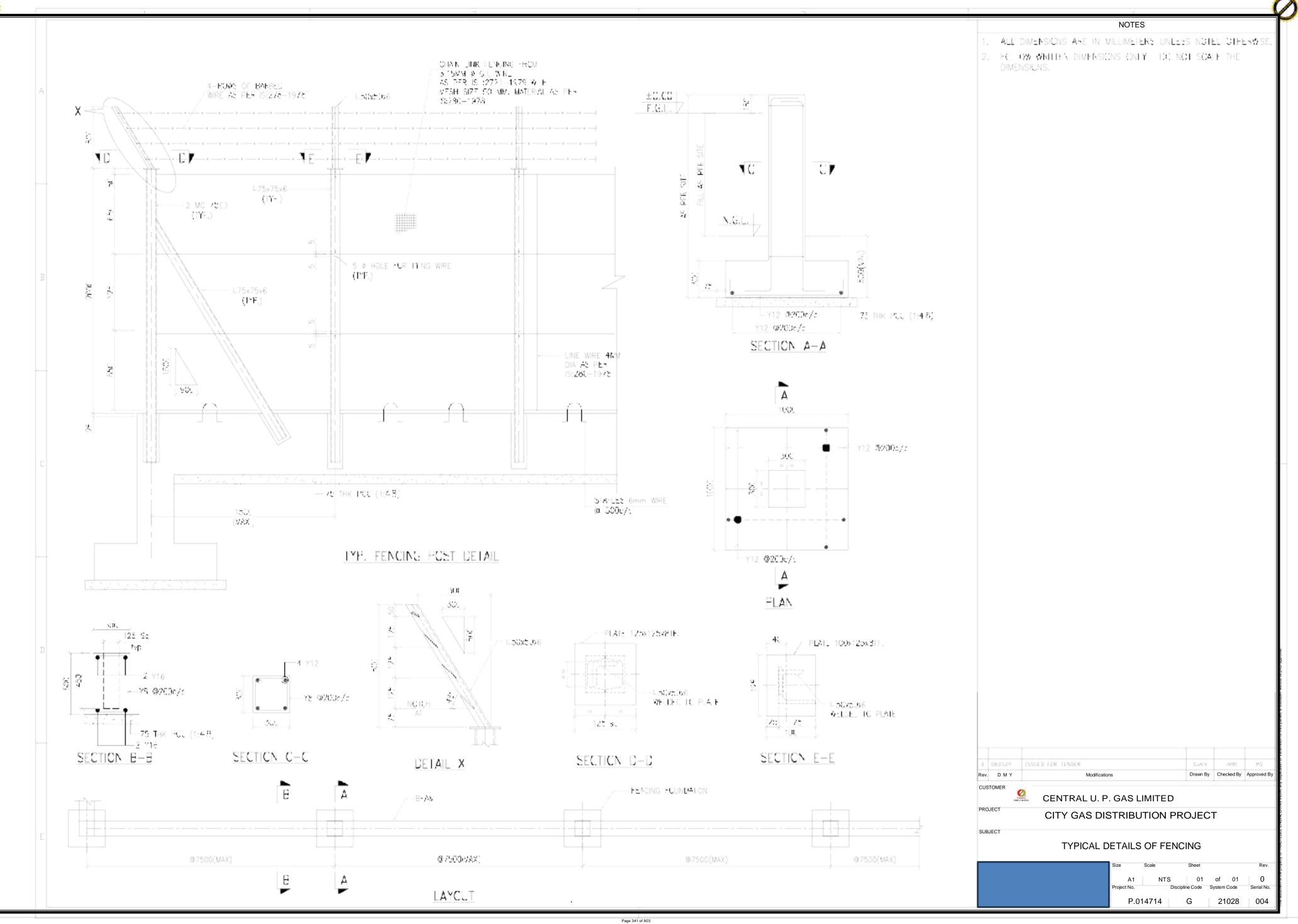
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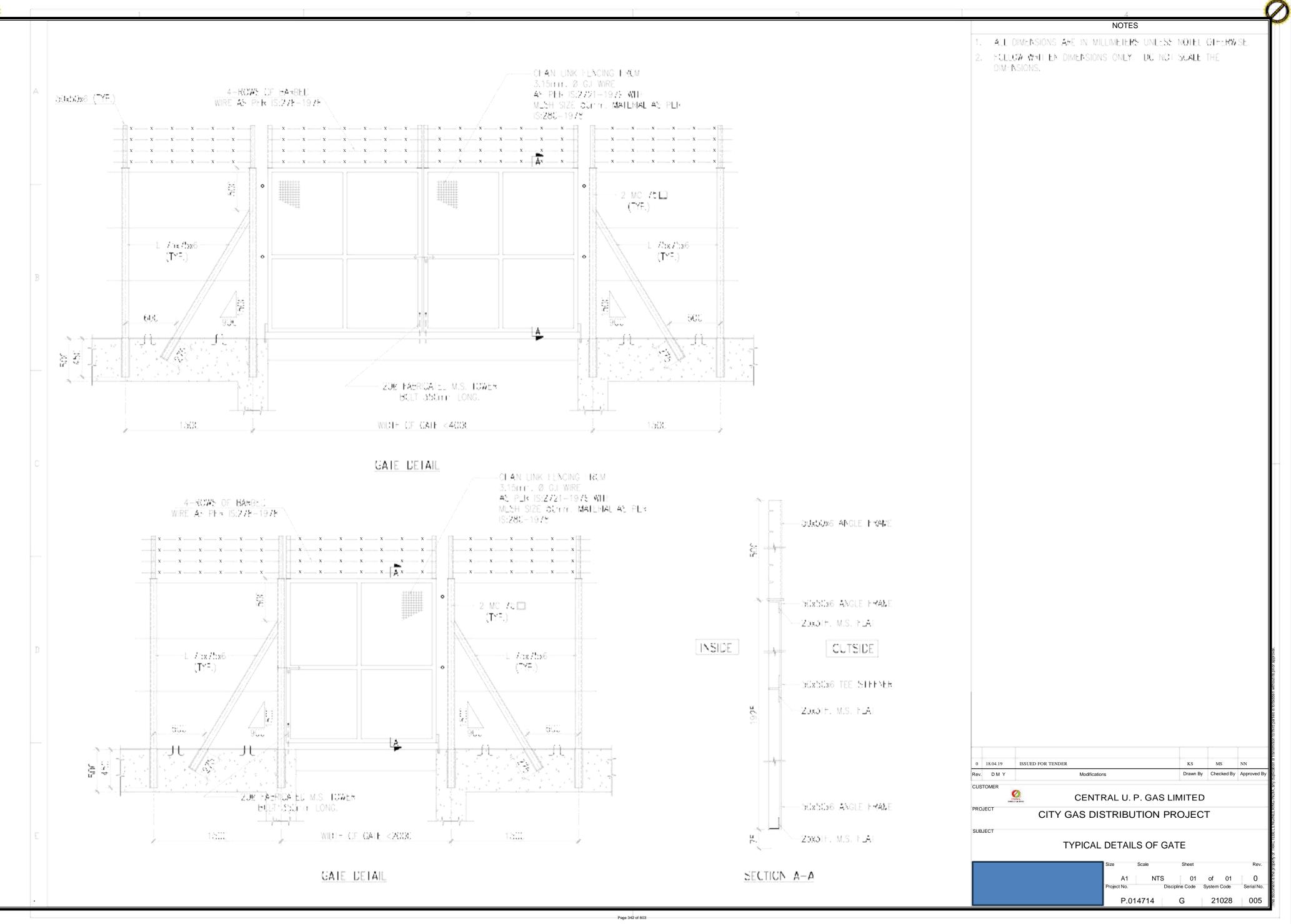
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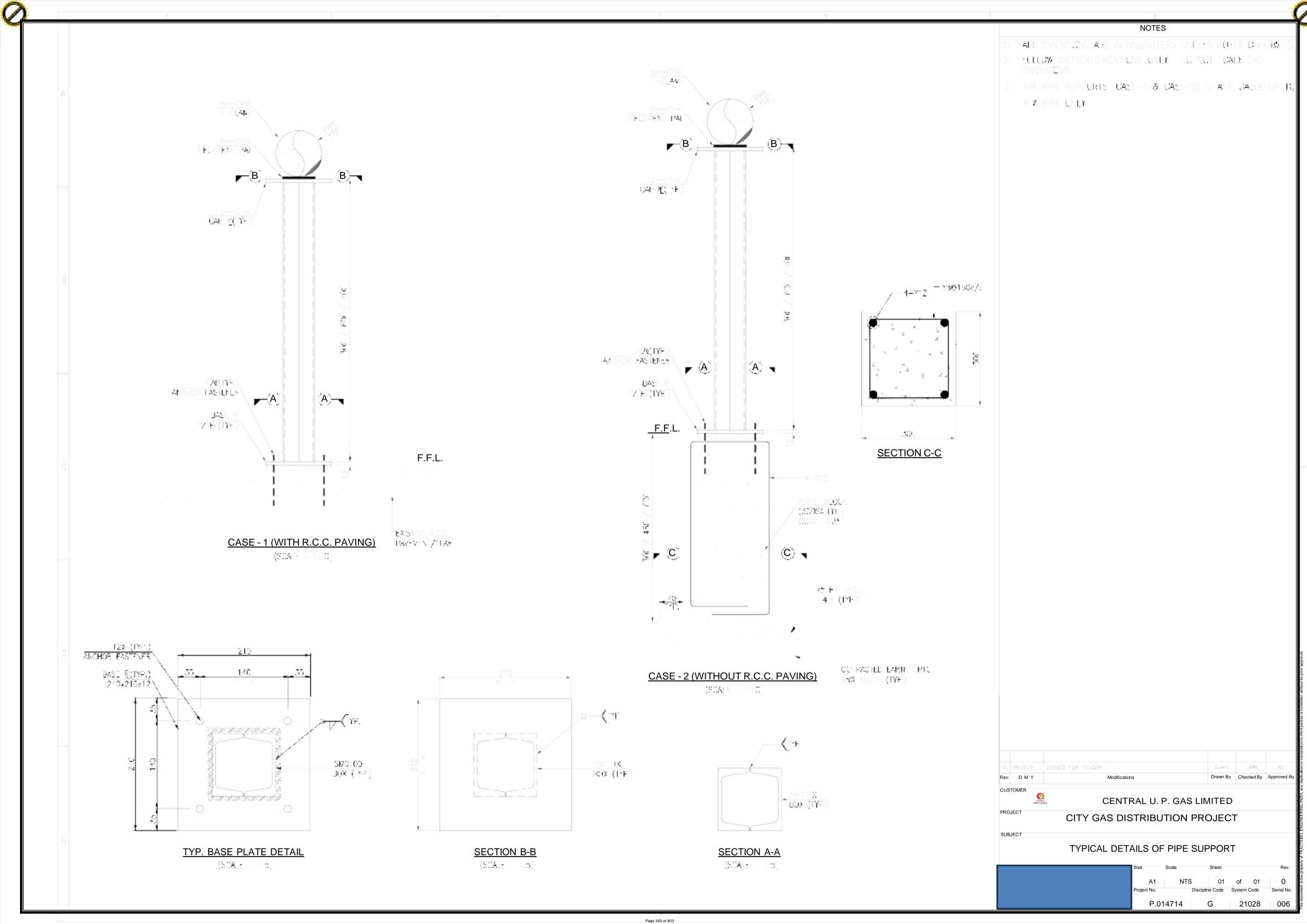
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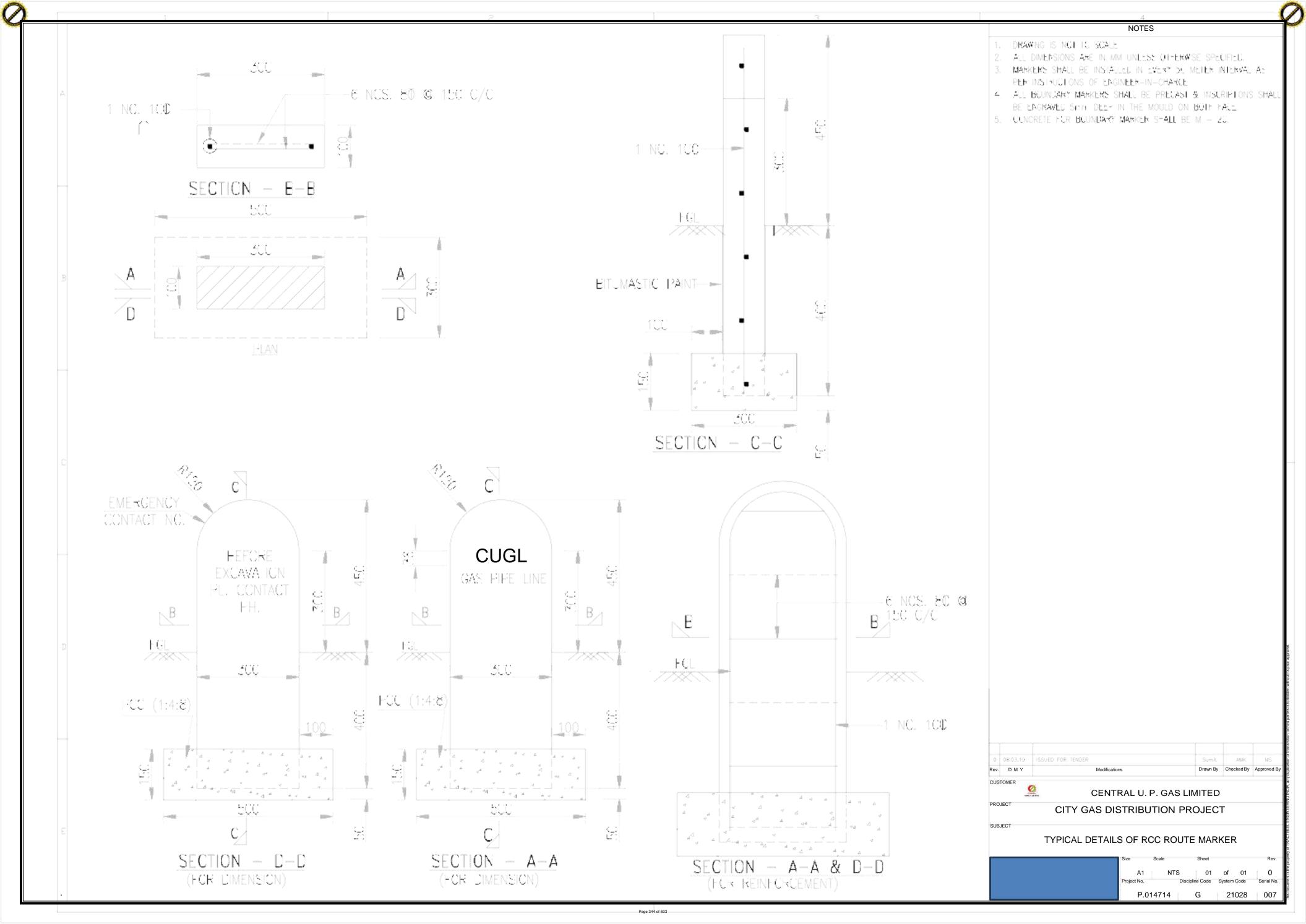
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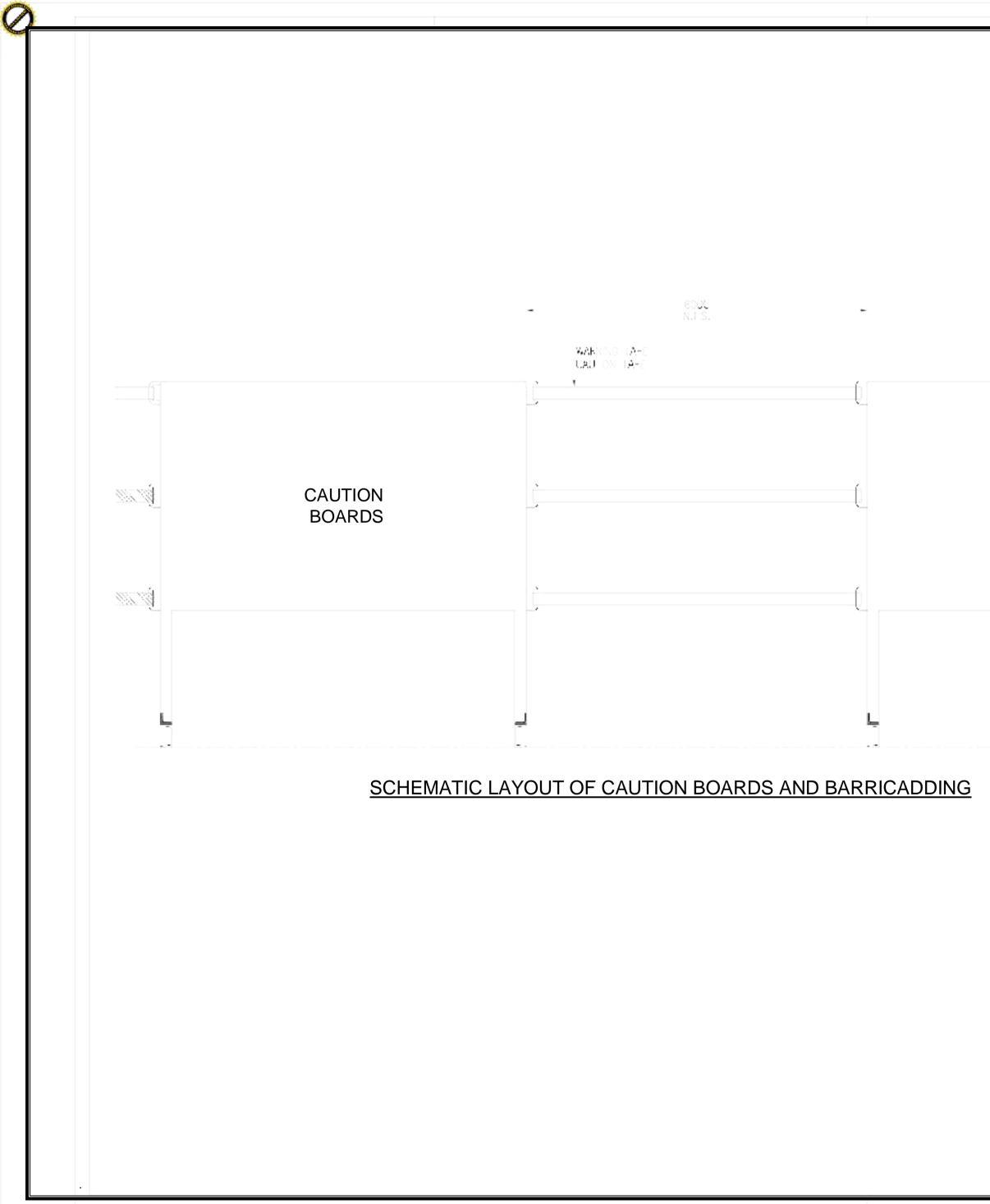


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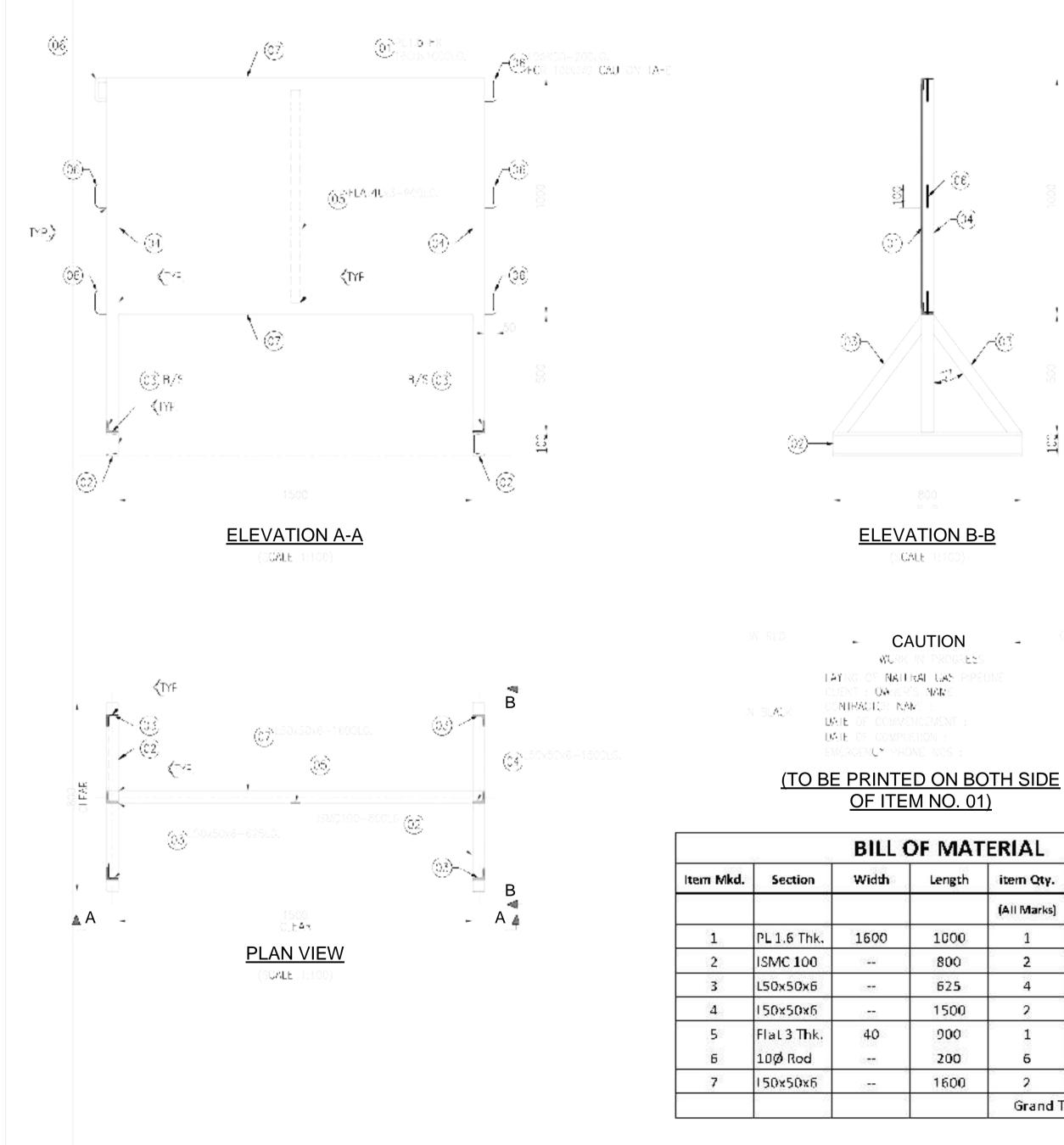








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## FULLOW WRITTEN DIMENSIONS CHEY. DC NOT SCALE, OLIENTS LOGO Rev. DMY Modifications Drawn By Checked By Approved By CUSTOMER CENTRAL U. P. GAS LIMITED PROJECT CITY GAS DISTRIBUTION PROJECT SUBJECT TYPICAL DETAIL OF CAUTION BOARD Size Scale Sheet Rev. A1 NTS 01 of 01 0 oject No. Discipline Code System Code Serial No. P.014714 G 21028 008

NOTES

ALL DIMENSIONS ARE IN MM. UMLESS CITERWISE SPECIFIED

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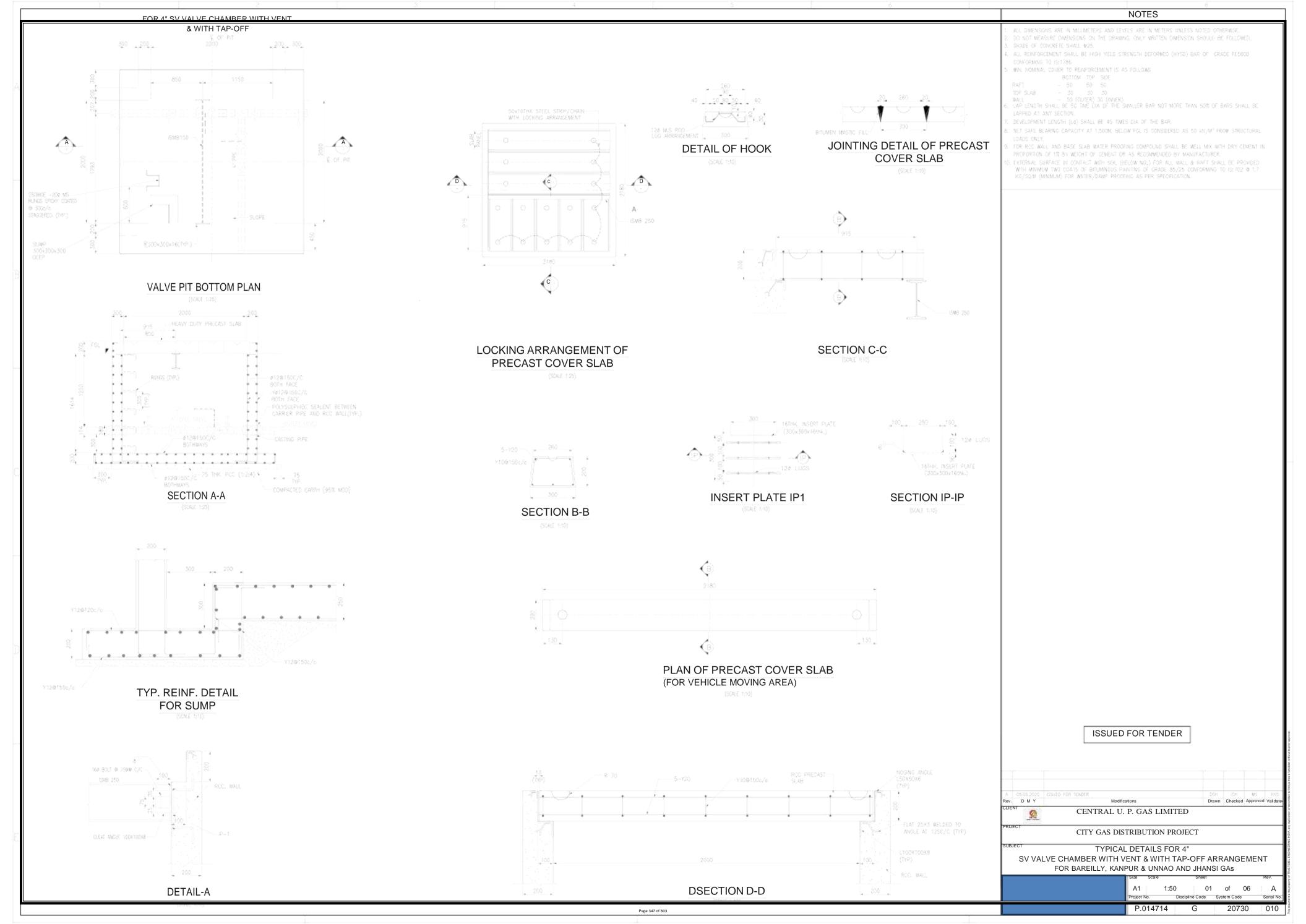
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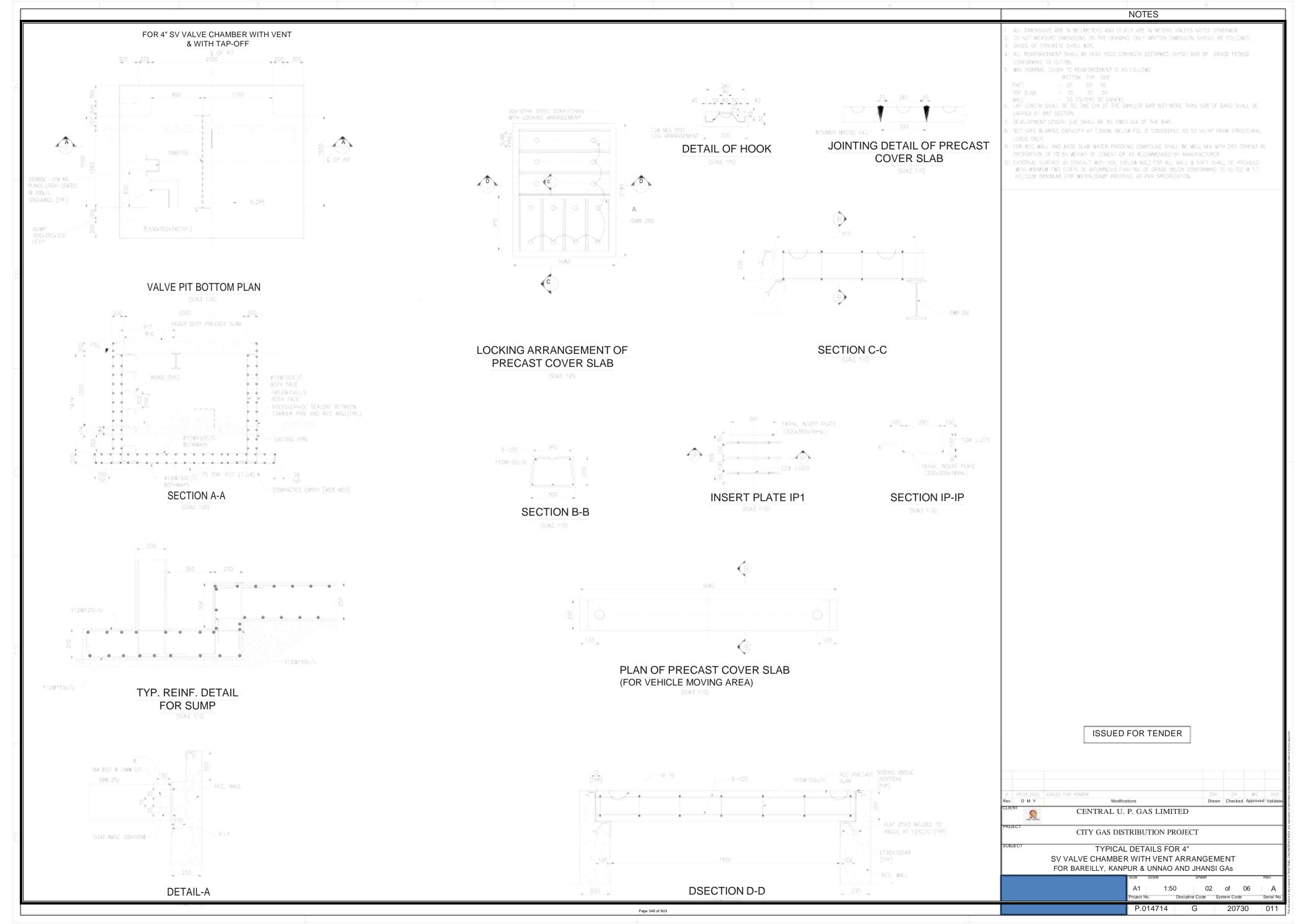
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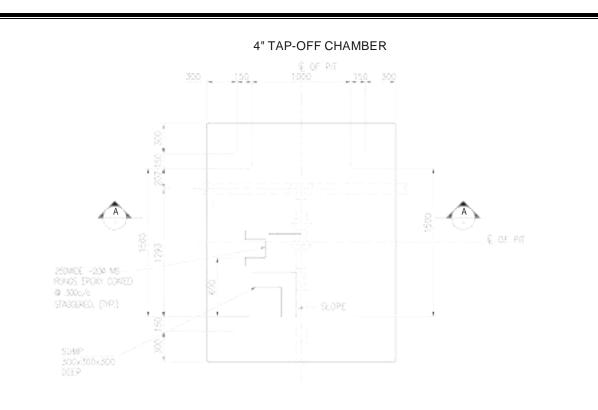
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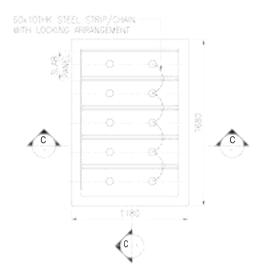
ngth	item Qty.	Weight	In Kgs
	(All Marks)	Kgs./M, M2	Total Weight
000	1	12.56	20.10
00	2	9.20	14.72
525	4	4.50	11.25
500	2	4.50	13.50
00	1	0.94	0.03
:00	6	0.62	0.74
600	2	4.50	14.40
	Grand T	otal (Kg)	74.74

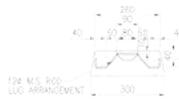






VALVE PIT BOTTOM PLAN





LOCKING ARRANGEMENT OF PRECAST COVER SLAB

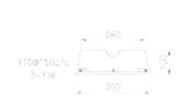


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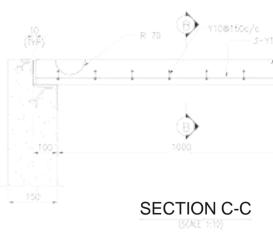
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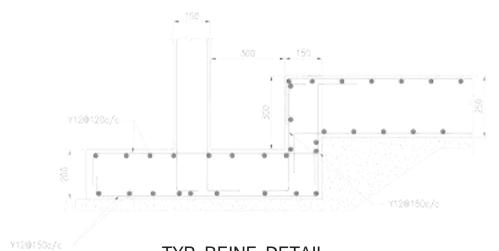
SECTION B-B



PLAN OF PRECAST COVER (FOR VEHICLE MOVING AREA)



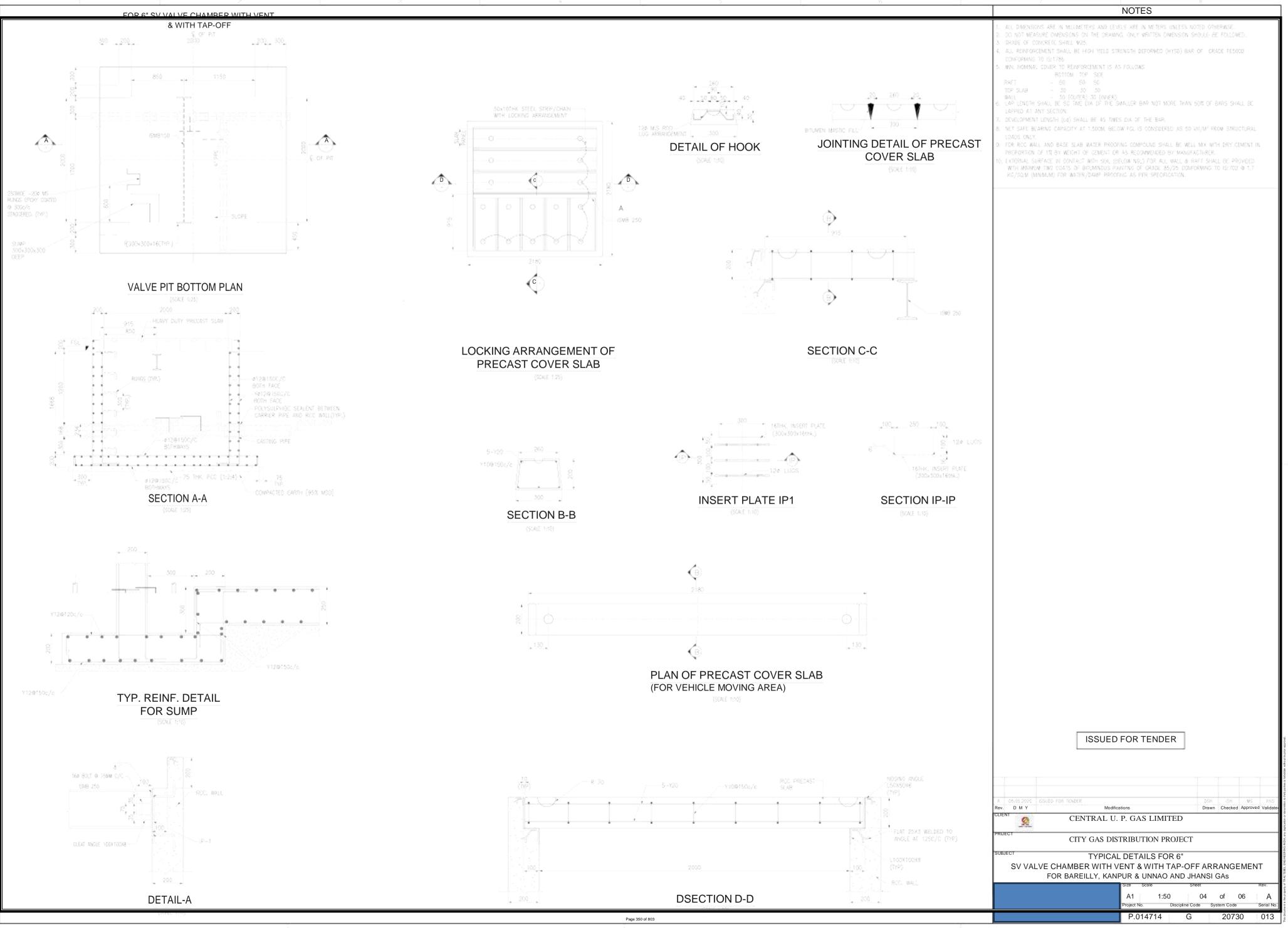
SECTION A-A

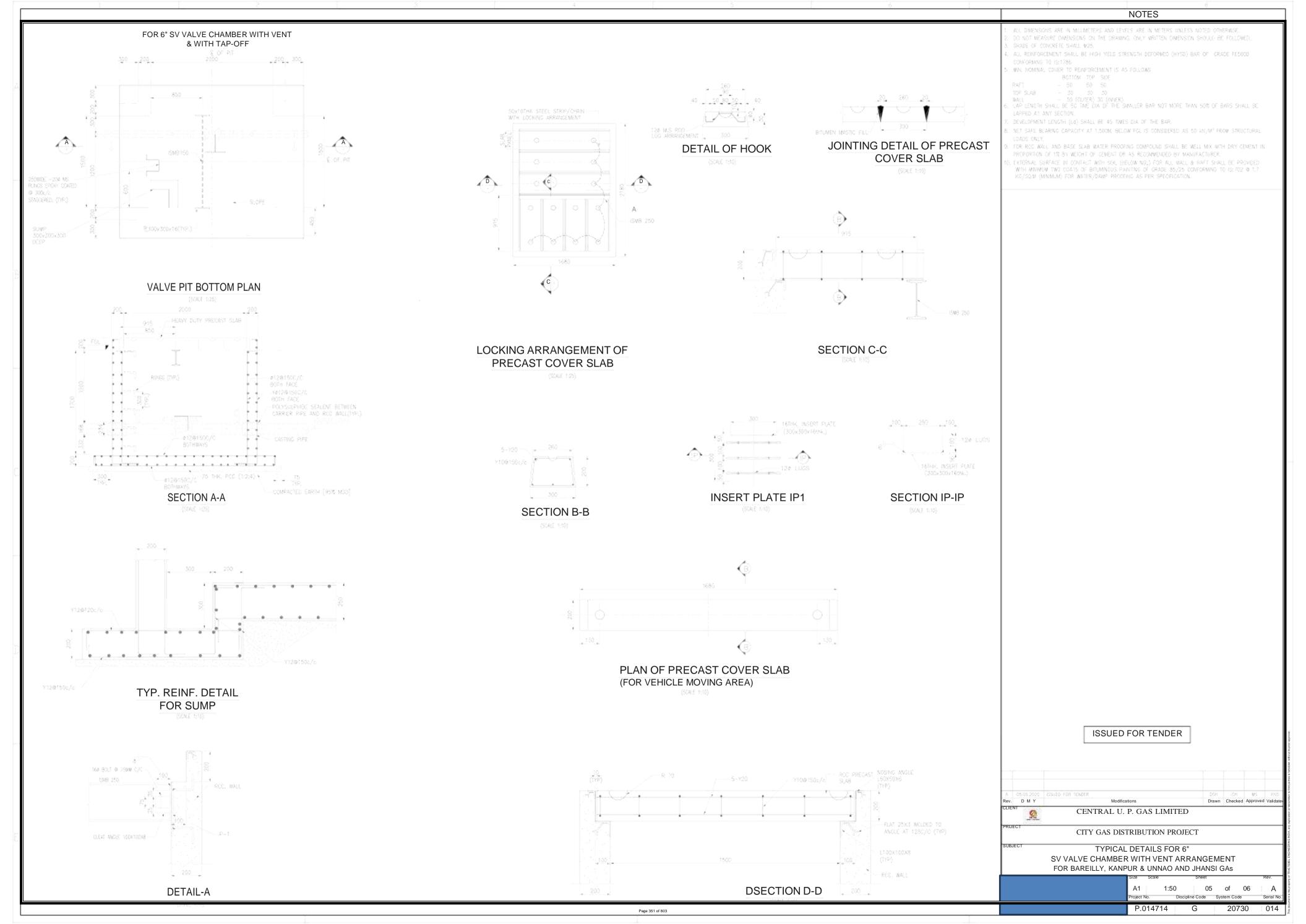


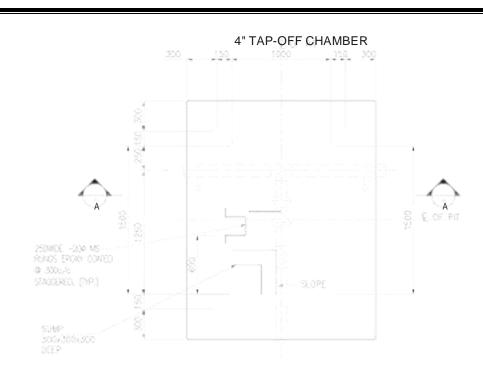
TYP. REINF. DETAIL FOR SUMP

Page 349 of 803

<u> </u>	NOTES
	<ol> <li>ALL DIMENSIONS ARE IN MULLIMETERS AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.</li> <li>DO NOT WEASURE DIMENSIONS ON THE DRAWING, ONLY WRITTEN DIMENSION SHOULD BE FOLLOWED.</li> <li>GRADE OF CONCRETE SHALL W25.</li> <li>ALL REINFORCEMENT SHALL BE HIGH YIELD STRENGTH DEFORMED (HYSD) BAR OF CRADE FESODD CONFORMING TO IS:1786</li> <li>MIN NOMINAL COVER TO REINFORCEMENT IS AS FOLLOWS BOTTOM TOP SIDE</li> <li>RAFT - SO SO SO WILL - SO (OUTER) 30 SO SO WILL - SO (OUTER) 31 (INVER)</li> <li>CARPED AT ANY SECTION.</li> <li>DEVELOPMENT LENGTH (LA) SHALL BE AS TWEE DIA OF THE BAR.</li> <li>NET SAFE BEARING CAPACITY AT 1.500M BELOW FOL IS CONSDERED AS SO IN/M<sup>4</sup> FROM STRUCTURAL LOADS DALY.</li> <li>FOR RCC WALL, AND BASE SLAB WATER PROOFING COMPOLIND SHALL BE WELL MIX WITH DRY CEMENT IN PROFORMING TO FIS TOP WITH WITHOUT OF CEMENT OF AS RECOMMENDED BY MANUFACTURER.</li> <li>(KTERNAL SUBTACE IN DONTACT WITH SOM, (BELOW NGL) FOR ALL WALL &amp; RAFT SHALL BE PROVED OF AN EXCLUSION OF AS RECOMMENDED BY MANUFACTURER.</li> <li>(KTERNAL SUBTACE IN DONTACT WITH SOM (BELOW NGL) FOR ALL WALL &amp; RAFT SHALL BE PROVED ON THE WALK AND BASE SLAB WATER PROOFING COMPOLIND SHALL BE WELL MIX WITH DRY CEMENT IN PROFORMING TO FIS BY WEIGHT OF CEMENT OF AS RECOMMENDED BY MANUFACTURER.</li> <li>(KTERNAL SUBTACE IN DONTACT WITH SOM (BELOW NGL) FOR ALL WALL &amp; RAFT SHALL BE PROVED ON THE MINIMUM TWO COMING OF BRITING OF GRADE 85/25 DONFORMING TO IS: 702 W 1.7 KG/SQLM (MINMUM) FOR WATER/DAMP PROOFING AS FIRE SPECIFICATION.</li> </ol>
OK	
SLAB	
SLAB	ISSUED FOR TENDER
RCC. WALL	A       OS 05 2000       COULD FOR FORMER       Description       Drawn       Checked       Approved       Validated         Rev.       D       M       Y       Modifications       Drawn       Checked       Approved       Validated         CLIENT       CENTRAL U. P. GAS LIMITED       PRUJECT       CITY GAS DISTRIBUTION PROJECT       SUBJECT       TYPICAL DETAILS FOR 4"         SUBJECT       TYPICAL DETAILS FOR 4"       TAP-OFF CHAMBER ARRANGEMENT       FOR BAREILLY, KANPUR & UNNAO AND JHANSI GAS         Size       Scale       Sheet       Rev.         A1       1:50       03       of       06       A         Project No.       Discipline Code       System Code       Serial No.         P.014714       G       20730       012







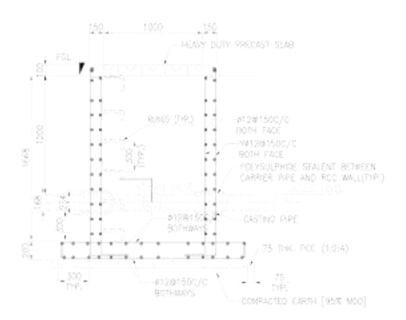
SQLIDIHK STEEL STRIP/CHAIN

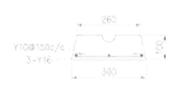


### VALVE PIT BOTTOM PLAN

### LOCKING ARRANGEMENT OF PRECAST COVER SLAB







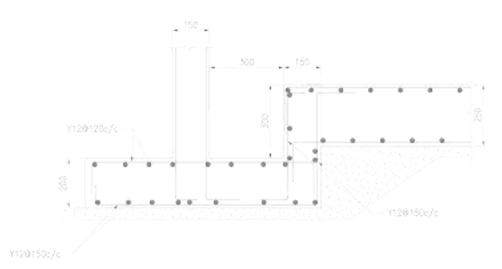
SECTION B-B



PLAN OF PR (FOR VEHICLE



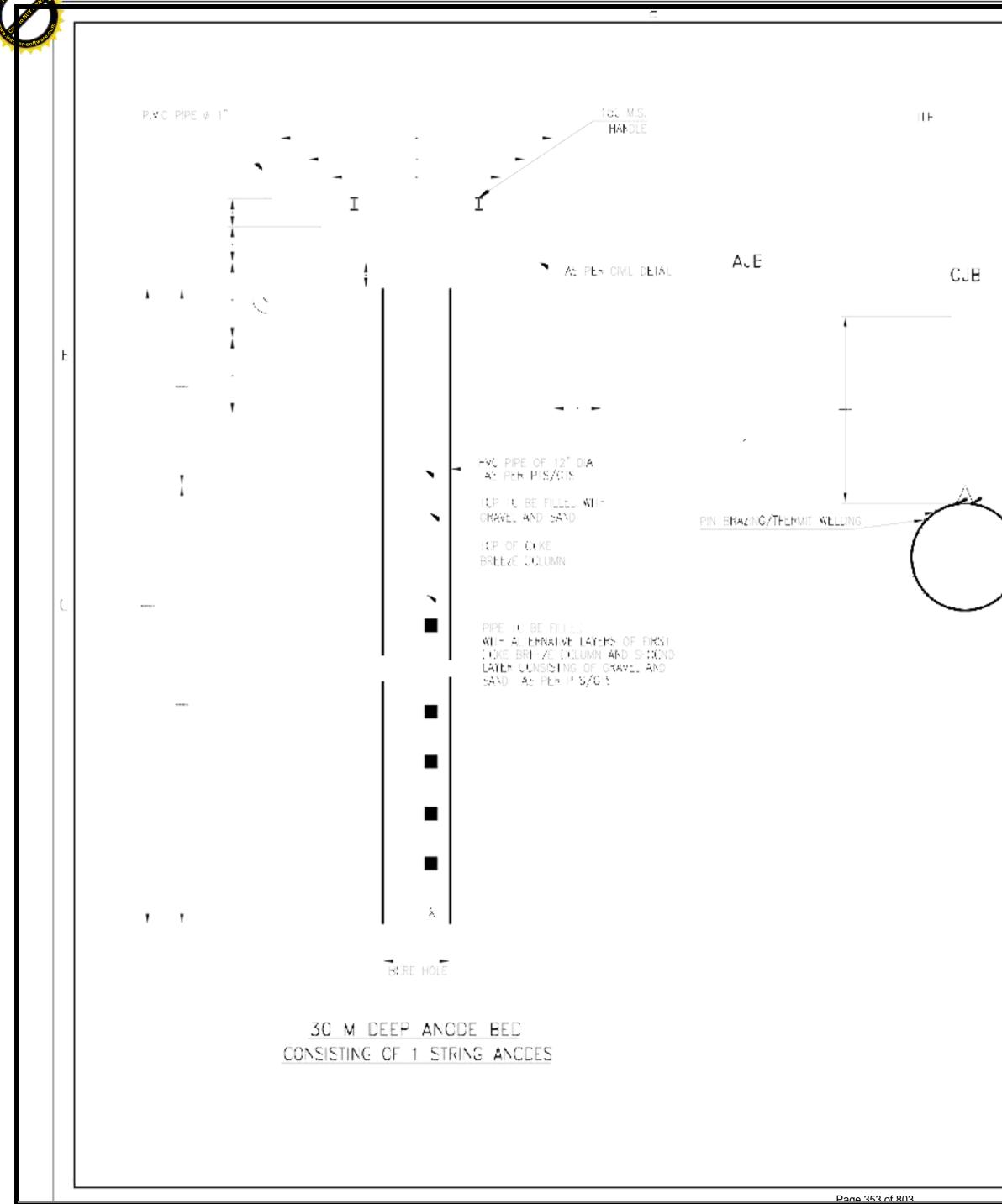
SECTION A-A



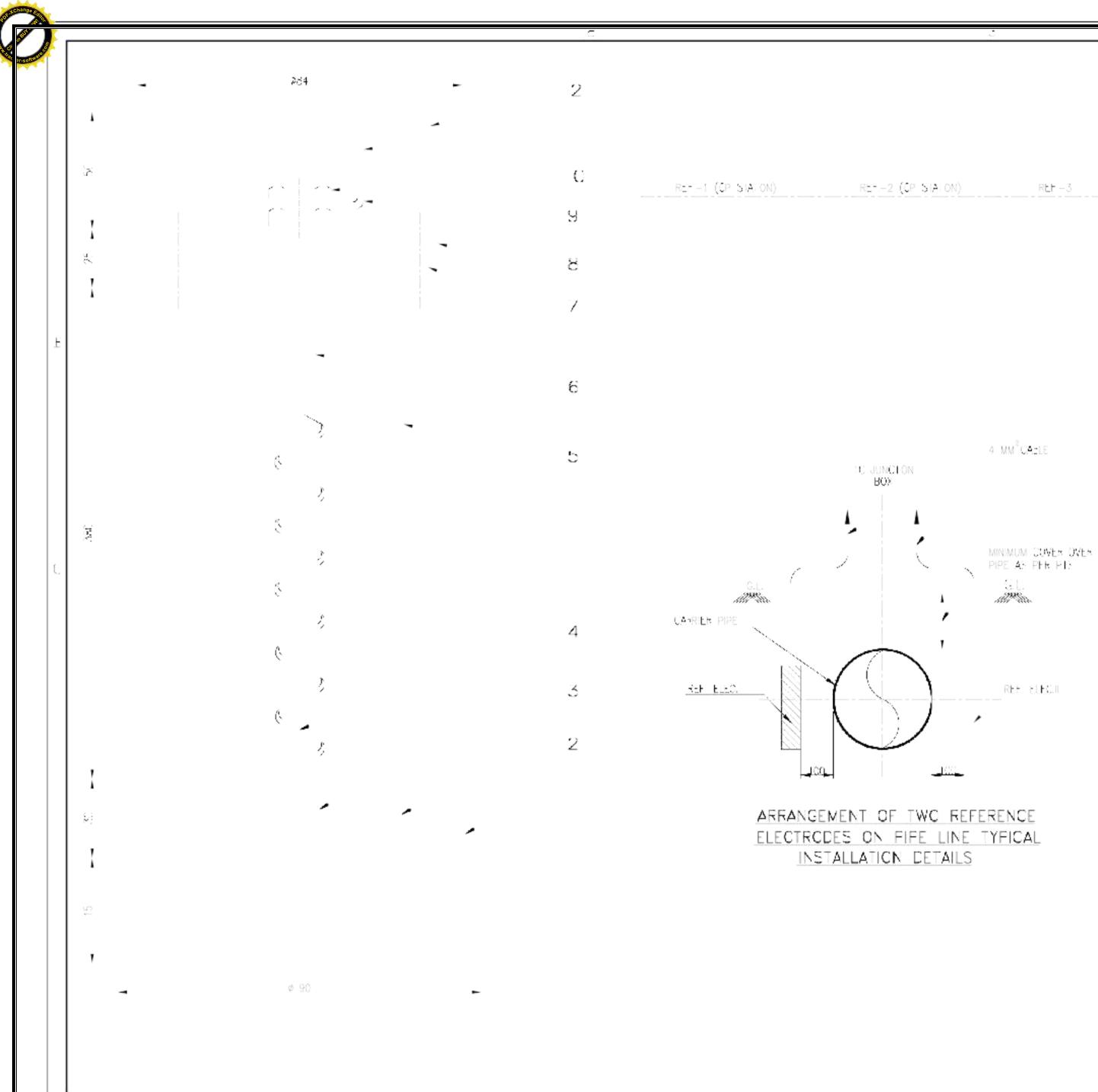
TYP. REINF. DETAIL FOR SUMP

Page 352 of 803

	NOTES
	<ol> <li>DO NOT MEASURE DIMENSIONS ON THE DRAMMAG, ONLY WRITTEN DIMENSION SHOULD BE FOLLOWEDL.</li> <li>GRADE OF CONCRETE SHALL W25.</li> <li>ALL REINFORCEMENT SHALL BE HIGH YIELD STRENGTH DEFORMED (HYSD) BAR OF CRADE FEDODD CONFORMING TO IS:1786</li> <li>MIN NOMINAL COVER TO REINFORCEMENT IS AS FOLLOWS BOTTOM: TOP: SIDE RAFT - 50 50 50 WMIL - 50 (OLDER) 30 (NWER)</li> <li>GRADE LENGTH SHALL BE GO THE DIALOF THE SWALLER BAR NOT MORE THAN 50% OF BARS SHALL BC LAPPED AT ANY SECTION.</li> <li>DEVELOPMENT LENGTH (L4) SHALL BE 45 TIMES DIA OF THE BAR.</li> <li>NET SAFE BEARING CAPACITY AT 1.500M BELOW FOL IS CONSDERED AS 50 MIN/M<sup>4</sup> FROM STRUCTURAL LOADS DWLY.</li> <li>FOR ROC WALL, AND BASE SLAB WATER PRODRING DOMPOLIND SHALL BE WELL MIX WITH DRY CEMENT IN PROPORTION OF 1% BY WEIGHT OF DEMENT OR AS RECOMMENDED BY MANUFACTURER.</li> <li>(KTERNAL, SUBFACE IN CONTACT WITH 50%, (BELOW RGL) FOR ALL WALL &amp; RAFT SHALL BE PROVIDED WITH MINIMUM TWO COATS OF BRUMINOUS PAINTING OF GRADE 85/25 DOMPORATIONS.</li> </ol>
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JOINTING DETAIL OF PRECAST COVER SLAB	
ECAST COVER SLAB MOVING AREA)	
70 	ISSUED FOR TENDER
	A         05.01.2020         625/2020
	Rev.       D       Modifications       Drawn       Checked Approved Validated         CLIENT       CENTRAL U. P. GAS LIMITED         PRIJECT       CITY GAS DISTRIBUTION PROJECT         SUBJECT       TYPICAL DETAILS FOR 6"         TAP-OFF CHAMBER ARRANGEMENT
	PUR & UNNAO AND JHANSI GAs         Size       Scale       Sheet       Rev.         A1       1:50       06       of       06       A         Project No.       Discipline Code       System Code       Serial No.         P.014714       G       20730       015



		<b>F</b>
(-)43V DC (+) INANSECRMER D.C. OUTPUT (-) RECEPTER UNE/CPPER GRADE	<ul> <li>NOTES</li> <li>ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.</li> <li>FOLLOW WHIT EN DIMENSIONS IONLY DO NOT SCALE.</li> <li>THESE DIMENSIONS ARE INDICATIVE ONLY. THESE DIMENSIONS MUST BE ALTERED TO SUIT THE SITE REQUIREMENT.</li> <li>THIS DRAWING FOR INFORMATION AND GUIDANCE ONLY. ACTUAL DRAWING AND COCUMENT TO BE PREMARED BY CONTRACTOR AND ALPROVED FROM OWPER/CONSULTANT BEFORE EXECUTION OF SAME.</li> <li>ANODE BED TYPE (DEEF WELL OR HORIZONTAL TYPE) SHALL BE FINAL SHO DURING DETAIL FROM FRING SUBJECT TO APPROVAL.</li> </ul>	
PIN BRAZING/TEERMIT WELLING		
		CK NG INDR, any dust care or transmissinile third parties is ferbidden vieneut its prior sporovel-
	AF OV: KK: KS -F SKF Rev_D_W_YModulicationsDrawn_Obecker_Approved_Validates SUBJECTIMPRESSED_CURRENT_CATHODIC PROTECTION_SCHEMATIC SizeScaleShort A3NTS01of01 Drawing NoRev GGNG-E-20712-3210	This document is the projective of CVACTORE, ENGINEED

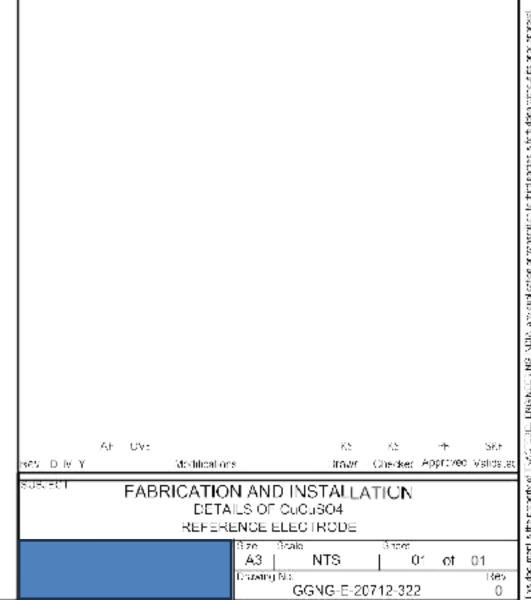


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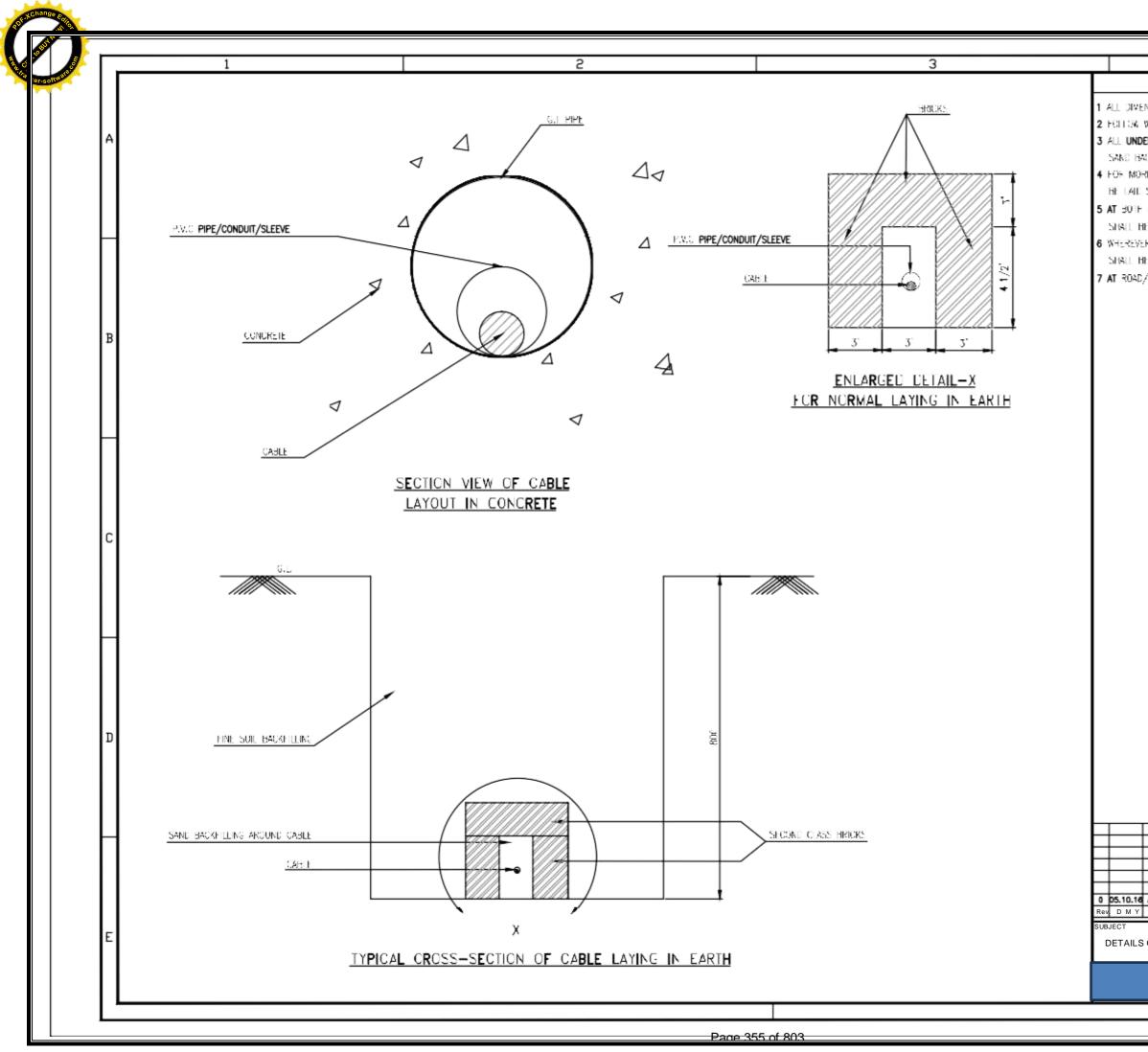
- 1 ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
- 2 FOLLOW WHITEN DIMENSIONS ONLY. DO NOT SCALE
- 3 THE PIPE ASSEMBLY SHALL BE HOT DIP GALVANISED AT EN FASRICATION.
- 4 BRICK WURK SHALL BE DONE AF 2★ COMPACENC THE SCIL.
- 5. INSTALLED DETAILS FOR PERMANENT OU-OUSCH REFERENCE CELLS AS MENTIONED IN DRAWING ARE FOR GUIDANCE ONLY.
- 6. HOWEVER, INS ALEATON PROCEDURE DESIGN DRAWING ETC SHALL BE DUNE AS PER A-PROVAL OF OWNER/CONSULTAN

## EILL OF MATERIAL

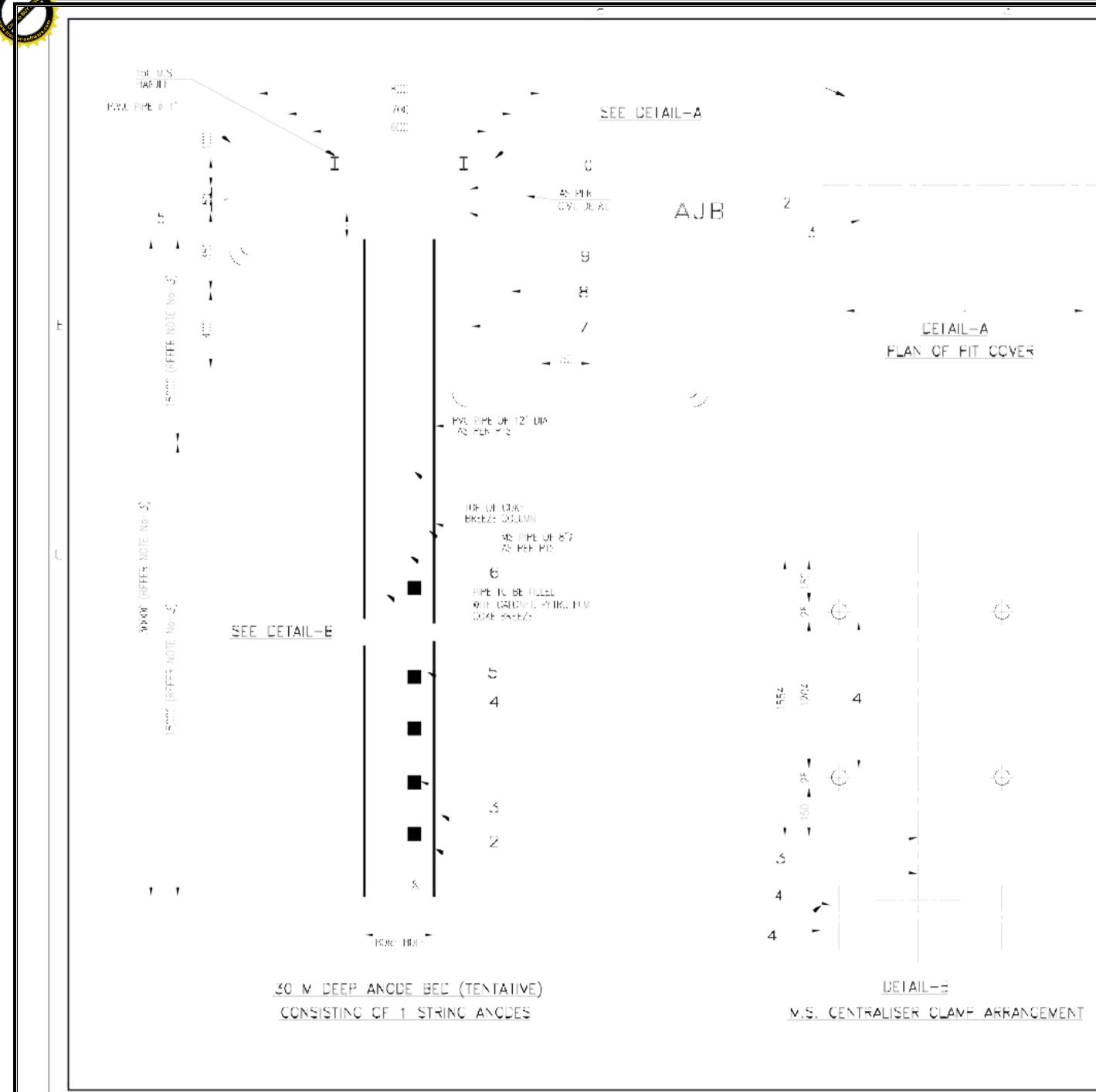
SL NO,	DESCRI-LON	QIY.
1.	P.V.C. PIPE 3 MM THICK	1 No.
2.	SAG WOCD PLUG	1 No.
3.	CuSC <sub>4</sub> CRYSTALS	AS RECD.
4,	ELECTROLYTIC CUPPER SPIRAL # 8 MM	1 No.
5.	CUSC <sub>4</sub> SALURA EC SCLUTION	AS RECO.
6.	BRAZED CUPPER JOINT	1 No.
7.	WATER FILLING BOLTED HOLES Ø 8 MM	2 Nos.
8.	HYLAN BUSH	1 No.
9.	CUPPER LUG	1 No.
10,	SCLIED CASLE CONNECTION	1 No.
11.	CONNECTION CALLS 10 MM <sup>2</sup>	AS RECD.
12.	EPCXY FOR SEALING	AS RECO.



Page 354 of 803



						ODEAN	Change	Saliko
							TO BUT D	
NOT	4					www.trac	ker-soft	areco
NOT Insions are in MN UNLES written dimensions on th <b>Erground</b> Cable Shall B OKHIL. RE THAN ONE CABLE IN TH SIDE BY SIDE IN SEPARAT ENDS OF CABLE <b>TERMINAT</b> ENDS OF CABLE <b>TERMINAT</b>	R: Others 1: Do ao 8: Laid in 1: Brick I 1:	)T SCALE N BRICK CABLE TI COVERIN OOF OF UIRED, T	: Coverif Rench, G. One me -Joints	CABLE S LIER (MI FOR ED	NIMUM)		ker-soft	
APPROVED Modifications FABRICATION A OF CABLE LAYING (TYPI	ICAL) FOI		TION ODIC P	PR Approved ROTEC		This document is the property of TRACTEBEL ENSINEERING INDIA, any duplication or transmition to third parties is forbidden without its prior approval.		
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- 1. ALL DIMENSIONS ARE IN MM UNLESS OTFERWISE SPECIFIED.
- 2. ECLLOW WHITEEN DIMENSIONS ONLY. DC NOT SCALE
- 3. THESE DIMENSIONS ARE INDICATIVE ONLY THESE DIMENSIONS MUST ALTERED TO SUIT THE SITE REQUIREMENT.
- 4. THE MMO ANODE STRING SHALL BE DUAL FEED IY-E.
- 5. ALL WORK SHALL BE CARRIED OUT BY EXPERIENCED AND QUALFIED PERSONNEL WITH A-PROVED DESIGN AND DRAWING FROM OWNER/ CONSULTANT.



SL NO.	DESCRIPTION	QFY.
1.	PVC CASING PIPE OF 12" DIA	15 Mtrs.
2.	CCKE BREEZE	AS RECD.
3.	ANODE SIZE IS 2.5 MM X 1000 MM, OUT-JI OF 8 Amp.	t siring M <b>r</b> o
∠,	M.S. CENTRALSER	10 Nos.
5.	P.V.C. PERFORATED VENT PIPE 1" @	AS RECD.
6.	CASLE LEADS	1 No.
7.	P.VC PIPE 1000 MM Ø	AS RECD.
8.	CONCRETE WORK FOR TOP OF ANODE BED	AS RECD.
9.	CABLE THE WEIF 1/4' NYLON ROPE	AS RECD.
10.	GJ. PIPE 2" # FCR SUPPORTING CARLE	1 No.
11.	M.S. PLACE ICP COVER	1 No.
12.	ANODE LEAD JUNCTION BOX	1 No.
13.	M.S. LIFTING HANDLES	2 Nds.
14.	M.S. NUL & ECLI	S6 Nos.
15.	P.VC PIPE 4° Ø	AS RECD.

AF OV: Rev DIV Y Modulications

SUBJECT

BKS KS 🕂 Drawr Checker Approved Validates

FABRICATION AND INSTALLATION DETAILS OF DEEP ANODE GROUND BED

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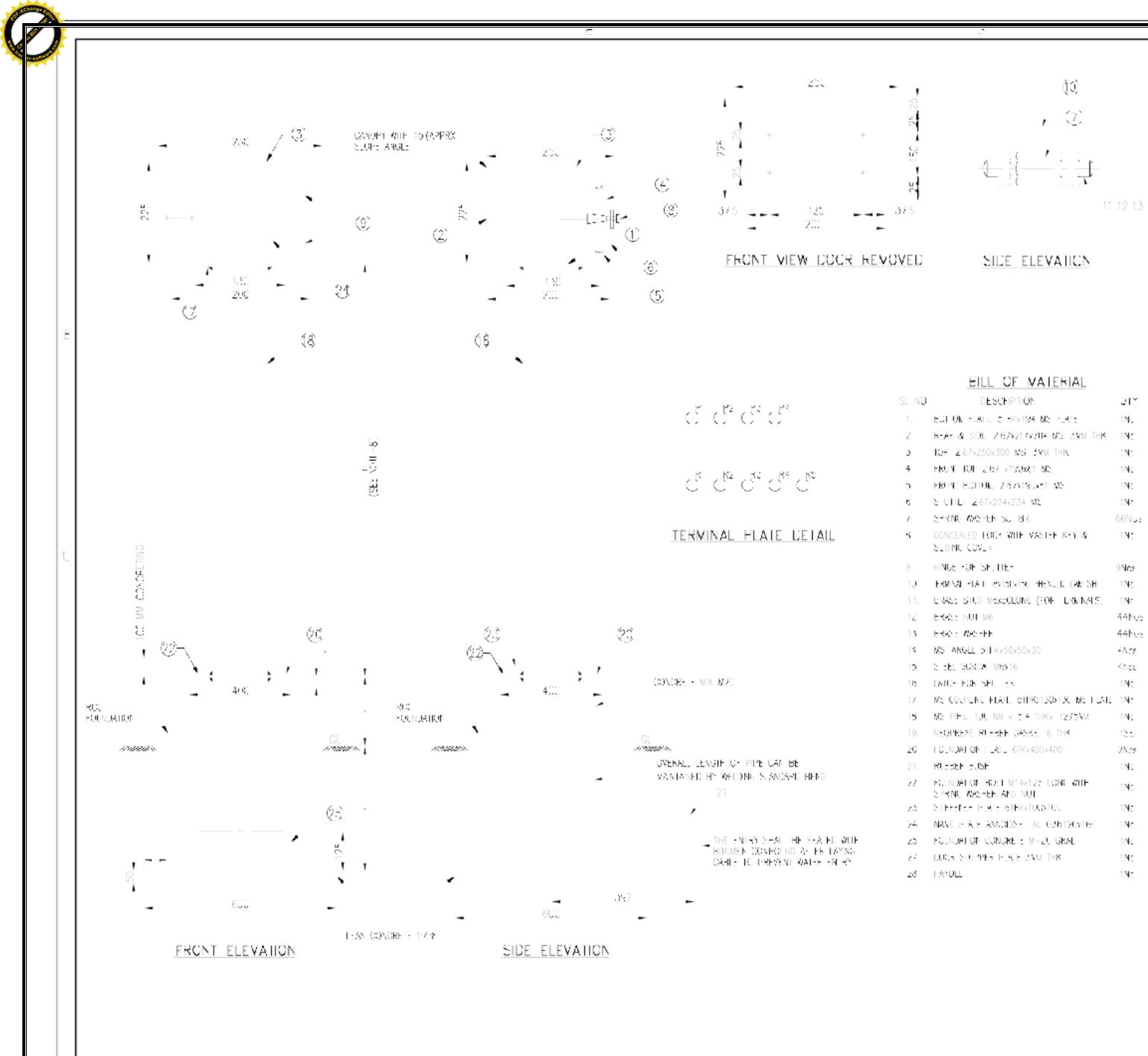
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SE NO.	DESCRIPTION	QΓ
1.	EGITON FLATE, 5 FRX194 MS FLATE	1Nc
2	REAR & SIDE, 2.67x217x704 MS, 5VM THK	1Ne
5	IOF, 2.67x250x300 MS 3VM THK	iNe
4	FRONT FOR 2.67 x130x81 MS	1Nc
5.	FRONT ECHOR, 2.6751SCxs1_MS	1N¢
6	SHUTTER 2:67x234x234 MS	1No
/	SHKING WASHEN SC. BIG	66N
5	CONCERTED LOCK WITH MASTER KEY & Seding Cover	1Nc
9.	HINGE FOR SEUTER	9Nos
10.	ERMINAL PLATE BYISEVISC PHENCLE LAW SHE	1No
11.	E GASE STUD MEXECTIONS (FOR TERMINALS)	1Nc
12.	ERASS NUL M6	44N
13,	ERAS: WASHER	44N
14.	MS. ANGLE 51FKx50x50x30	4No:
15.	STEEL SCREW, M6x16	4Np
16.	LATCH FOR SEC 125	iNc
17.	MS COUPLING FLATE, STHREE30813C MS FLATE	1Nc
15.	MS PIFE 100 NB x 5.4 THKx 1275MM	1Nc
19.	NEOPRENE RUEBER GASKEL 6 THK	155
20.	FOUNDATION FLATE 67Kx400x400	2No
21.	RUEBEN BUSH	1Nc
22.	ECONDATION BOLL MEANIZE LONG WITH SPRING WASHER AND NUT	1No
25.	STEFERER FLATE 6TEROTUG/100	1Nc
<u>94</u> ,	NAVE PLACE ANNOLISEC ALL 0.951203160	1Nc
20	FOUNDATION CONCRETE M-20 GRAD	1NC
27.	COCH STOPPER FLAGE SVM THR	1N¢

# NOTES

- 1 ALL DIMENSIONS ARE IN MM UNLESS OTFERWISE SPECIFIED.
- 2 FOLLOW WRITEN DIMENSIONS ONLY. DO NOT SCALE
- 3 THE SHULLER SHALL BE RENGED TYPE WITH CONCEALED LOCK & SHALL HAVE DOOR GASKET TO MAKE THE TEST STATION WEATHER PROCE(P:55).
- 4 THE INNER & CUTER SURFACE OF THE LEST STATION SHALL BE EPOXY. TYAN ED TWO COAT OF ZINC ROF E FOXY PRIMER AND THREE COAT OF BALLES SHIP GRAY COLOURED EPOXY PANT ACHEVING TOTAL PANT THORNESS NOT LESS THAN 250 MICRON
- 5. THE NAVE PLATE SHALL BE OF ANODISED ALUMINIUM WITH SLACK BACKGROUND & WHITE LETTERS & SHALL BE FIXED TO THE INNER SIDE. OF SHULLER
- 6 LEST STALON SHALL BE ERECTED WITH THEIR SHULTERS PARALLE. TO THE LINE OF AXIS AND FACING THE PIPE LINE. THE DIMENSIONS OF THE TEST STATION WILL WHEN DEPENDING ON THE TYPE OF THE LEST STALON
- 7. THE CHANAGE OF TEST STATION SHALL BE WINTLEN WITH BLACK PAINT. ON THE OUTER SIDE OF THE FRONT SHULLER.
- 8 HEIGHT OF THE TEST STA ON SHOWN ABOVE GROUND LEVEL IS MINIMUM - UNIM, THE ACTUAL HEIGHT SHALL BE DECIDED BASED ON LOCAL FLOOD. LEVELS TO BE ASCERIANED.
- 9 AFTER INSTALLATION OF FOUNDA OR BOLT,4' (100MM) CONCREING TO BE DONE ABOVE THE PLACES AS AN EXTENSION OF PCC(V=15) FOUNDATION. TOTAL DEFTE OF THE FOUNDATION SHALL BE SOC MM AND BOC MM ABOVE THE GRADED LEVEL
- 10 BEFORE FABRICATION, DRAWINGS ARE REQUIRED TO BE APPROVED BY OWNER.
- 11 DIMENSIONS, SPECIFICA CONSIAND COAMTER MENTION HEREIN ARE INDICA IVE AND FOR GUIDANCE CALY .
- 12 DOOR SHALL BE HINGED TYPE WITH CONCEALED LOOK AND SHALL HAVE DOOR GASKET TO HAVE TEST STATION WEA FER PROOF AND FLAVE PROOF. (IF REQUIRED).
- 13 The name plots of test stations shall in minimum carry tolowing information (c) lest station number
- (b) Chainage in km
- $|\langle \phi \rangle|$  lost station connection scheme bype
- (c) Distance from glogine in meters
- (e) Direction of product flow

AF OV:

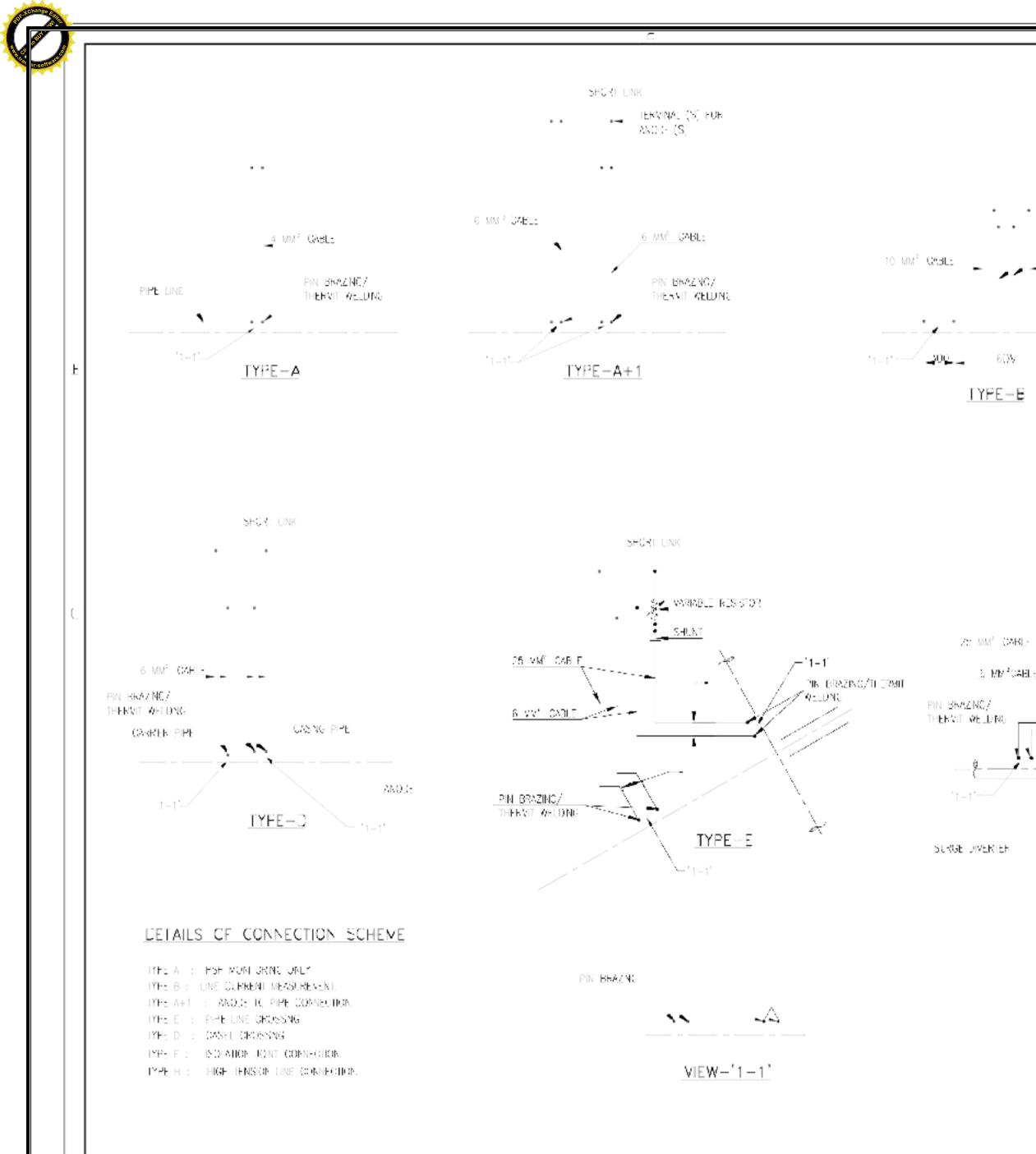
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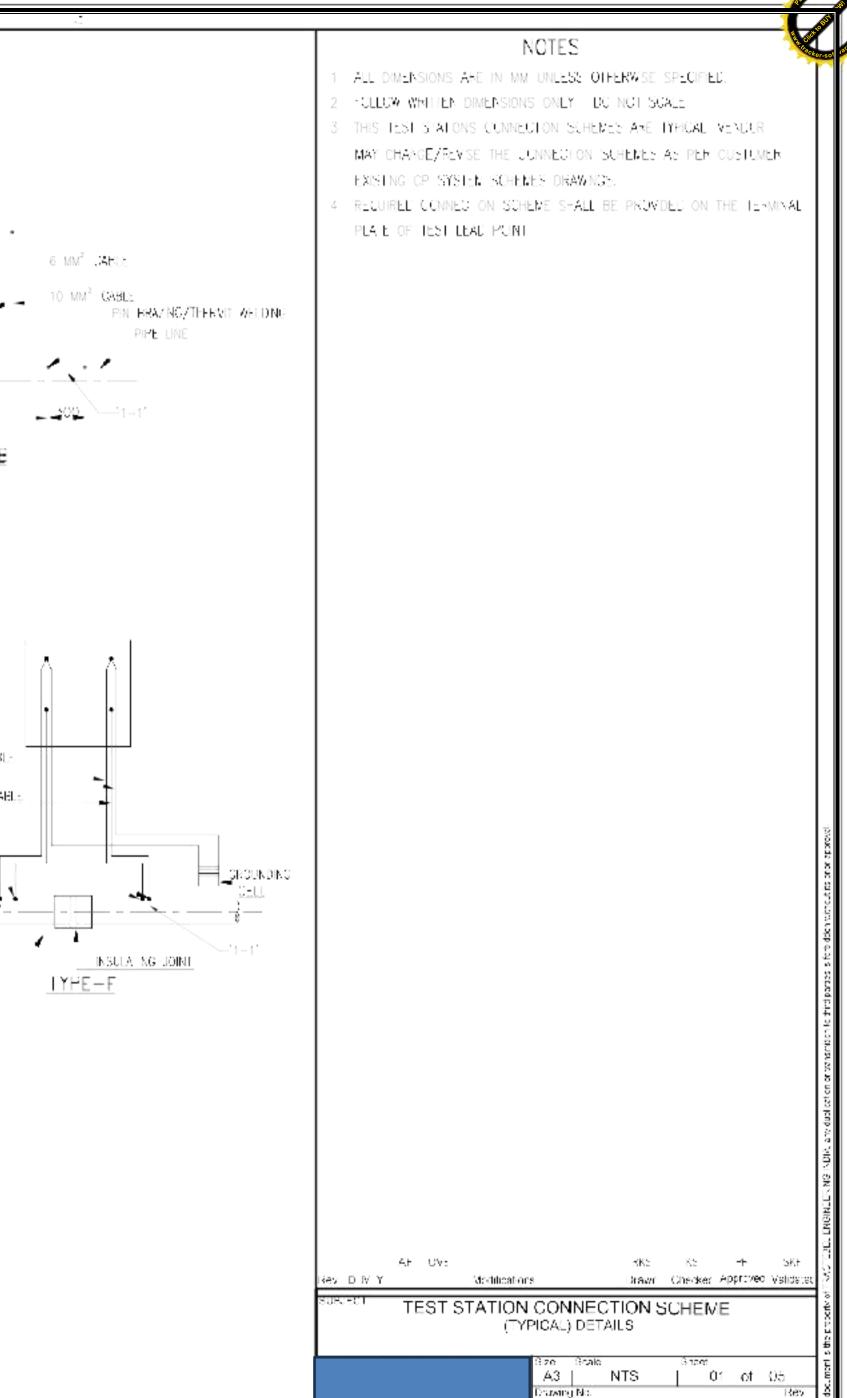
TEST LEAD POINTS & JUNCTION BOX WITH FOUNDATION DETAILS

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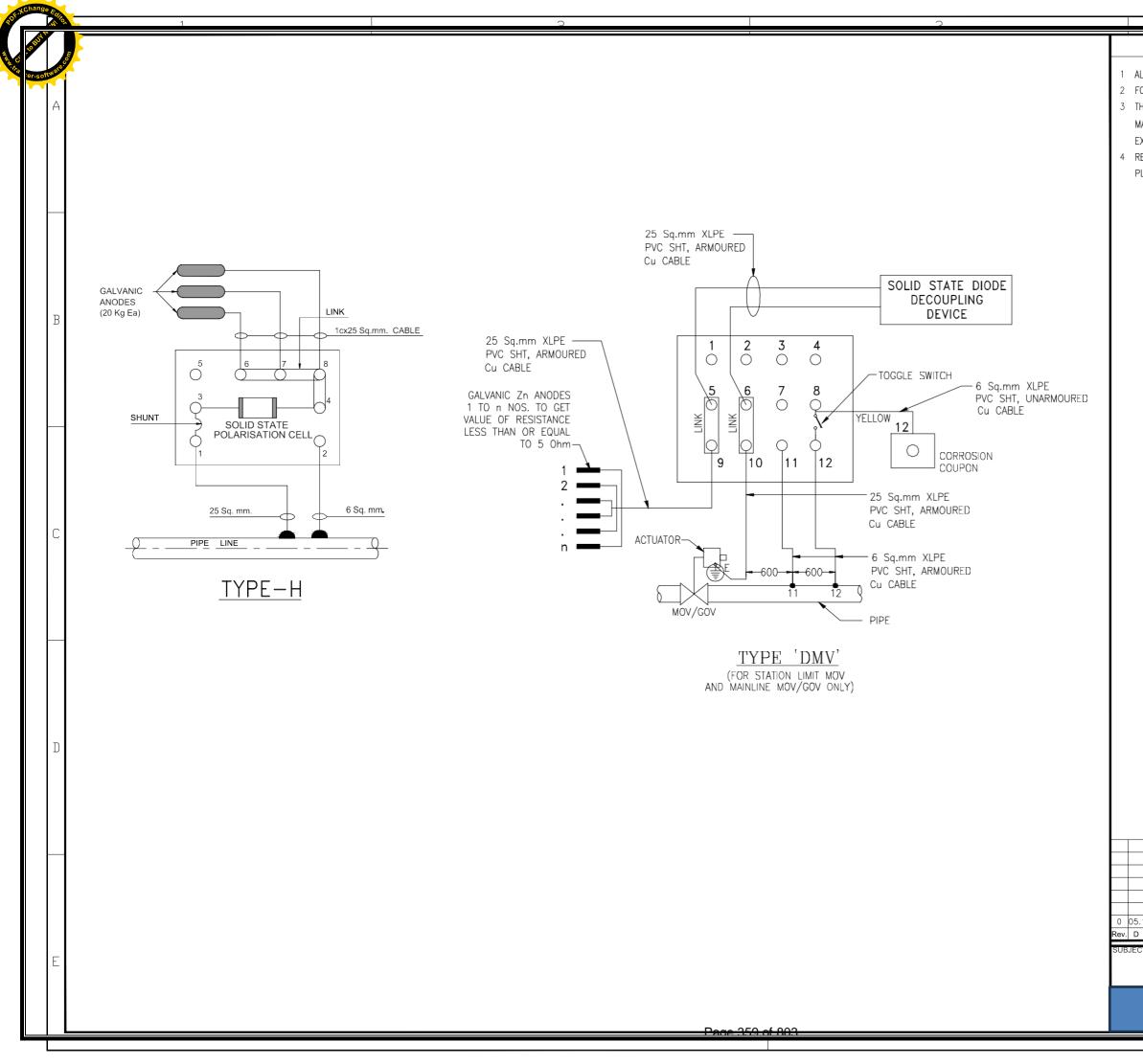
RS RS PF SKE Brawn - Checked Approved Validated



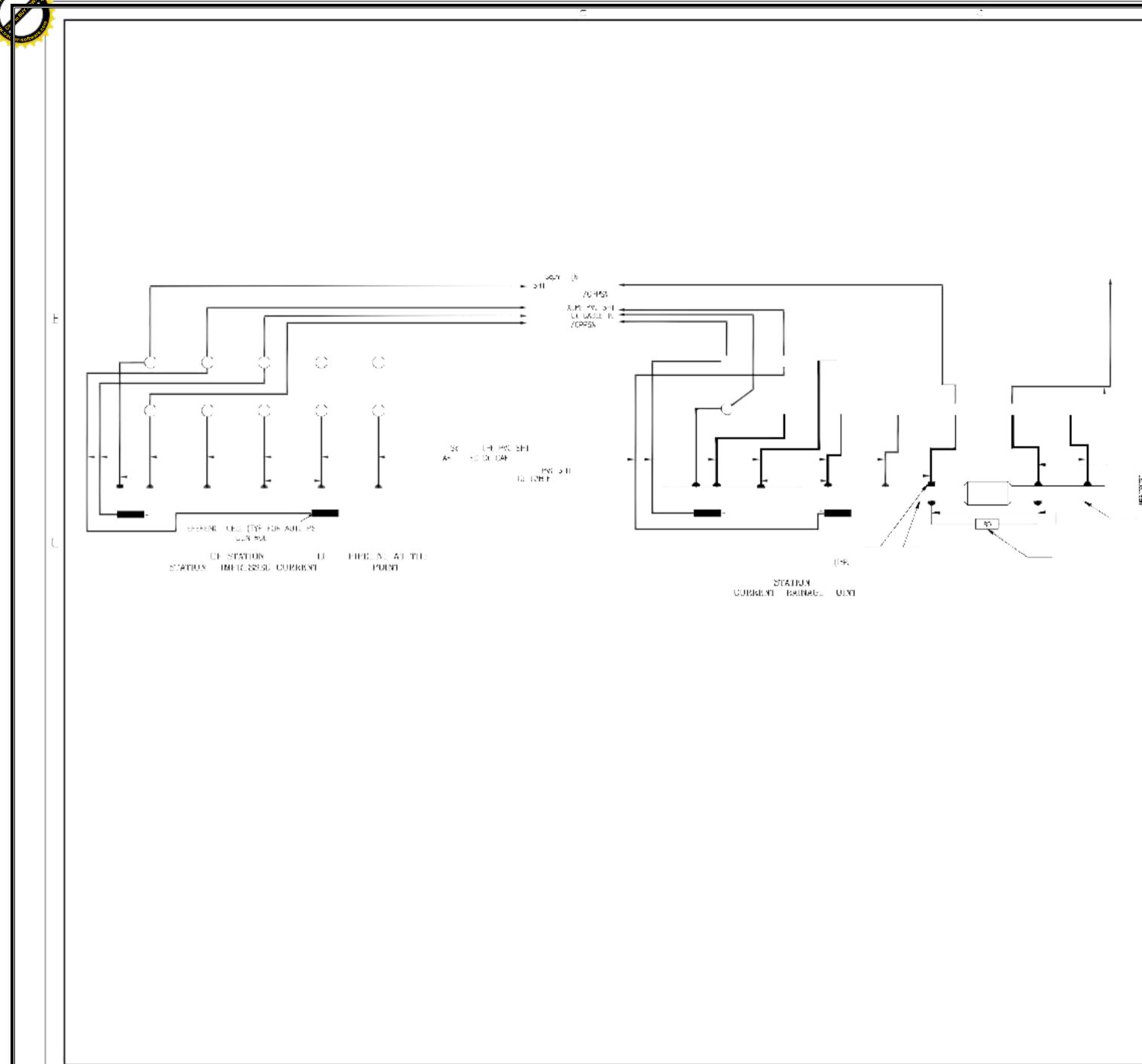


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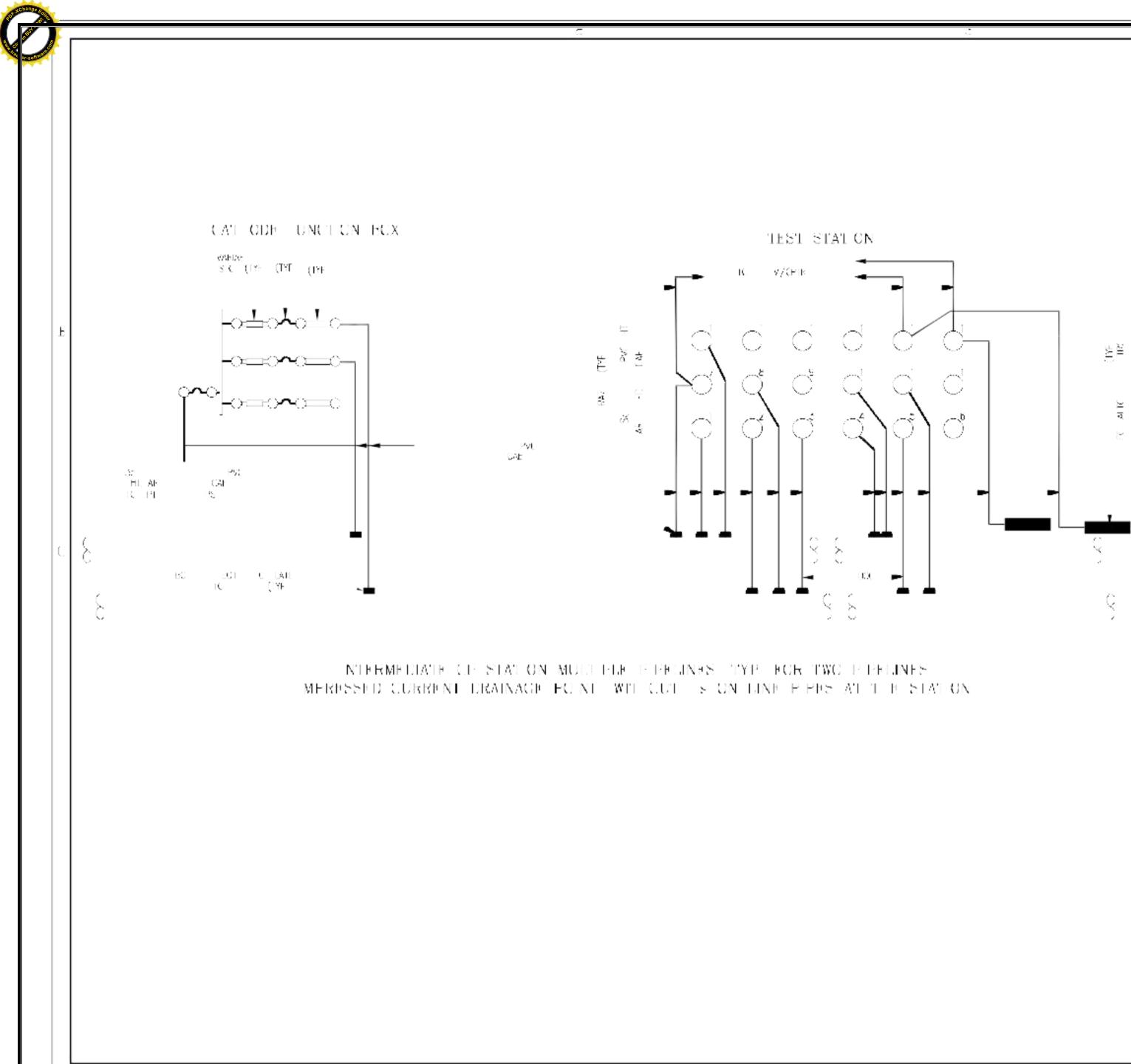
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OLLOW WRITTEN DIMENSIONS ON HIS TEST STATIONS CONNECTION						
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XISTING CP SYSTEM SCHEMES I						
REQUIRED CONNECTION SCHEME	SHALL BE PRO	VIDED ON	N THE TE	RMINAL		
PLATE OF TEST LEAD POINT.						
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Page 360 of 803

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	SUBJECT TEST STATION CONNECTION SCHEME (TYPICAL) DETAILS
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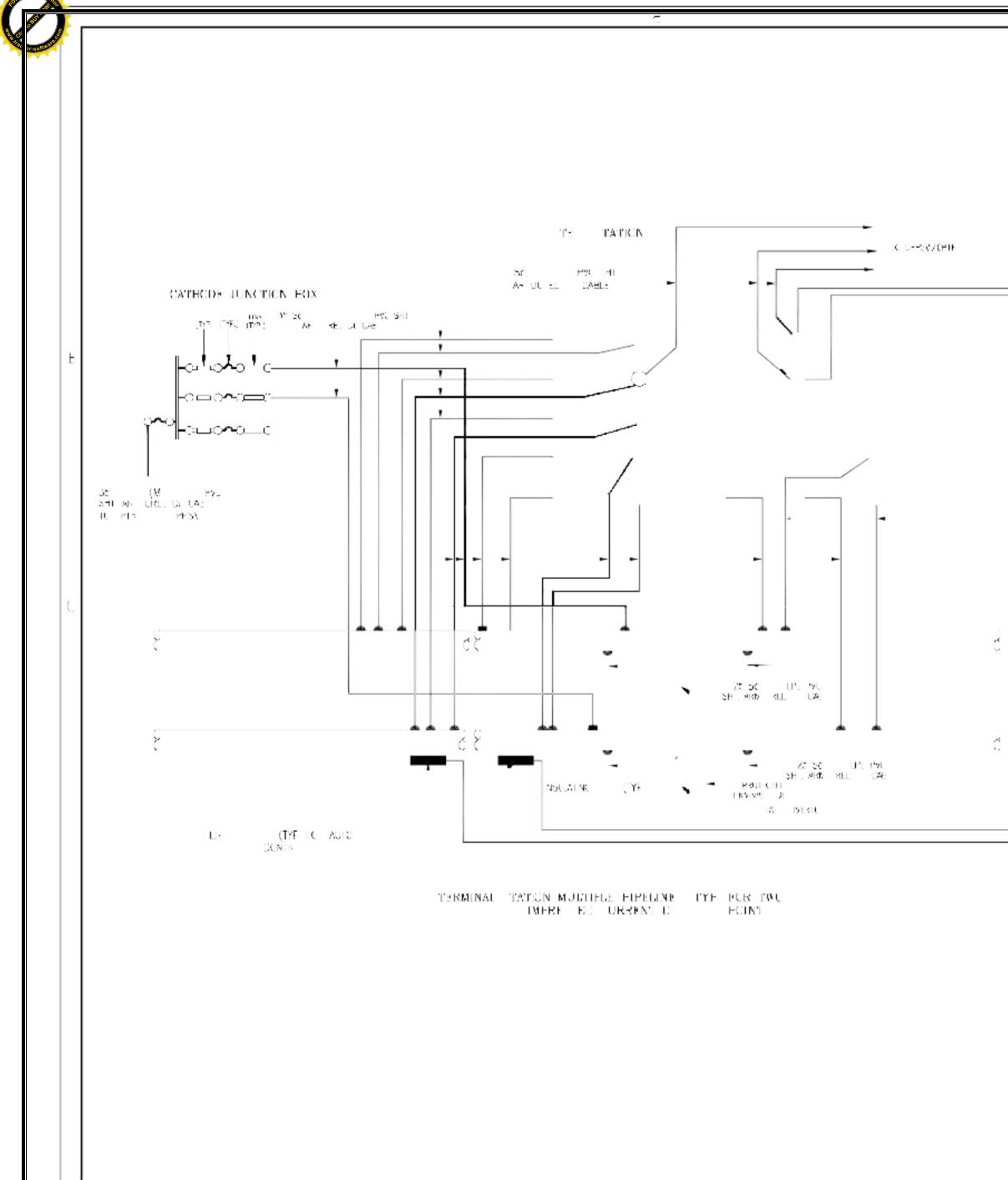
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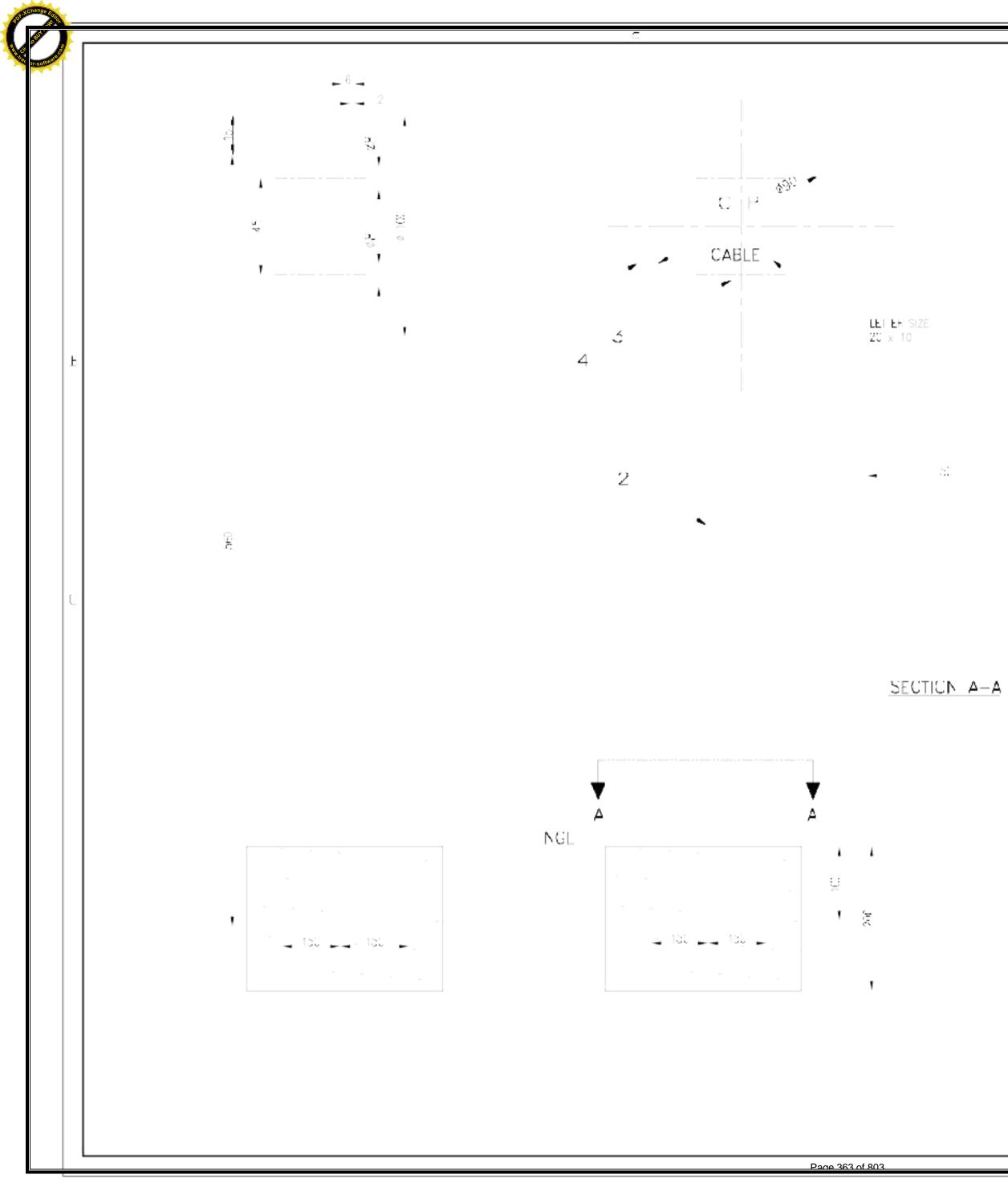
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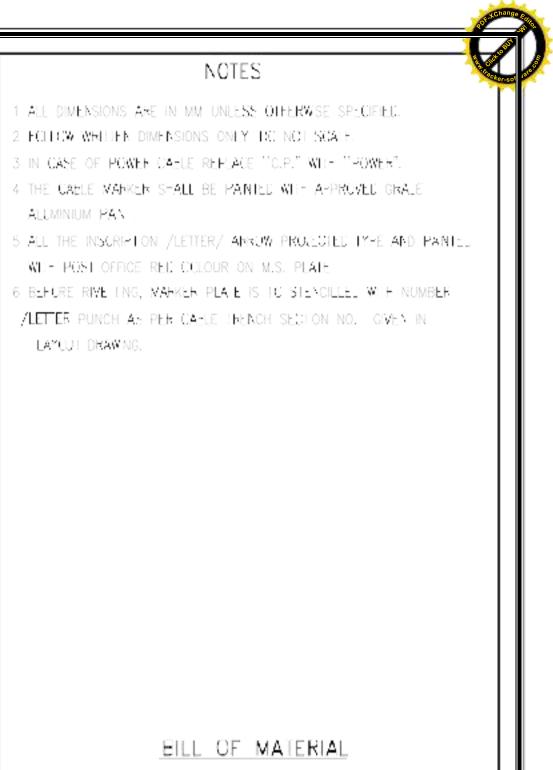
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SUBJECT TEST STATION CONNECTION SCHEME (TYPICAL) DETAILS Size Scale Sheet A3 NTS 05 of 05 Detering No: 1869 GGNG E 20712:328 0





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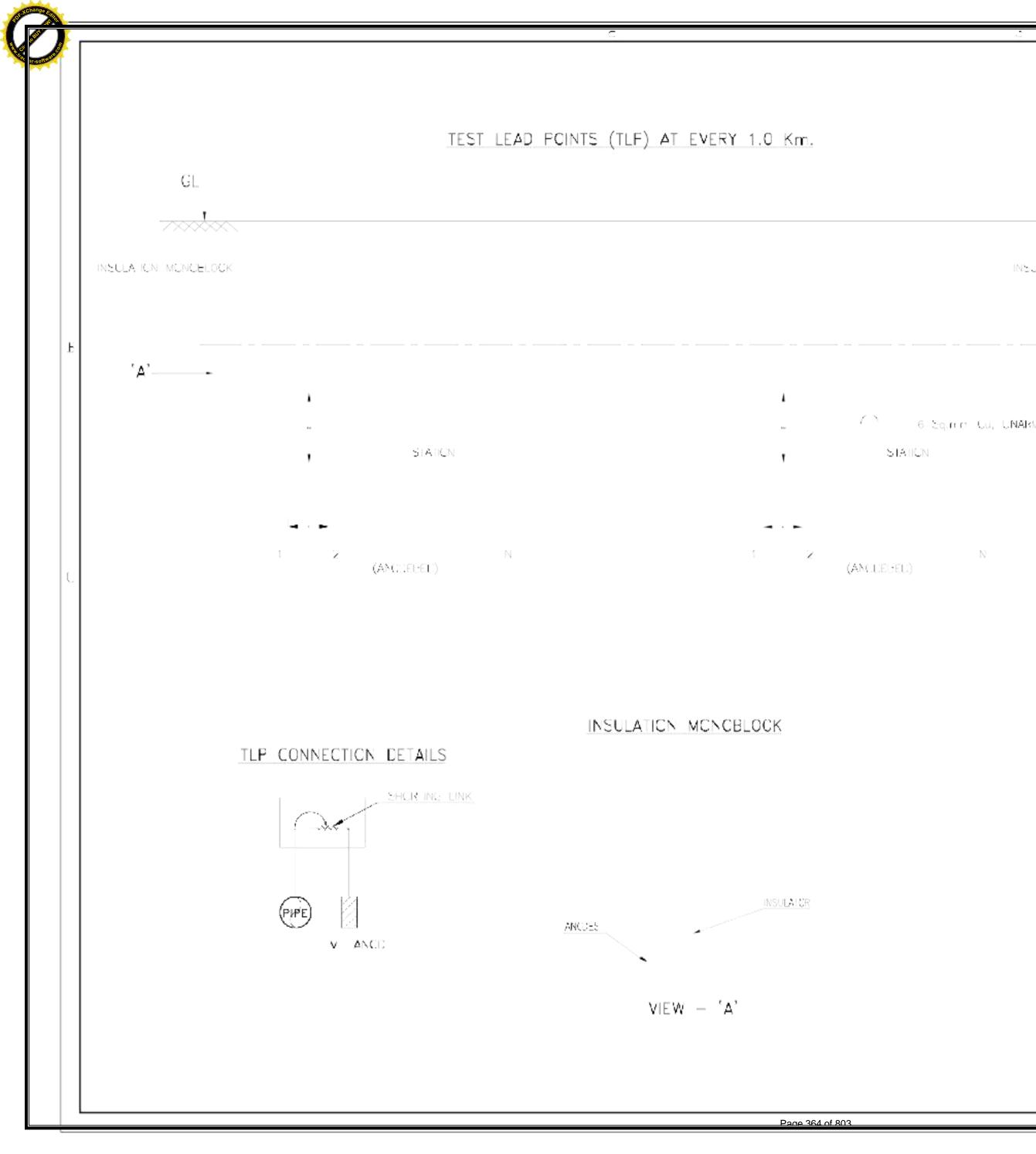
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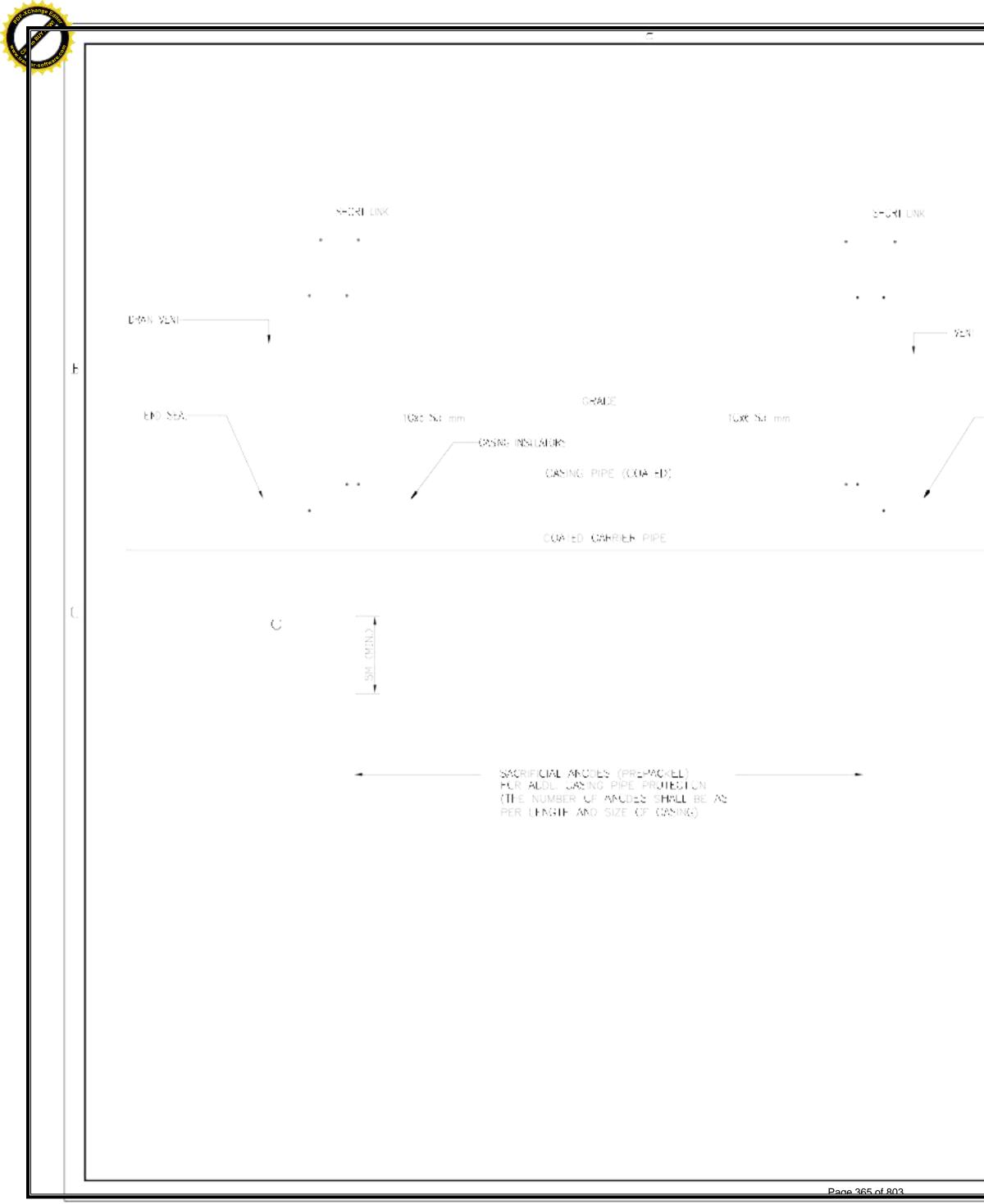
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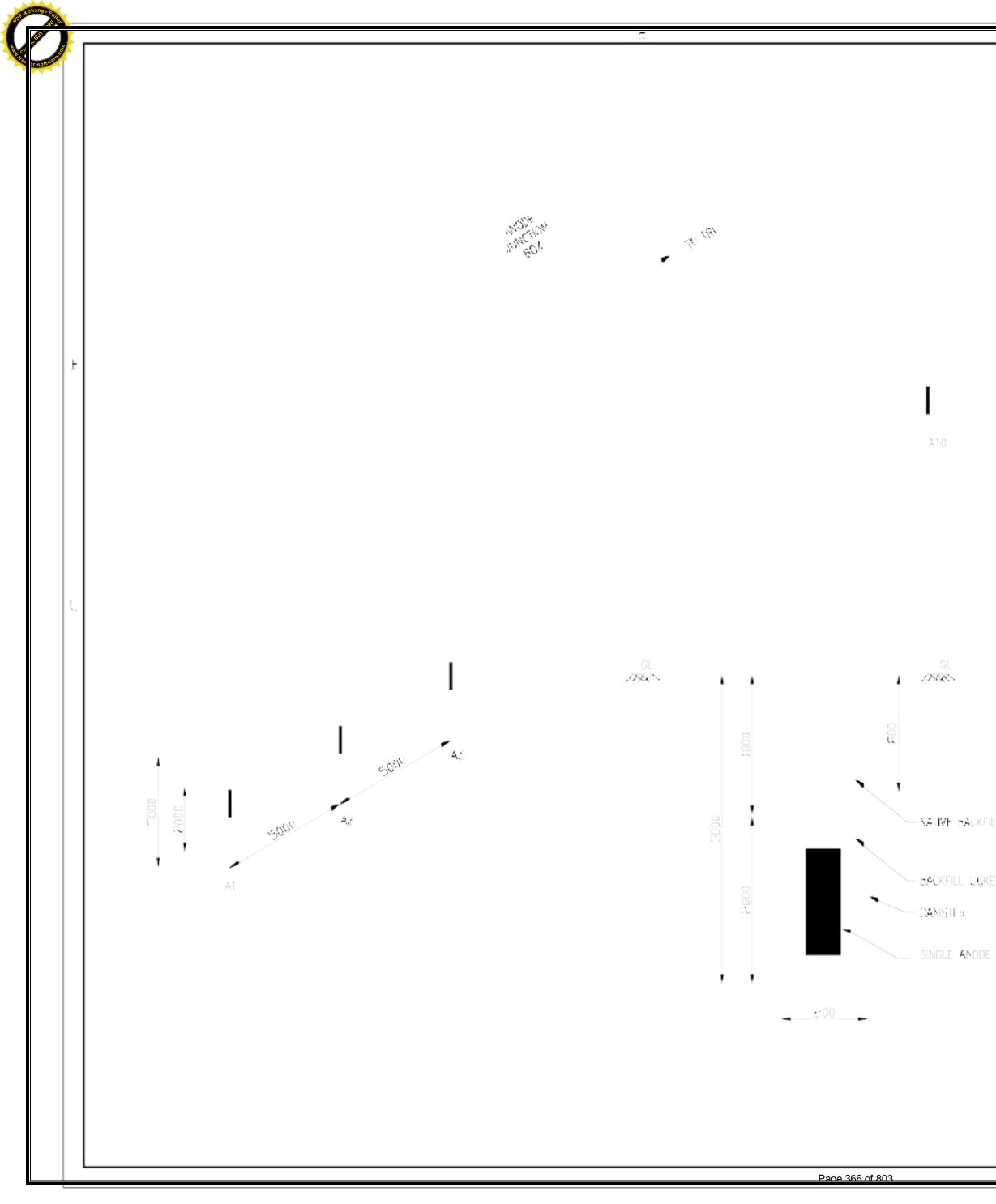
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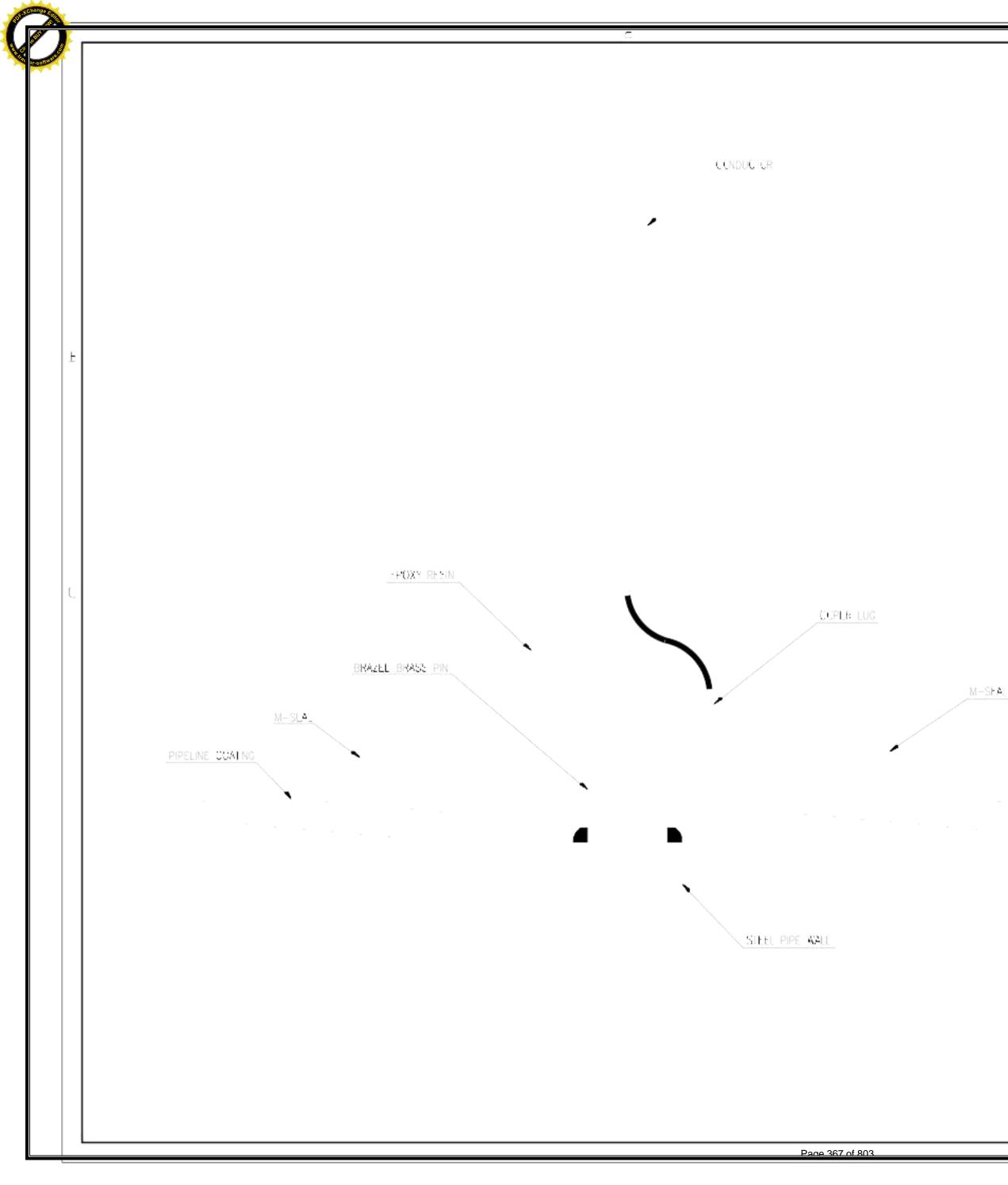
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	NOTES	01
	1. ALL DIMENSIONS ARE IN MM UNLESS OF FRWISE SPECIFICE.	
	2. FOLLOW WHITEN DIMENSIONS ONLY, DC NOT SCALE 2. No. ANOCH, N. CO. INSTALLATION, DOI: 10.1016/10.1016/1011	
	<ol> <li>Mg ANODES TO BE INSTALLED AS PER THE APPROVED DESIGN DOCUMENT.</li> </ol>	
	4 ALL NATIVE BACKFILL SCIL SHALL BE FREE OF RUCKS, GARBAGE PAPERS,	
GL	PLASECS: ETC	
	5. CABLES SHALL BE LAD WITH ENOUGH SLACKNESS TO AVOID DAMAGE TO	
	CABLES DURING BACK FILLING ETC.	
, , , , , , ,	6. ANODE TAL CAELE SHALL NOT BE USED FOR LIFTING THE ANODE ROPE SLINGS SHALL BE USED FOR LIFTING THE ANODE DURING INS ALLA ON IN	
INSULATION MONCELOCK	IC CROUND BEC.	
	7. THE SCHEME/SPECIFICATION ARE FOR GUIDANCE ONLY.	
	8. ANODE CONFIGURATION SHALL BE CON NUOUS FORWARD/BACKWARD	
	SEQUENCES (FOR RENOVABLE BENDING) AND TWO ANODE OUT UT	
	CURRENT SHALL NOT BE LESS THAN 90MA	
- `Α`	9. CABLE LOOP OF 0.5M IS TO BE PROVDED WITH EACH ANODE.	
	(c) M.G. ANODE WEIGH HAS PER SCOPE OF WORK.	
UNARMOURED CABLE (XLPE)	(b) TAL CABLE-MINIMUM TO MIR. LENGTH SHALNG COMPOUND.	
	(c) COTTON BAG 2000x200MM VENUER TO CONFIRM.	
	(c) SPECIAL BACK FILL COMPOSITION	
	() GYPSUM - 75% (ii) BENICNITE - 20%	
	(T) SCDIUM SUEPHALE - C%	
	(e) ANODE UTBIZATION FACTOR - 85%.	
	10. DRAWING REFER TEST S ATON CONNECTION SUREWE TIPE A & A+1	
	DRAWING NO TE-IN-SID-G-E-0326, SH 1 OF 3 R5.	
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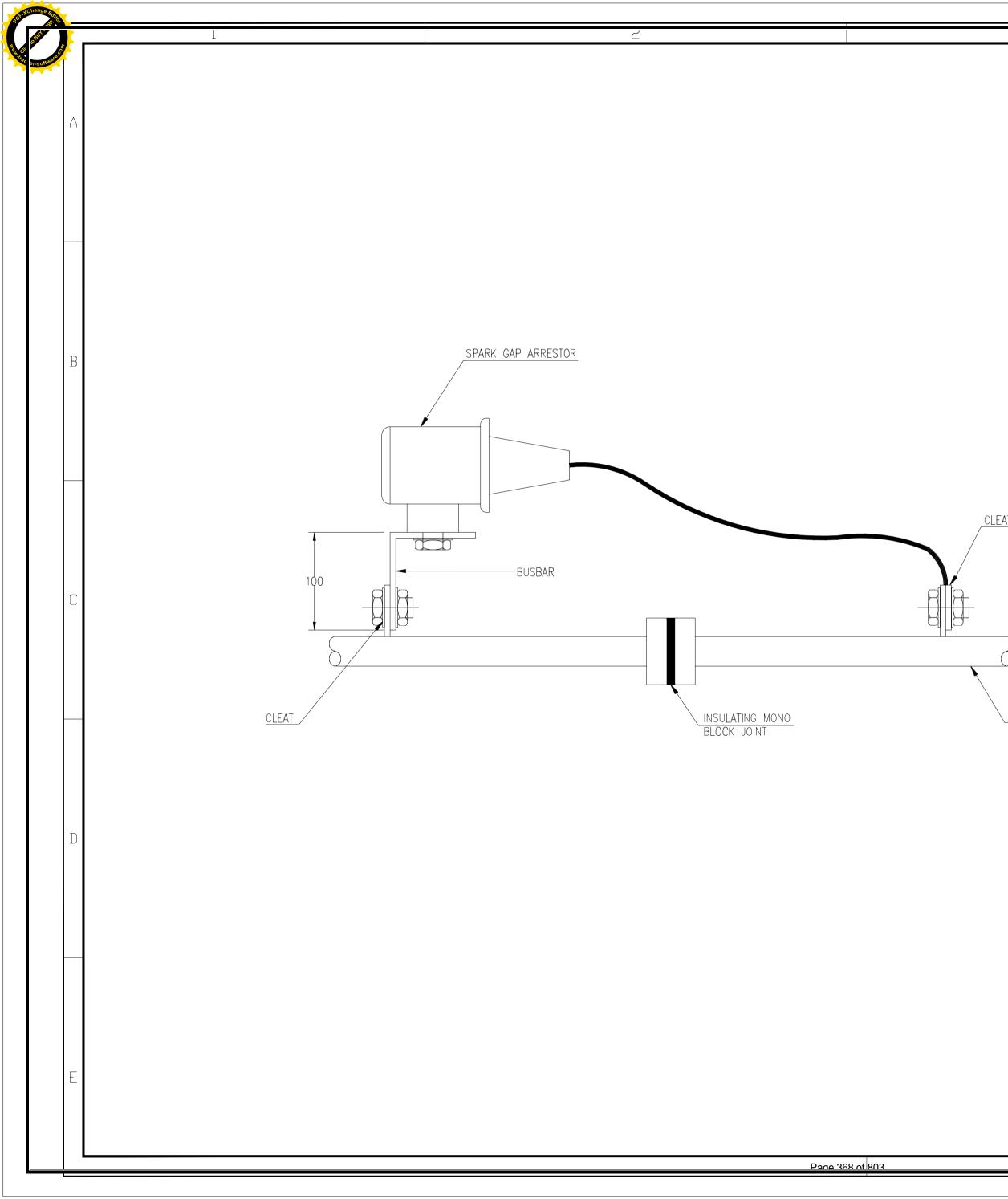
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1 ALL DIMENSIONS ARE IN MM UNLESS O HERWISE SPECIFIED.	
2 FOLLOW WRITTEN DIMENSIONS ONLY. DO NO SCALE.	
<ul> <li>3 CASING PIPE: SACRIFICIAL ANODE SHALL BE PROVIDED AT BOTH ENDS OF CASING PIPE FOR PROTECTION.</li> <li>4 THE ANNULAR SPACE BETWEEN CASING AND CARRIER PIPE SHOULD BE FILLED WITH DIELECTRIC MATERIA. LIKE PETROLEUM WAX OR PETROLEUM BASED COMPOUNDS AS SPECIFIED IN NACE SP0200-2014.</li> <li>5 THIS DRAWING FOR GUIDANCE ONLY. HOWEVER, CONTRACTOR TO PREPARE SEPARATE DRAWING, SPECIFICATION AND PROCEDURE FOR APPROVAL FROM OWNER/CONSULTANCE</li> </ul>	
	febidden without its onde approxit-
	23. NG MDIA, are dual cation or twinsmitton to third parties is forbidden where it its area approve
	DELENGINEES NG INDIA, any dud
AF UV: KE KE KE HE Rev D IV Y Modifications Drawn Checked Approved V SUBCECT TYPICAL CATHODIC PROTECTION SCHEME FOR CASED CROSSINGS	SKF (alidetec) (CLCN) is state
Bize Scale Strate A3 NTS 01 of 0 Dispaning No. GGNG-E-20712-329	Ę



	NOTES	R Old to Bat
	1 ALL DIMENSIONS ARE IN MM UNLESS CITERWISE SPECIFIED.	
	2 FOLLOW WRITTEN DIMENSIONS ONLY, UC NOT SCALE.	
	3 THESE DIMENSIONS ARE INDICATIVE ONLY THESE DIMENSIONS MUST BE ALTERED TO SUIT THE SITE REQUIREMENT.	
	4 QUANTITY OF ANODE SHALL BE FINALSED DURING DETAIL ENGINEERING BY APPROVAL OF OWNER AND CONSULTANT.	
	5 MMC ANODE SHALL BE INS ALLED IN CAMIS ERS.	
1	6 SPECIFICATION MENTIONED FOR GUIDANCE CNLY.	
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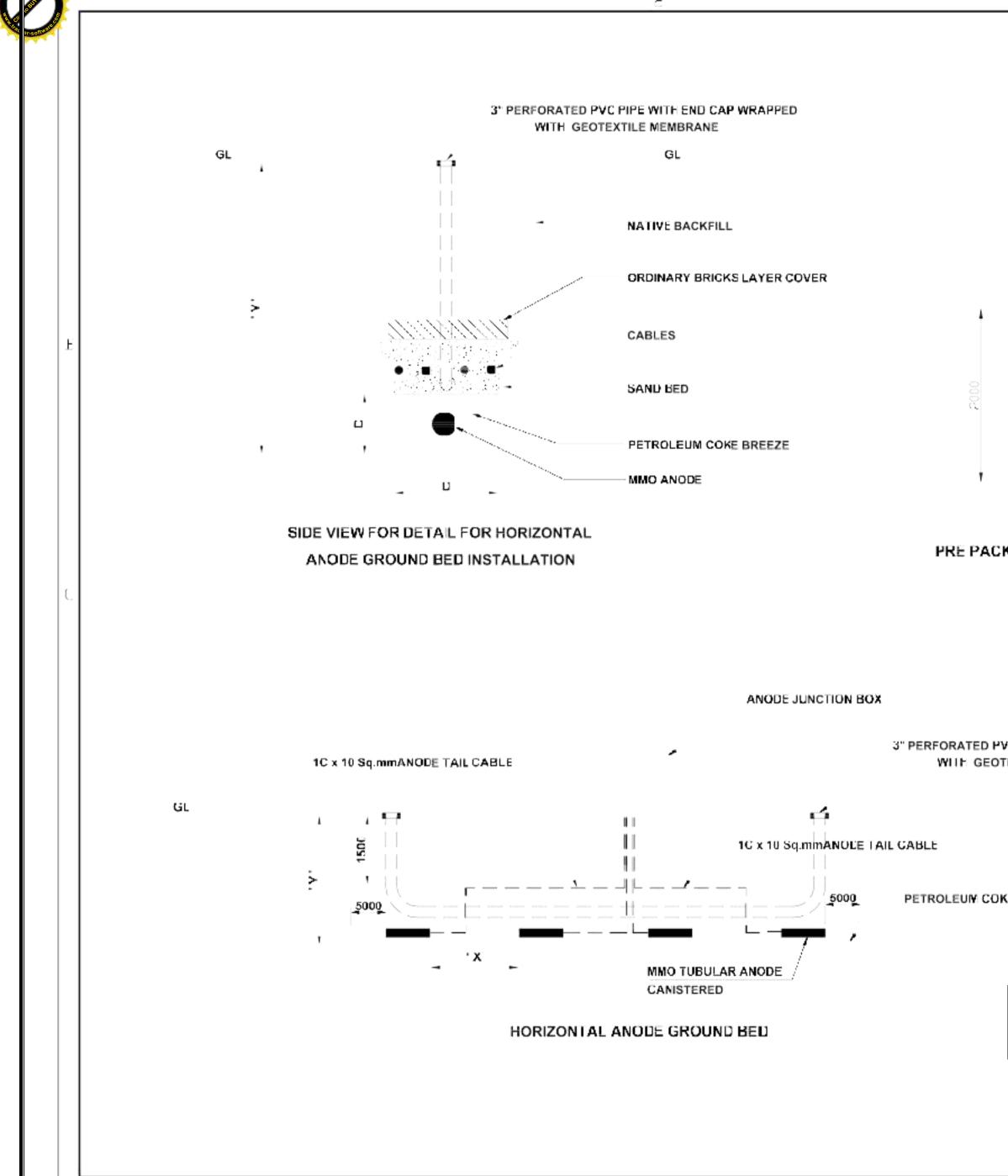
	NOTES	<b>A CARGE AND</b>
	1 ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.	467-501
	2 FOLLOW WRITEN DIMENSIONS ONLY. CO. NOT SCALE	
	3 THE CABLE WILL BE FIXED TO THE PIPLINE AT AN ANGLE TO FACILIATE LAYING OF THE CABLE ALONG THE PIPELINE.	
	4 TEST CERTFICATE & BATCH NOS OF PINS TO BE RECORDED.	
	5. THE PIN BRAZING IC HAVE THE FOLLOWING CHARACTERISTICS:	
	<ul> <li>(c) EXTREMELY LOW CONTACT RESISTANCE : ≤ 0.1 0.</li> <li>(b) LOW TRANSITION RESISTANCE : 7.5 TO 14 MO PER BRAZED JOINT</li> <li>(c) HIGH MECHANCIAL STRENGTH : BINDING STRENGTH 450 N/MM2 SHEAR STRENGTH 245 N/MM2</li> <li>(c) BRAZING TEMPERATURE : 6500 C</li> <li>(e) TIME PER BRAZE : 2 SECONDS</li> <li>(f) WEATHER EFFECT : SUITABLE FOR ALL WEATHER OPERATION</li> <li>(c) LIFE : 40 YEARS</li> <li>(b) FIELD TEST : CASEE CONNECTION THROUGH PIN BRAZING TO BE FIELD TESTED FOR CONTACT RESISTANCE &amp; TEMPERATURE &amp; C.</li> </ul>	
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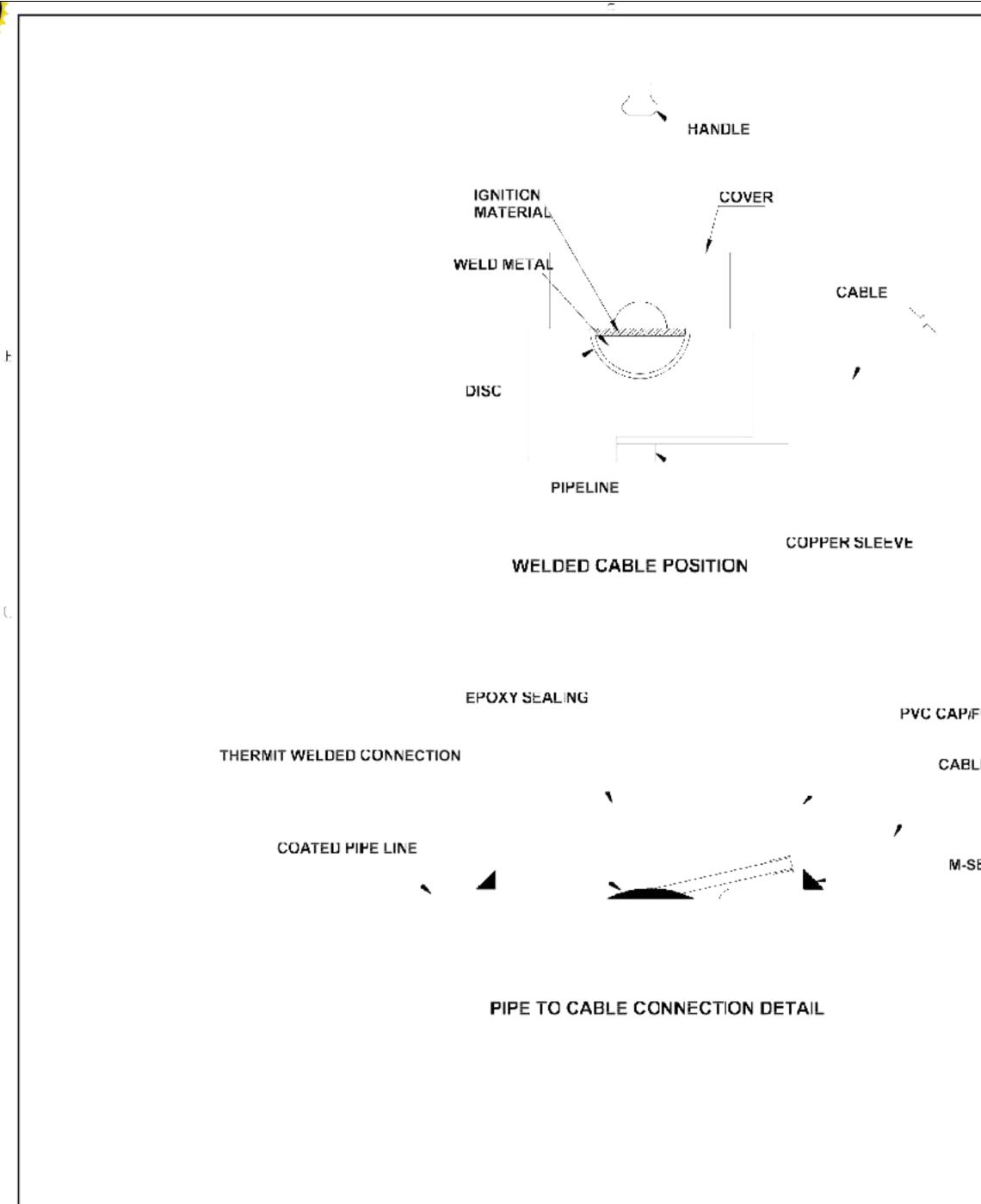
S.No.     DESCRIPTION     QTY.       1     TINED COPPER BUS BAR 25mm X 3mm THK 550mm LONG 905M00TH BEND AT 100mm     1       2     TINED C03PER BUS BAR 25mm X 3mm THK 1' SHAPE EEND AT CENTER FOR TOTAL LENGTH 2     1       2     200mm TC BE DYDEED NI TWO PART BOTH END WILL HAVE M12 HOLES     1       3     NOS NJT BUTS ARE PROVDED WITH EACH 2     2	1TINNED COPPER BUS BAR 25mm X 3mm THK 550mm LONG 90°SMOOTH BEND AT 100mm AT ONE END BOTH END WILL HAVE M12 HOLES12TINNED COPPER BUS BAR 25mm X 3mm THK 'L' SHAPE BEND AT CENTER FOR TOTAL LENGTH 200mm TO BE DIVIDED IN TWO PART BOTH END WILL HAVE M12 HOLES13NOS 10 SIZE BRASS NUT BOLTS, WASHERS NOS NUT BOLTS ARE PROVIDED WITH EACH2	Y
1       550mm LONG 90'SMOOTH BEND AT 100mm       1         AT ONE END BOTH END WILL HAVE M12 HOLES       1         2       TINNED COPPER BUS BAR 25mm X 3mm THK       1         2       'L' SHAPE BEND AT CENTER FOR TOTAL LENGTH       1         20mm TO BE DIVIDED IN TWO PART       1         BOTH END WILL HAVE M12 HOLES       1         3       NOS 10 SIZE BRASS NUT BOLTS, WASHERS         3       NOS NUT BOLTS ARE PROVIDED WITH EACH       2         DED ON INSULATING JOINT       2	1       550mm LONG 90°SMOOTH BEND AT 100mm       1         AT ONE END BOTH END WILL HAVE M12 HOLES       1         2       TINNED COPPER BUS BAR 25mm X 3mm THK         'L' SHAPE BEND AT CENTER FOR TOTAL LENGTH       1         200mm TO BE DIVIDED IN TWO PART       1         BOTH END WILL HAVE M12 HOLES       1         3       NOS 10 SIZE BRASS NUT BOLTS, WASHERS         3       NOS NUT BOLTS ARE PROVIDED WITH EACH       2	
2       'L' SHAPE BEND AT CENTER FOR TOTAL LENGTH 200mm TO BE DIVIDED IN TWO PART BOTH END WILL HAVE M12 HOLES       1         3       NOS       10 SIZE BRASS NUT BOLTS, WASHERS NOS NUT BOLTS ARE PROVIDED WITH EACH SPARK GAP ARRESTOR.       2	2       'L' SHAPE BEND AT CENTER FOR TOTAL LENGTH 200mm TO BE DIVIDED IN TWO PART BOTH END WILL HAVE M12 HOLES       1         3       NOS       10 SIZE BRASS NUT BOLTS, WASHERS NOS NUT BOLTS ARE PROVIDED WITH EACH       2	
3       NOS       10       SIZE       BRASS       NUT BOLTS, WASHERS       2         3       SPARK       GAP       ARRESTOR.       2	NOS 10 SIZE BRASS NUT BOLTS, WASHERS	
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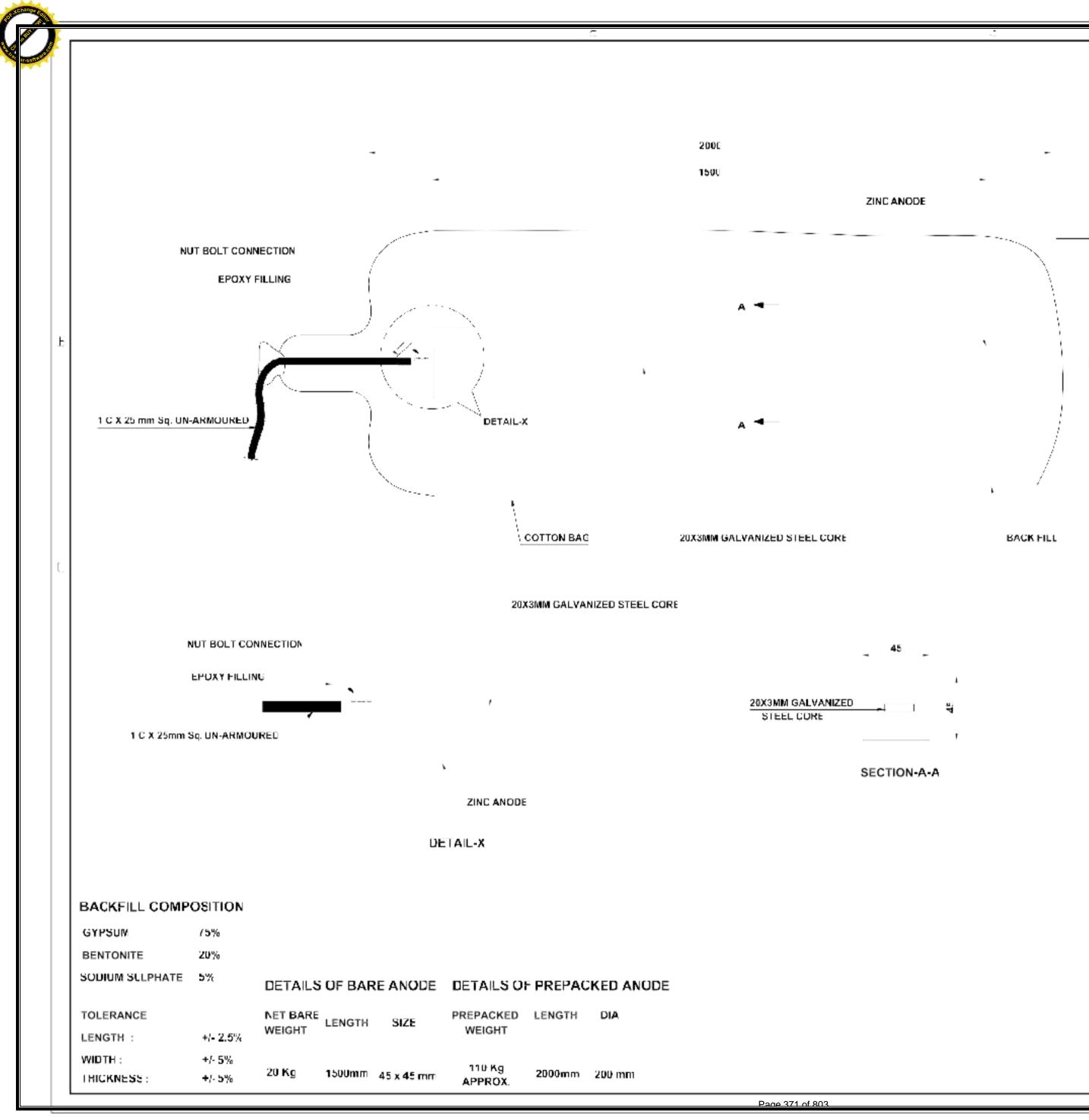


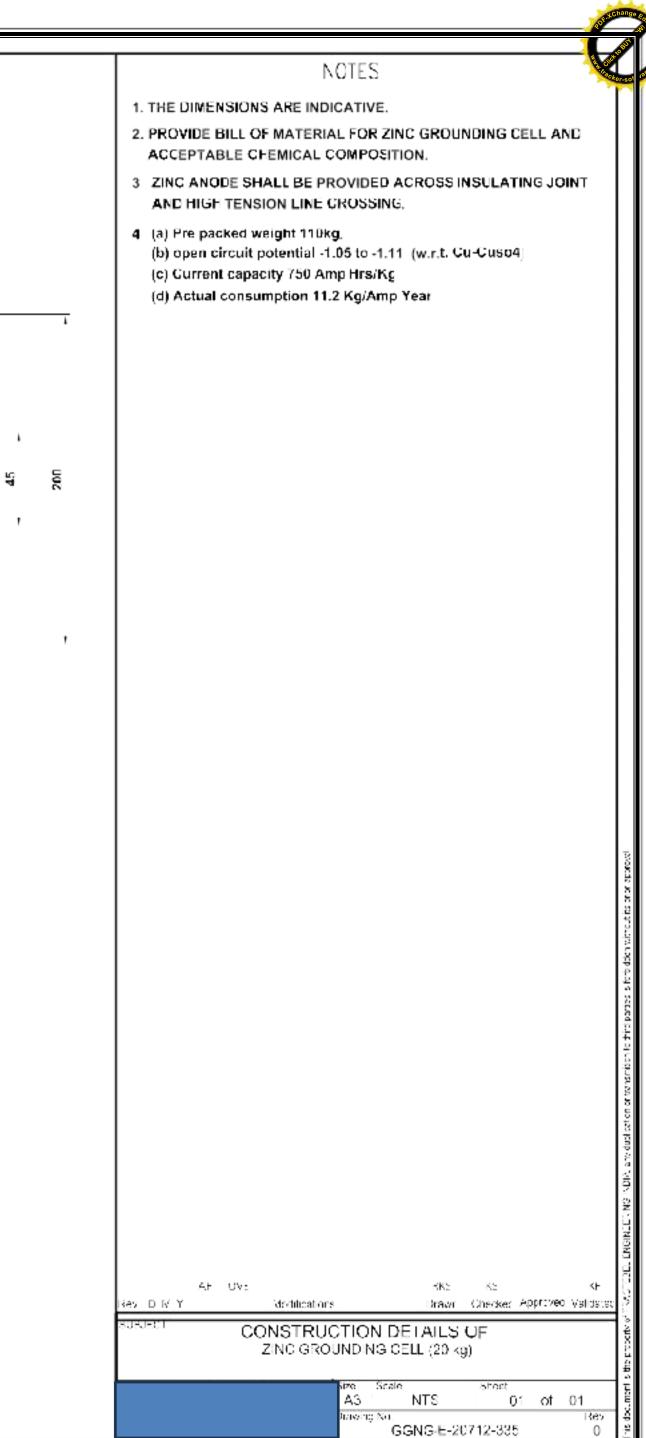
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	NOTES	* tracker-sol
	1. DIMENSION ARE IN MM UNLESS SPECIFIED.	
	2. No. OF ANODE SHALL BE AS PER CP DESIGN REQUIRMENT.	
	<ol> <li>DEPTH AREA &amp; LENGTH OF ANODE BED INSTALLATION &amp; ANODE DIMENSIONS SHALL BE IN LINE WITH DESIGN.</li> </ol>	
	4. ALL ANODE SHALL BE INSTALLED WITH CANISTER.	
	5. AJB SHALL BE KEPT AS PER SITE SUITABILITY & ACCESS & NOT NECESSARILLY AT CENTER OF ANODE BED.	
	6. DISTANCE BETWEEN ANODE TO ANODE SHALL BE AS PER DESIGN APPROVAL.	
	4. SHEET STEEL CANISTER SHALL BE 22 SWG, 200 MM DIA AND 2000 MM LONG.	
	8. DEPTH OF THE ANODE BED SHALL BE AS PER DESIGN APPROVAL ON CASE TO CASE.	
	9. ANODE TAIL CABLE SHALL BE LAID THROUGH SUITABLE FLEXIBLE PVC PIPE.	
	10. 3" PERFORATED PVC PIPE WITH CAP WRAPPED WITH GEOTEXTILE MEMBRANE SHALL BE INSTALLED FOR WATERING THE GROUND BEC.	
- BACKFILL CUKE BREEZE	11. SPECIFICATION MENTIONED FOR GUIDANCE ONLY.	
CANSIER	12. IDENTIFICATION OF ANODE :-	
	FIRST FIGURE - No OF Cp. STN.	
SINGLE ANODE	SECOND FIGURE - No OF ANODE ROW THIRD FIGURE - ITS OWN SERIAL STARTING SEQUENTIALLY.	
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		IDD. ENGINE
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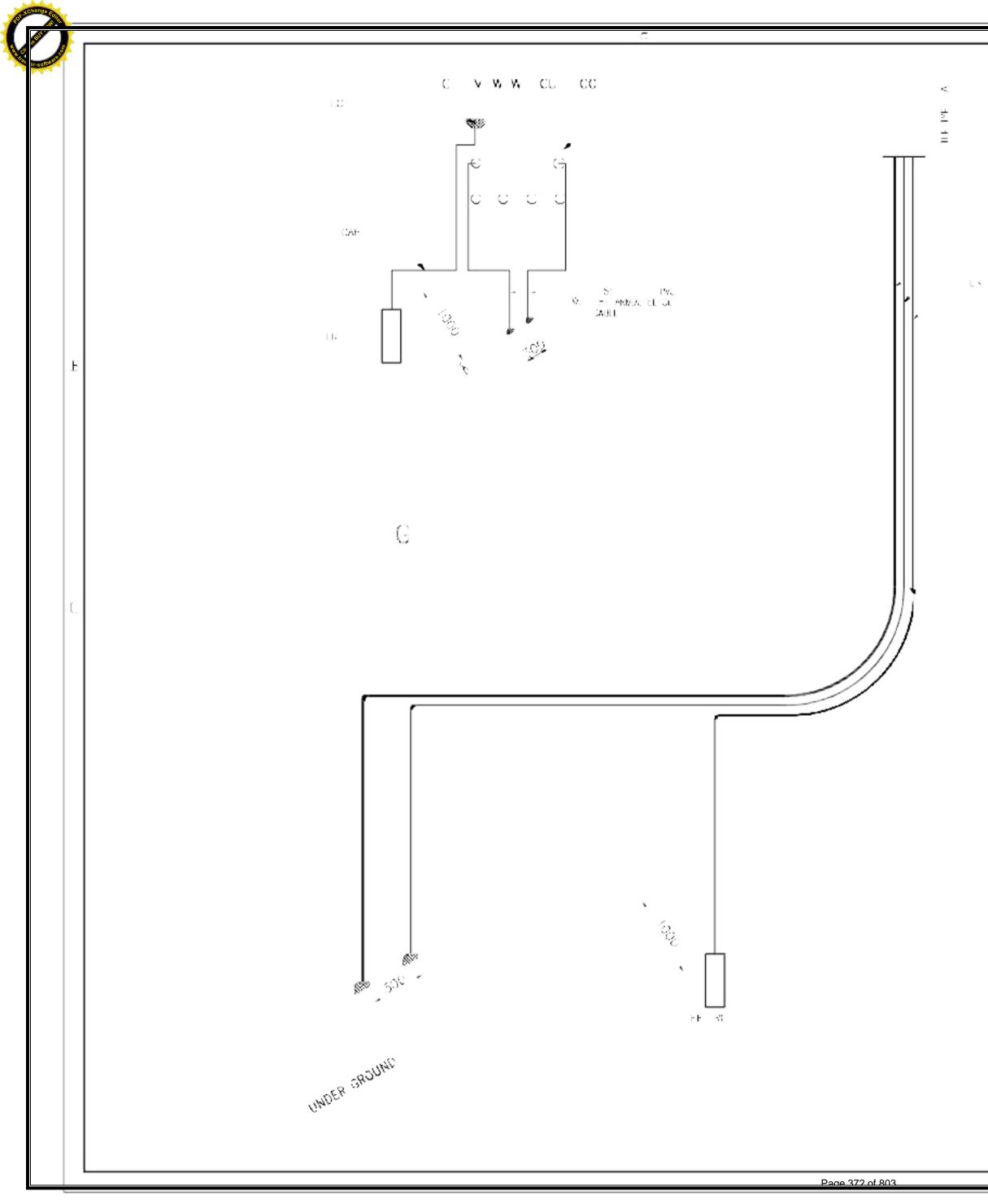


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UNNEL E EAL PUTTY		EDD. LINGINGEN NG INDIA, any dust conservation to thick parties is first door winduit its of a space of
	AF OV: KKS KS SKF Rev D IV Y Vodulcators Draver Checked Approved Valida: SUBJECT THERMIT WELDING DETAILS SPS Scale Street A3 NTS 01 of 01 Drive ing No 1 kee GGNG-E-20712-334 0	document is the properties of 1740







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ELL AVETT E2	AF UV: KK2 K2 Rev D IV Y Montheators Draw (Decker Approved )	90 1914 - Alexandro Alexandro and an anticon to this parties is farefulation with out its of an approxit. 24.011000, ENGINEEXING INDIA, any dust cartion or twasmistion to this parties is farefulden with out its of an approxit.
	Rev         D_FV_Y         Modifications         Drawn         Object         Object         SURGECT         TYPICAL INSTALLATION AND CONNECTION         DETAILS OF EXTERNAL ER PROBE WITH TEST STATION	
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