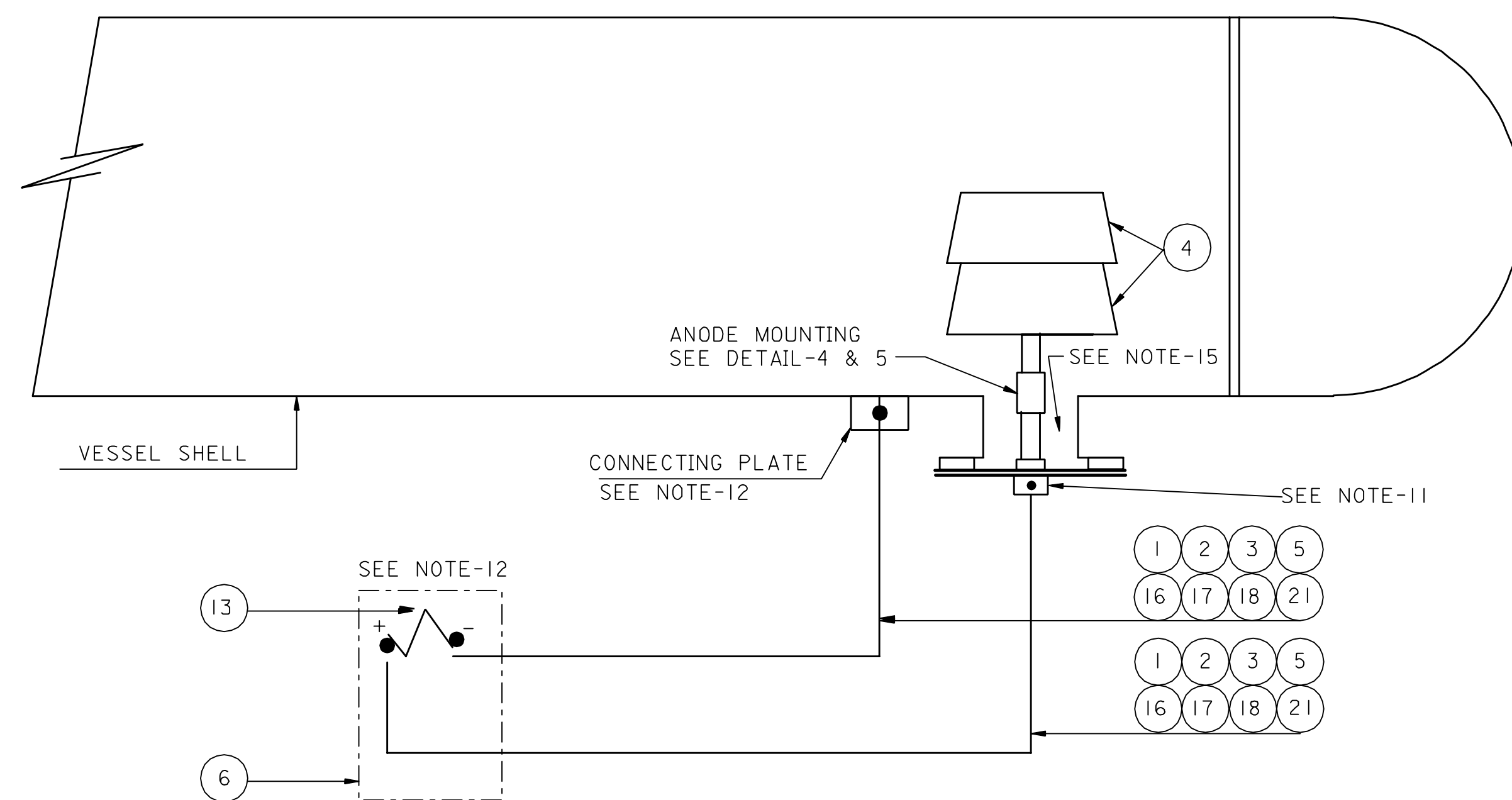
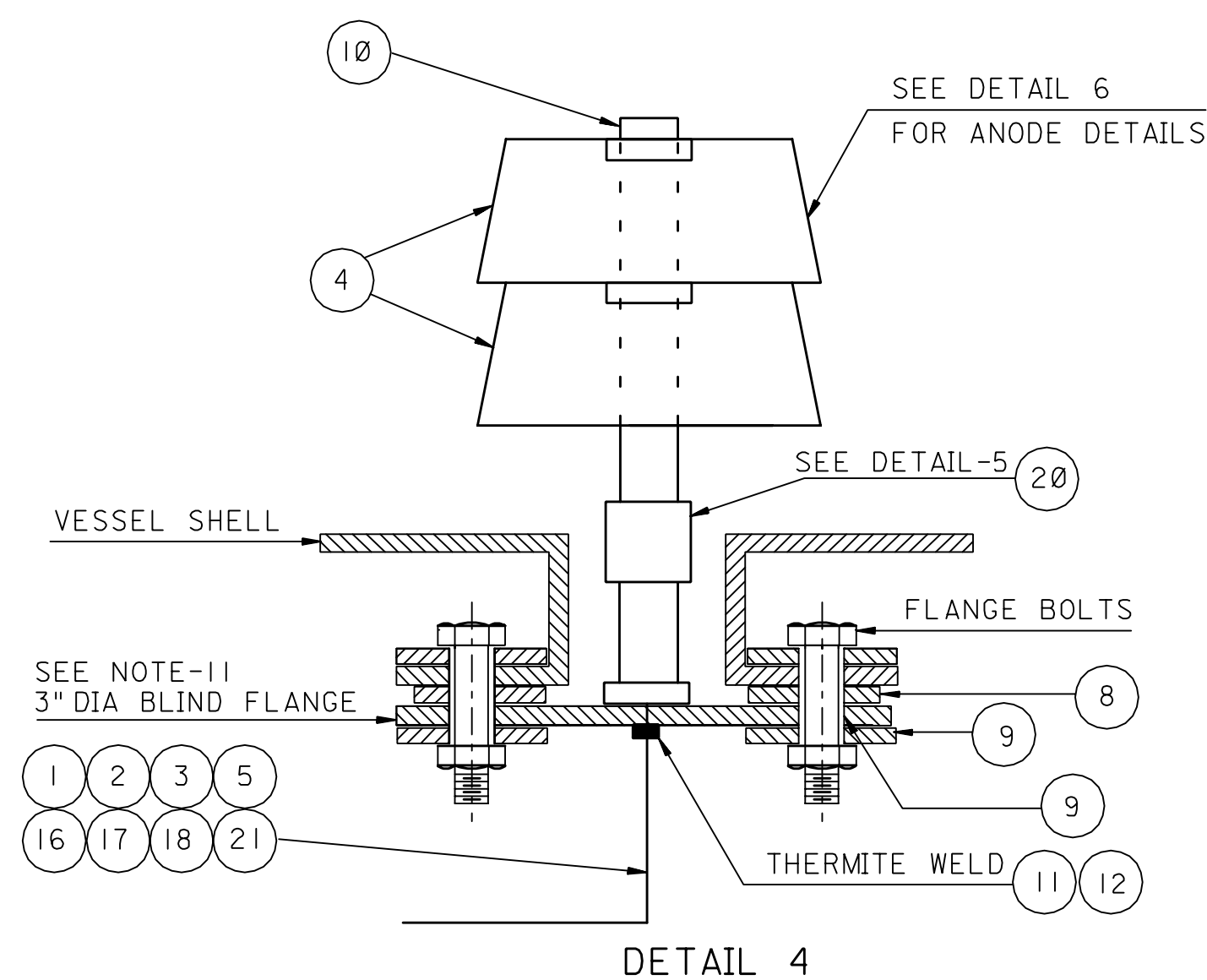
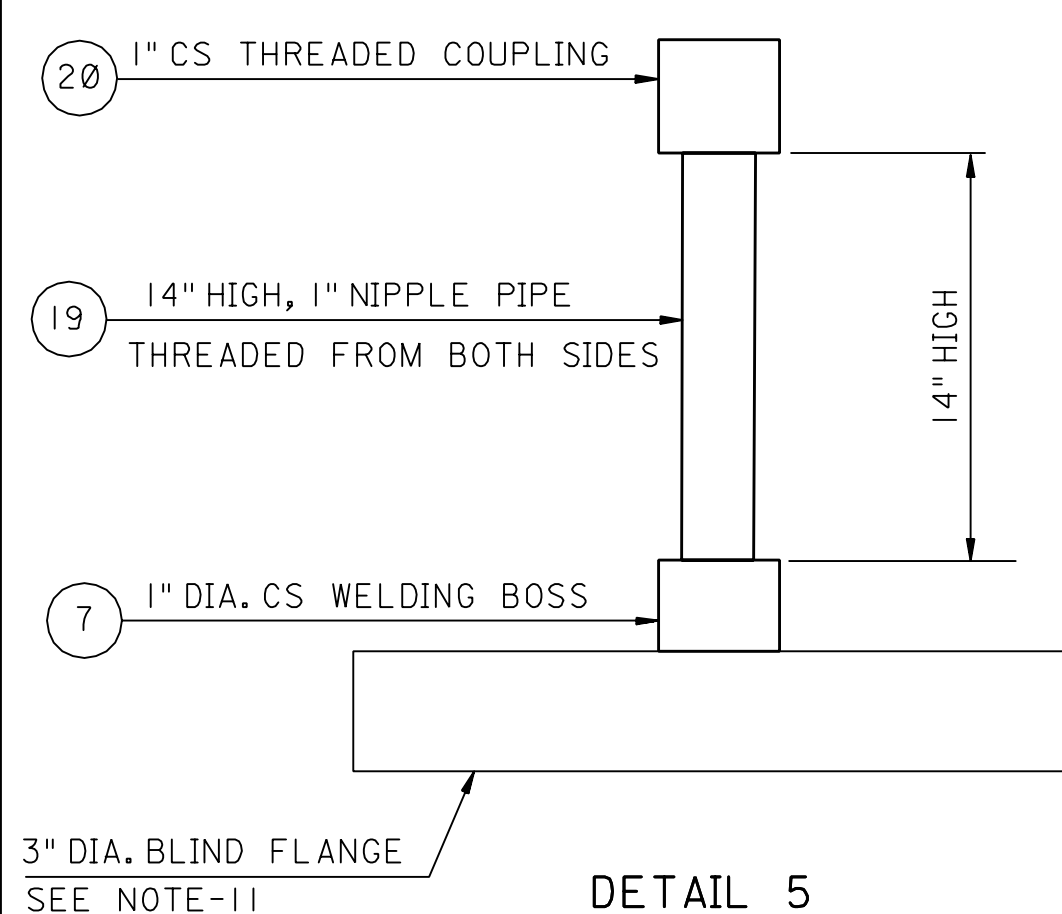
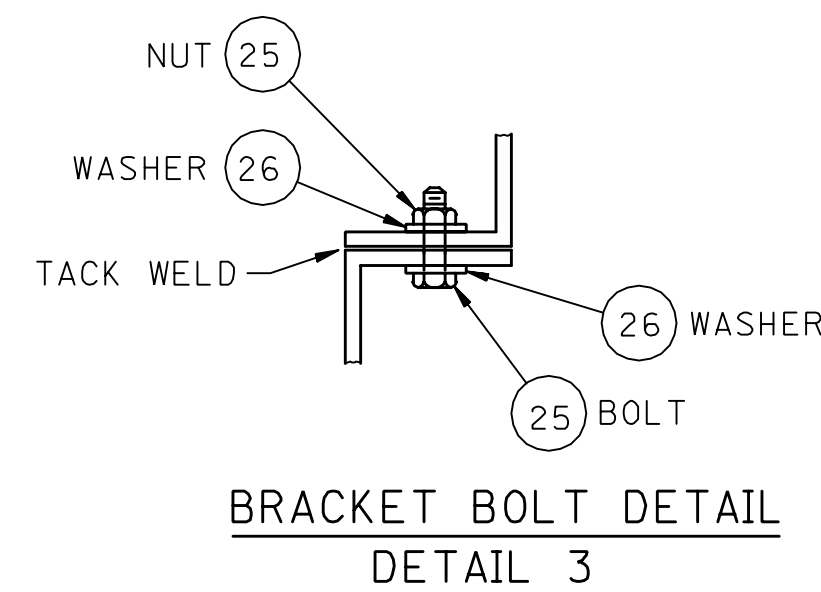
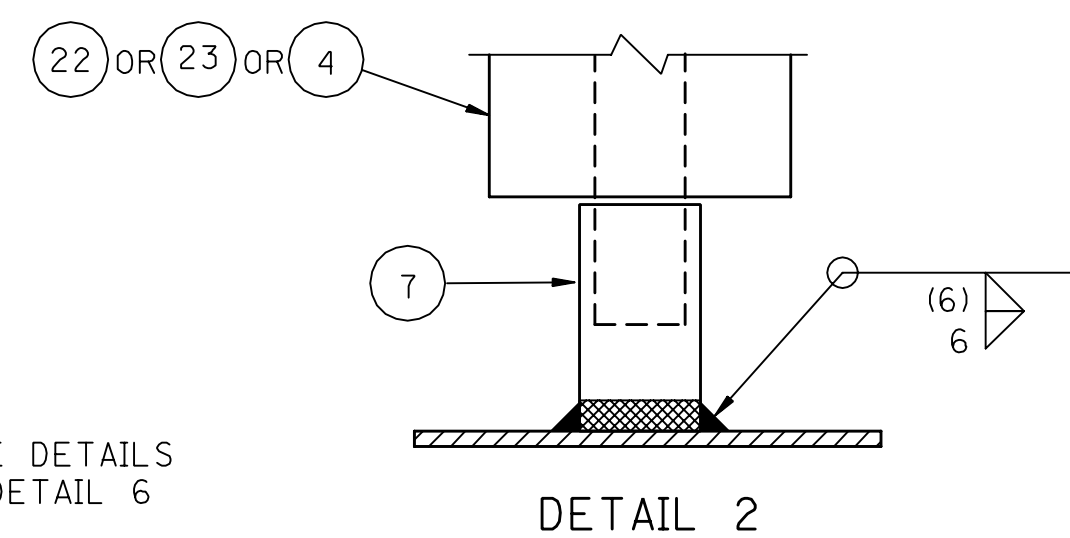
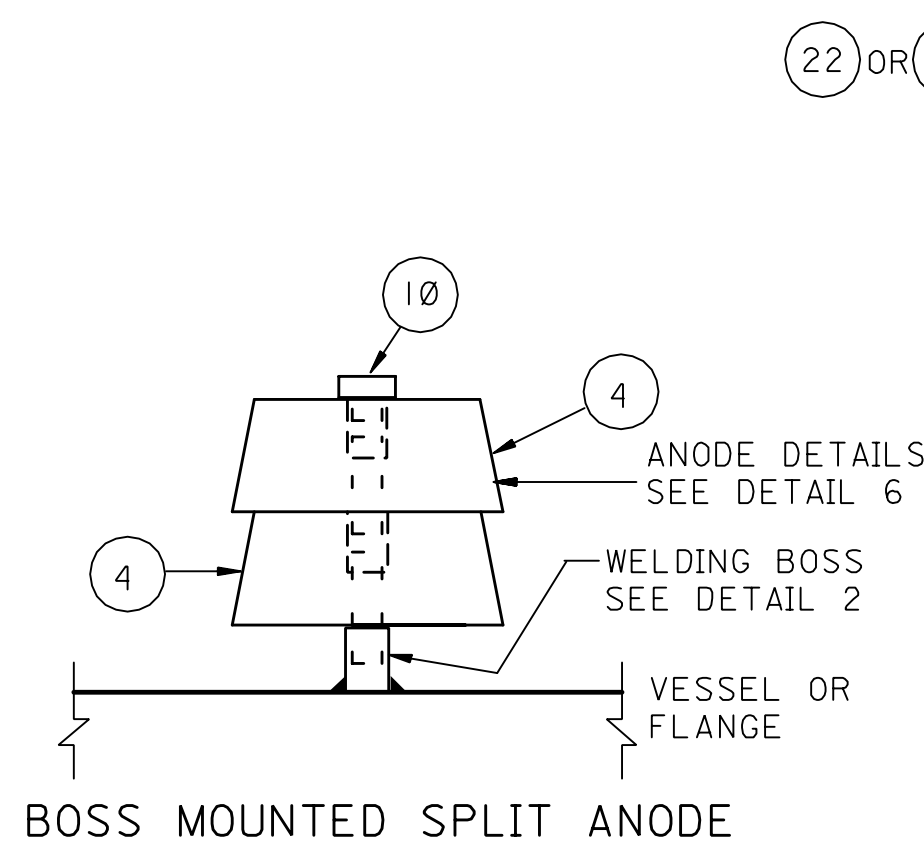
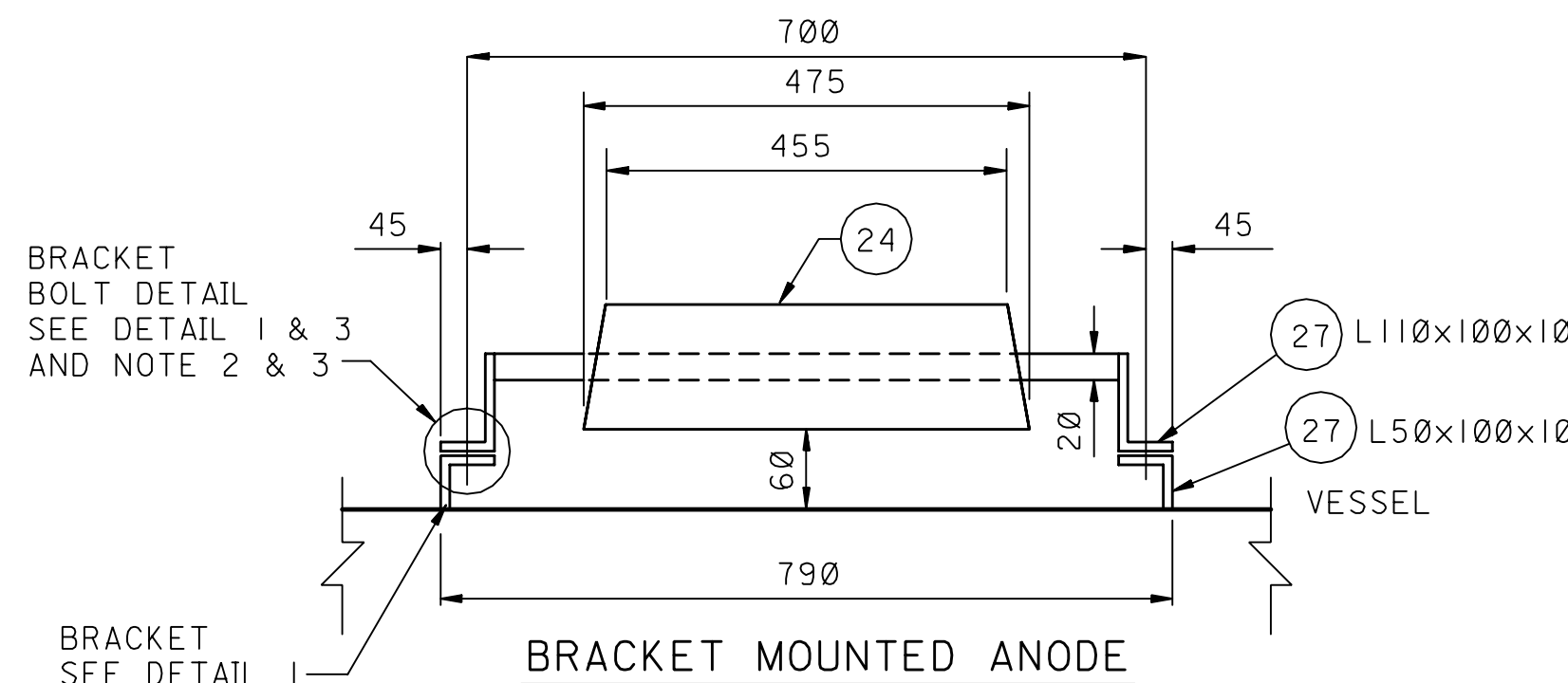
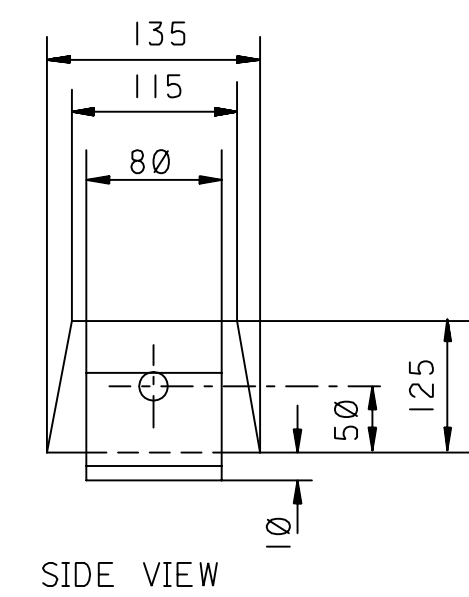
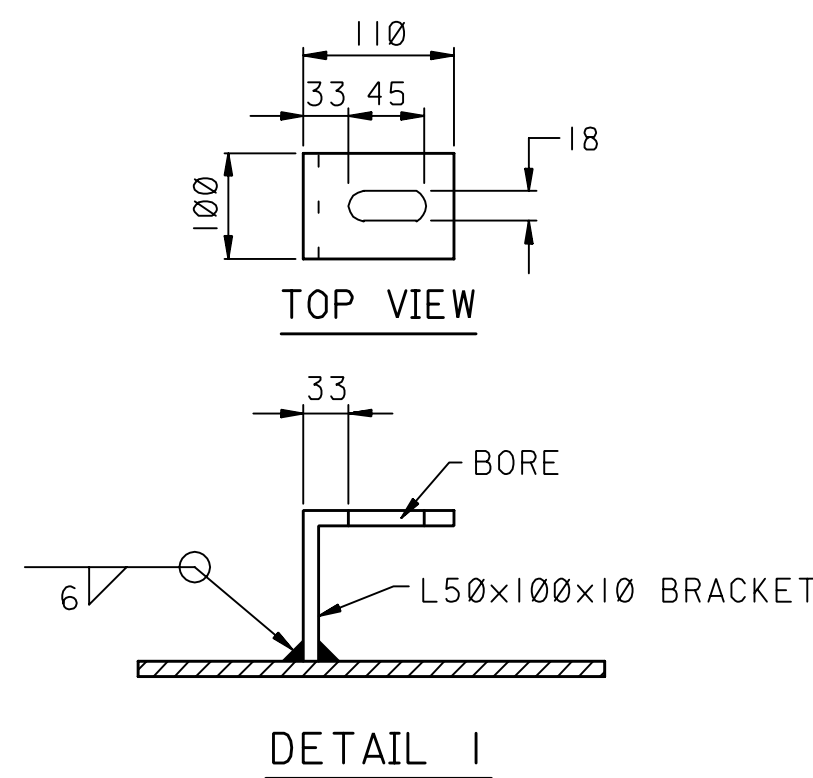
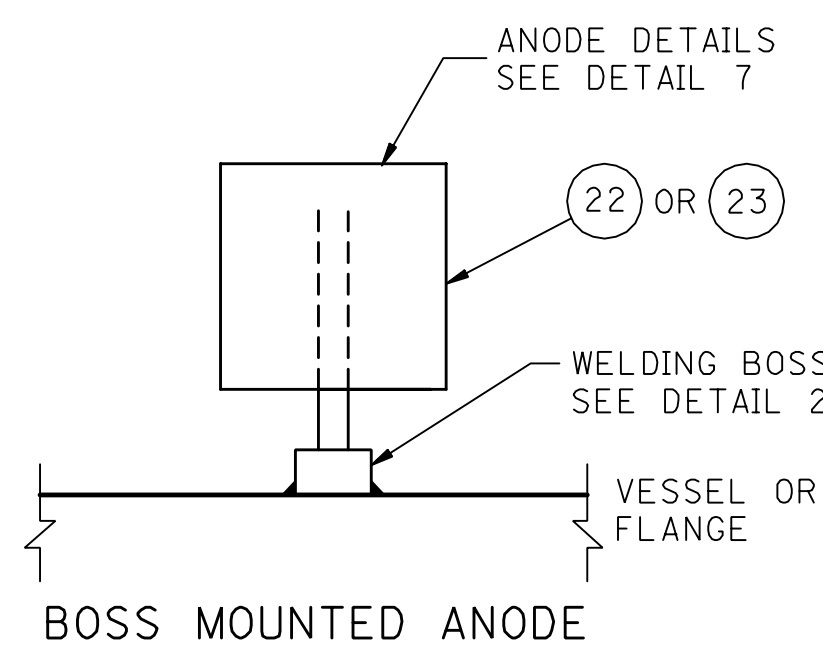
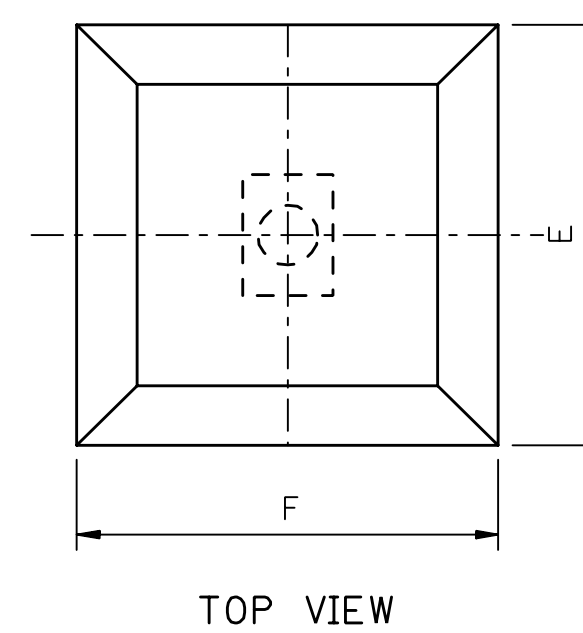
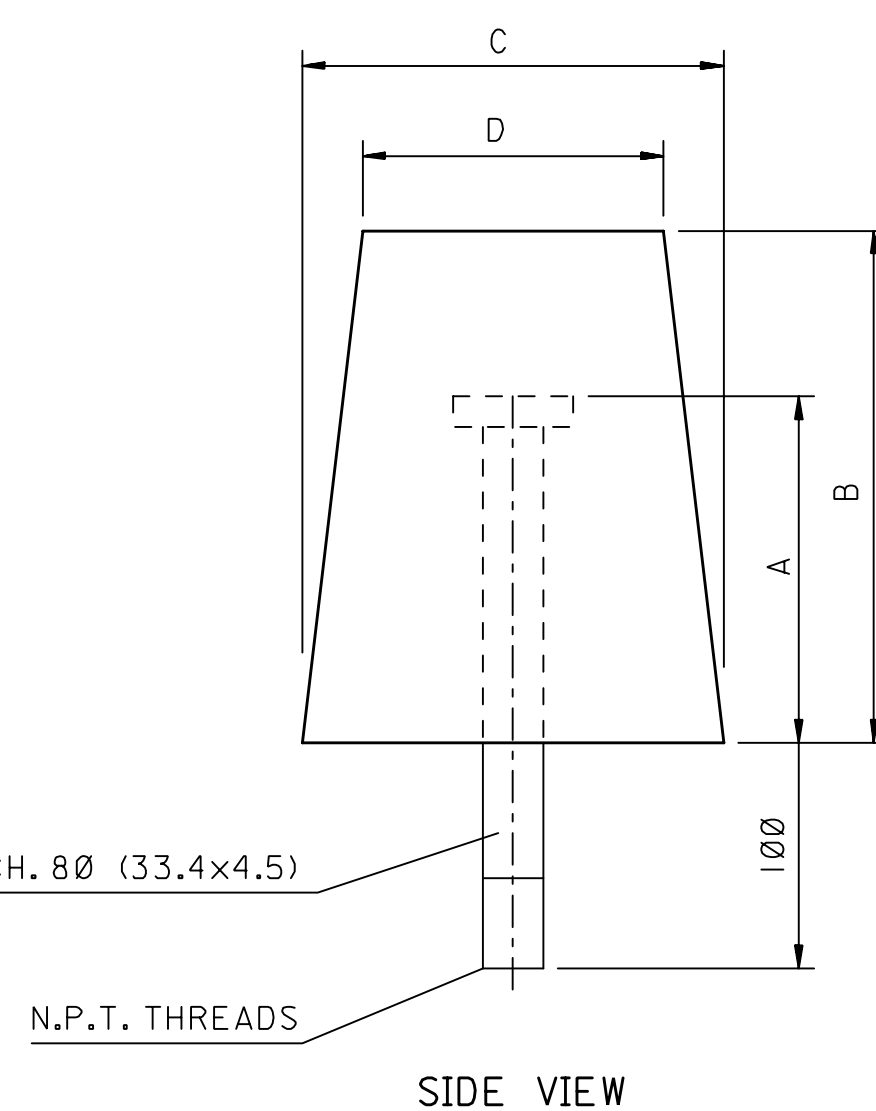
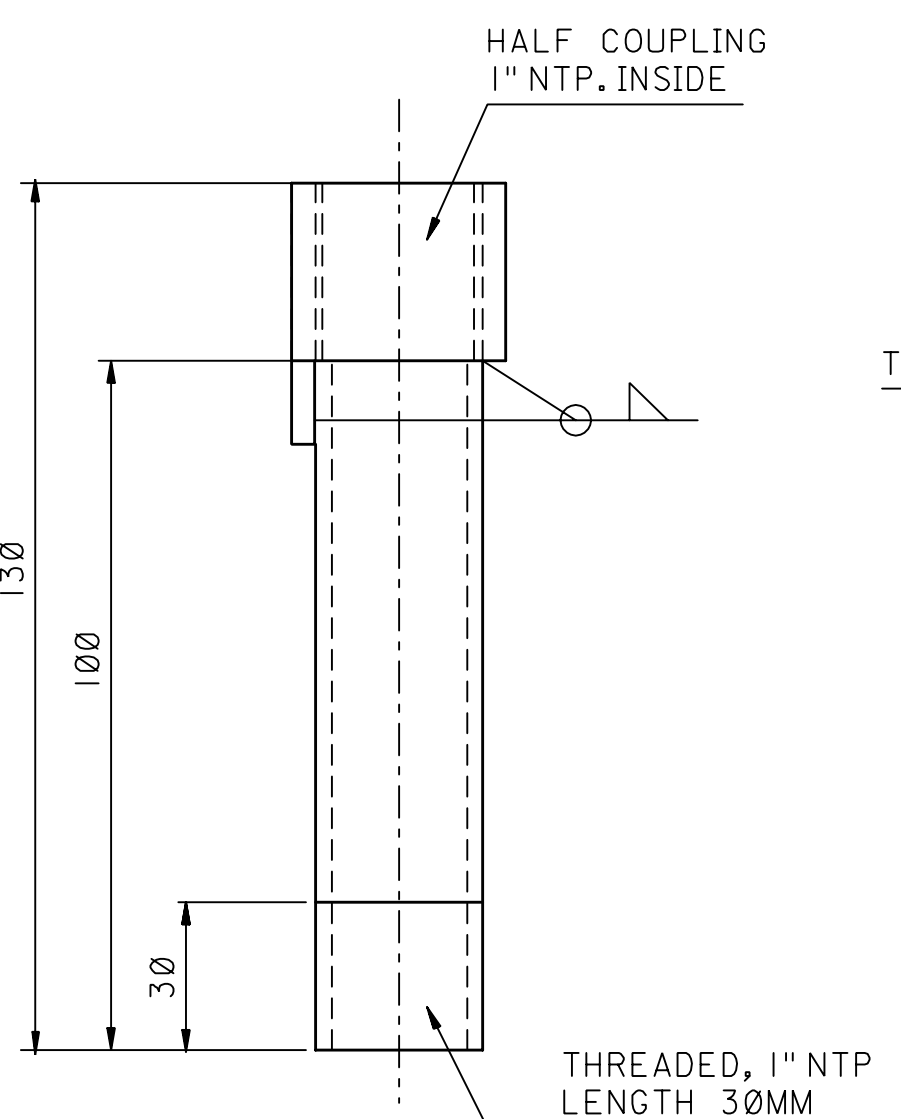
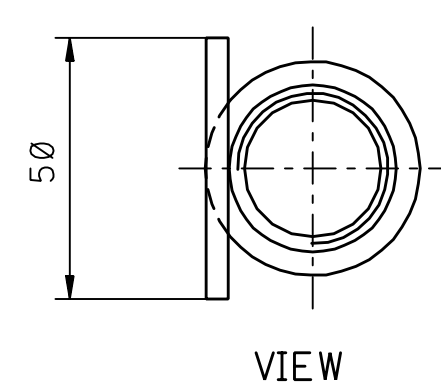
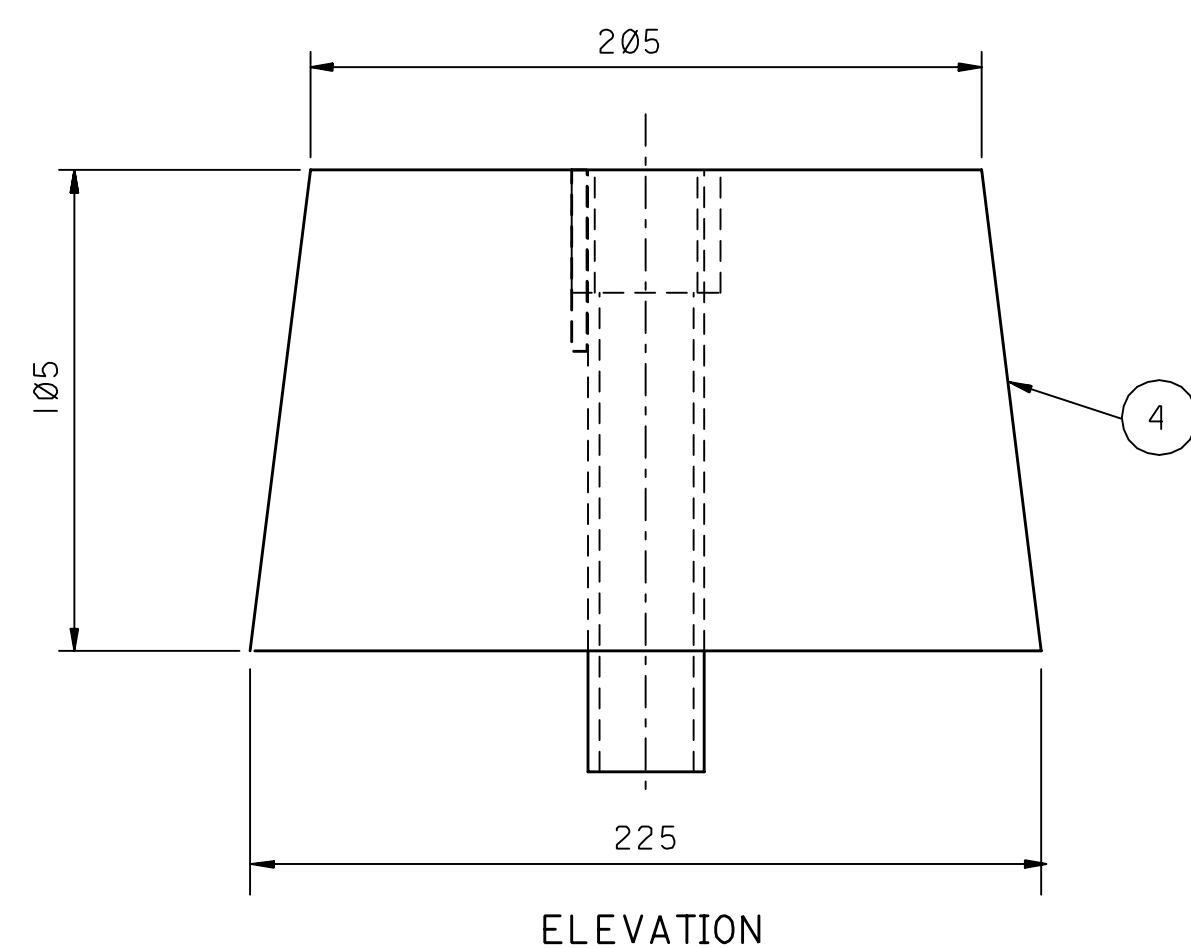




LAYOUT OF VESSEL'S ANODE MONITORING SYSTEM (AMS)



HIGH TEMPERATURE ZINC ALLOY BLOCK ANODES
DETAIL 7

SAP MM No.	NET WEIGHT	A	B	C	D	E	F
100007331	50.5 KG	150 mm	200 mm	205 mm	175 mm	205 mm	205 mm
100073253	22.2 KG	150 mm	200 mm	140 mm	115 mm	140 mm	140 mm

MATERIAL LIST		
ITEM	SAP MM No.	DESCRIPTION
1	11000414067	ELECTRICAL CABLE, #8 AWG CABLE 250 DEG. C
2	DC	1/2" BUSHING END
3	1000423703	1/2" CONNECTOR WATER TIGHT 180 DEG. F
4	1000050226	25kg NORANODE ANODE; 225MM DIA. x 105MM L.G.
5	1000422491	1/2" RIGID METALIC CONDUIT
6	1000435674	JUNCTION BOX, WATER TIGHT, COATED.
7	1000030892	1" C.S. WELDING BOSS; THREADED
8	1000096735	GASKET, INSULATING; 3" DIA ASME CL 150
9	1000096862	GASKET, INSULATING; 3" DIA 150#
10	1000053199	PLUG; PIPE; CPVC; 1"; HEX HEAD 160 DEG F
11	1000116831	TOOL KIT, CADWELD
12	1000112646	POWDER METAL WELD
13	1000074000	SHUNT, 0.01 OHM, M.C MILLER
14	1000434672 OR 1000434676	CHICO COMPOUND SEALING POWDER
15	DC	CHICO X PACKING
16	1000432566	BODY; CONDUIT
17	1000433197	COVER; CONDUIT BODY
18	1000016892	REDUCER, RIGID CONDUIT
19	DC	1" NIPPLE PIPE THREADED FROM BOTH SDES (14") IN LENGTH
20	1000015777	1" C.S. COUPLING THREADED
21	1000434843	1/2" DIA. SEALING FITTING EYS
22	1000073331	22 KG HTZ ANODE SEE DETAIL -7
23	1000073253	50 KG HTZ ANODE SEE DETAIL -7
24	1000073255	50 KG HTZ BRACKET MOUNTED ANODE
25	1000213804	BOLT WITH NUT: STEEL 1/2" x 13 TPI x 2" LG
26	1000228673	LOCK WASHER; STL; EXTERNAL TOOTH 3/8"
27	DC	CARBON STEEL (CS) FLAT BAR

NOTES:-

1. WELDING OF BRACKET OR WELDING BOSS TO VESSEL:
 - a. 1/4" FILLET WELD
 - b. WELD PROCEDURE P 1-1
 - c. PREHEAT TO 250°F
 - d. INSPECT WELD WITH MAGNETIC PARTICLE OR LIQUID PENETRANT
2. CLEAN THE MATING SURFACES TO BRIGHT METAL ON THE BRACKETS; THEN, TACK WELD BRACKETS AFTER BOLTING TOGETHER.
3. COAT ALL STEEL SURFACE AFTER ANODE INSTALLATION USING APC5-2A ACCORDING TO SAES-H-101 SECTION 8.3 AND 8.2.7. DO NOT COAT THE ANODE MATERIAL.
4. INSTALL 1" PVC PLUG IN THE TOP OF THE ANODE IN THE SPLIT ANODE ARRANGEMENT.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
6. TACK WELDING MAY BE ELIMINATED IF REQUESTED BY PROPONENT.
7. THE NUMBER OF ANODE MONITORING SYSTEMS REQUIRED FOR EACH TYPE OF VESSEL IS LISTED IN TABLE 1.
8. FOR VESSELS NOT LISTED IN TABLE-1, CONSULTING SERVICES DEPARTMENT WILL DETERMINE THE NUMBER AND PLACEMENT OF THE ANODES. ALSO FOR VESSELS WITH OPERATING TEMPERATURE GREATER THAN 70°C, CSD WILL DETERMINE THE ANODE DESIGN ON CASE-BY-CASE BASES. THE SIZE, WEIGHT AND NUMBER SHALL BE NO LESS THAN THAT REPRESENTED BY TABLE-1, UNLESS APPROVED IN WRITING BY THE SUPERVISOR OF CSD/M&CCD/C&SCU.
9. INSTALL THE MONITORING SYSTEMS IN THE ENDS OF THE VESSEL. FOR HPPT'S SEE NOTE 19. DEHYDRATOR MUST HAVE AN ADDITIONAL ONE IN THE CENTER.
10. USE ANODE S/N 1000073253 ANODE OR USE TWO 25-KG ANODE S/N 1000050226 OR ANODE ALLOY THAT ARE THREADED TOGETHER TO FORM ONE 50-KG ANODE AT EACH WELDING BOSS.
11. THE BLIND FLANGE MUST BE ELECTRICALLY ISOLATED FROM THE VESSEL EXCEPT FOR THE PATH THROUGH THE CABLE AND SHUNT.
12. INSTALL THE SHUNT BOX AND MAKE THE CABLE CONNECTION TO THE VESSEL AT THE CLOSEST PRACTICAL LOCATION TO THE VESSEL.
13. WELD A 75mm X 75mm X 3mm OR LARGER STEEL PLATE TO THE VESSEL FOR CABLE CONNECTION.
14. THERMITE WELD THE CABLE TO THE BLIND FLANGE AND THE VESSEL CONNECTING PLATE.
15. FILL THE 3 INCH NOZZLE WITH CHICO COMPOUND TO THE BOTTOM OF THE VESSEL.
16. ANODE S/N 1000073331 AND 1000073255 MAY ONLY BE USED FOR THE VESSELS LISTED IN TABLE-1, IF APPROVED IN WRITING BY THE CATHODIC PROTECTION PROPONENT.
17. THE ISOLATION KIT AND GASKETS ARE FOR 150# RATING. USE THE RATING OF THE VESSEL TO ORDER THE CORRECT BLIND FLANGE, ISOLATING GASKET, ISOLATING KIT IF RATED OTHER THAN 150#.
18. VESSELS WITH COALESCING PACKING MUST HAVE THE AMS INSTALLED CLOSE TO THE PACKING.
19. RESISTANCE HAS TO BE MEASURED BETWEEN THE FLANGE AND VESSEL BEFORE BOXING UP TO ENSURE AN OPEN CIRCUIT.
20. REQUIREMENT OF THE MONITORING OF LPPT VESSELS AND OTHER TYPES OF VESSELS MUST BE BASED ON THE CORROSION AND COATING RECORDS OF THESE VESSELS.
21. FOR OTHER SIZES OF VESSELS USE TABLE-1 TO FIGURE OUT THE REQUIREMENT BASED ON PROPORTIONAL CALCULATIONS FOR THAT SPECIFIC VESSEL. BASED ON RECORDS OF CORROSION AND INSPECTION, THE NUMBER OF ANODE FOR THE VESSELS CAN BE INCREASED.
22. THE NUMBER OF ANODES FOR VESSELS THAT ARE NOT LISTED IN TABLE 1 SHALL BE DETERMINED ACCORDING TO INSPECTION AND CORROSION RECORDS.

DWG. RESPONSIBILITY:
CATHODIC PROTECTION STANDARDS COMMITTEE

SCALE: NONE

REVISION CERTIFICATION		EDSD VERIFICATION
THIS INDICATES THAT REV. NO. <u>02</u>		
OF THIS DRAWING IS COVERED, FOR ALL		
APPROVAL/CERTIFICATION REQUIREMENTS,		CONTROL NUMBER
BY DRAWING COMPLETION CERTIFICATE (DCC)		By: _____
NO.: <u>714128-8504-04</u>		DATE: _____

[illegible]

DESIGN CERTIFICATION	
DRAWN BY <u>AVM (ESSD)</u>	CHECKED BY <u>RCR 02/93</u>
DATE STARTED <u>12-26-92</u>	DATE COMPLETED <u>12-26-92</u>
DISCIPLINE ENGINEER <u>ORIGINAL SIGNED</u>	
PROJECT ENGINEER <u>ASL - UMAIR 03/93</u>	

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL CERTIFIED AND DATED.	CERTIFIED BY: _____ (NAME) SIGNATURE _____ DATE _____
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SAUDI ARABIAN OIL COMPANY

REVIEW FOR KEY DRAWINGS REQUIRED ☐ NOT REQUIRED ☐

CONSTRUCTION AGENCY _____
OPERATIONS _____
OTHER _____

CATHODIC PROTECTION	DRAWING TYPE STD
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INTERNAL GALVANIC ANODES

INSTALLATION DETAILS FOR VESSEL

STD. DWG.	ME
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PLANT NO.	INDEX	DRAWING NUMBER	SHT. NO.	REV. NO.
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990	X	AA-036388	001	02
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