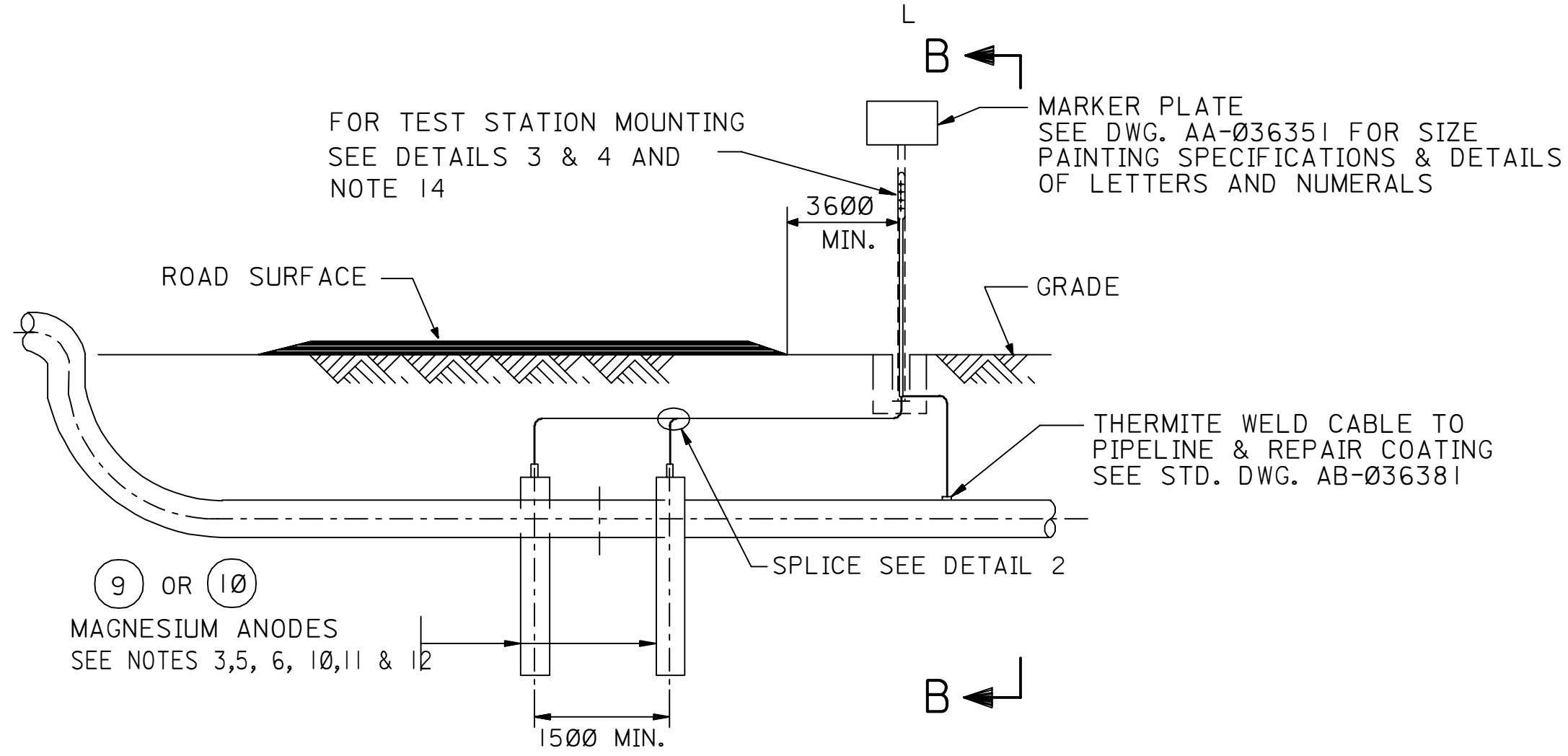
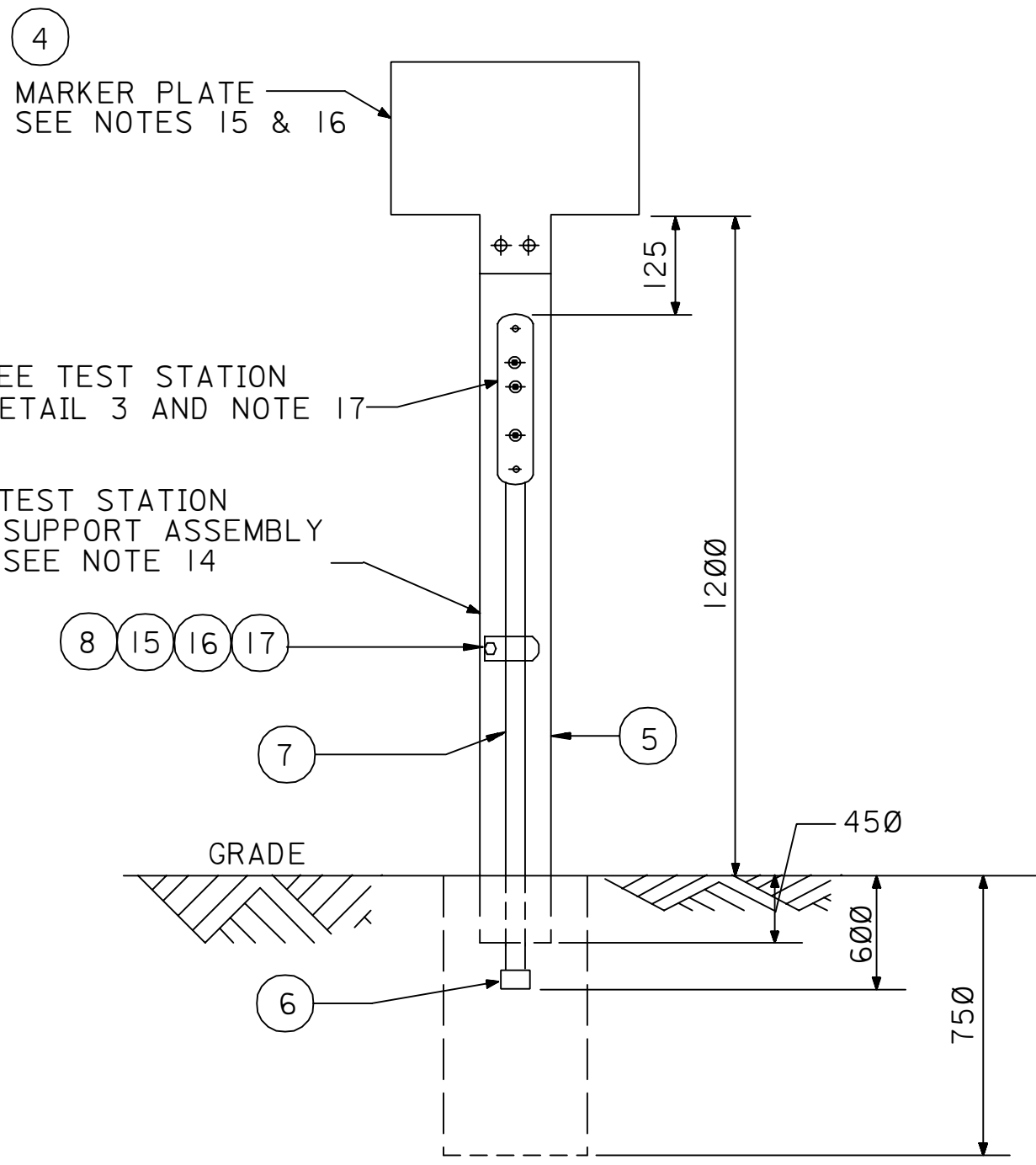
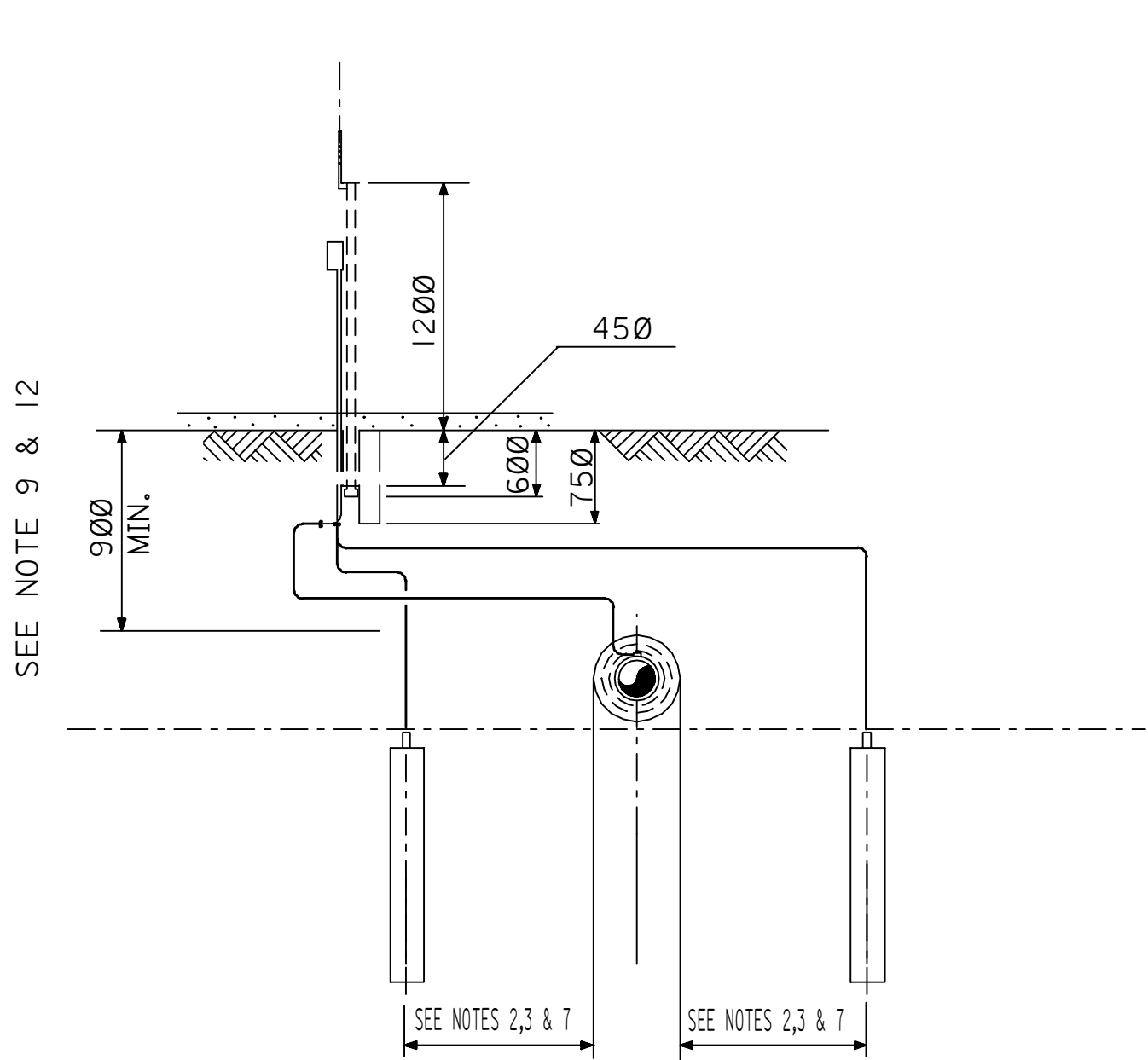




TYPICAL GALVANIC ANODE INSTALLATION
NEW ABOVE GRADE PIPELINE AT ROAD
CROSSING OR SSD-I FENCE CROSSING



DETAIL-4

MATERIAL LIST	
CODE	SAMS NUMBER
1	10-565-219
2	10-829-415
3	11-173-412
4	12-157-726
5	12-432-120
6	15-290-860
7	15-314-916
8	15-510-825
9	17-851-611
10	17-851-681
11	15-111-101
12	14-112-363
13	18-079-940
14	18-080-020
15	10-565-211
16	11-173-012
17	47-820-094
18	10-826-444
19	14-197-901
20	D/C
21	15-613-667
22	15-601-819

- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
 2. ANODE DISTANCE FROM PIPELINE TO BE 600 MIN. MULTIPLE ANODES TO BE INSTALLED ON 1500 MIN. CENTERS
 3. ANODE MAY BE INSTALLED VERTICALLY OR HORIZONTAL
 4. ANODE REQUIREMENTS FOR EXISTING PIPELINES (P-2 COATING OR TAPE WRAP) ARE INDICATED IN TABLE 1
 5. ANODE REQUIREMENTS FOR NEW PIPELINES (FBE OR SIMILAR COATING) ARE GIVEN IN SAES-X-400.
 6. FOR BORED CROSSINGS, INSTALL ANODES AT EACH SIDE OF CROSSING. FOR OPEN CUT CROSSINGS, INSTALL ANODES ON EACH SIDE OF THE PIPELINE IN CENTER OF ROAD OR CAMEL CROSSING.
 7. WHEN PARALLEL PIPING RUNS PROHIBIT 600 MIN. "CLEARANCE, ANODES SHALL BE BURIED A MIN. OF 600 BELOW PIPE (EXCEPT 300 MIN. IN ROCKY AREAS)
 8. IF PIPELINE O.D. ARE SEPARATED BY 1.3 METERS OF GREATER, ANODES MAY BE INSTALLED BETWEEN PIPELINES
 9. ALL ANODES ARE TO BE INSTALLED A MINIMUM OF 900 BELOW GRADE OR BELOW THE BOTTOM OF THE PIPE WHICH EVER IS GREATER (EXCEPT 300 MIN. IN ROCKY AREAS)
 10. PREPACKAGED ANODE TO BE THOROUGHLY SATURATED WITH WATER PRIOR TO ,DURING, AND AFTER BACKFILLING TAMP BACKFILL FIRMLY AROUND ANODE.
 11. BARE 100 LB. MAGNESIUM ANODE TO BE USED IN SUBKHA ONLY
 12. IN SUBKHA LAY ANODE HORIZONTALLY AT NOT LESS THAN 900 DEPTH.
 13. AFTER SECURING ANODE LEAD WIRE TO HEADER CABLE WITH SPLIT BOLT CONNECTOR AND SOLDERING, WRAP CONNECTION WITH 3 ONE HALF LAP LAYERS OF RUBBER TAPE, THEN 3 ONE HALF LAP LAYERS OF PLASTIC VINYL TAPE.
 14. FOR FABRICATION DETAILS OF SUPPORT ASSEMBLY, SEE STANDARD DRAWING AB-036540.
 15. FOR MARKER PLATE DETAILS SEE STANDARD DRAWING AB-036351.
 16. PLACE MARKER ON RIGHT HAND SIDE OF PIPELINE WHEN FACING IN DIRECTION OF INCREASING STATIONS.
 17. THE GALVANIC ANODE THREE-PIN TEST STATION (DETAIL 3), CONSISTING OF ITEMS 15 TO 22, IS AVAILABLE THROUGH SAMS (17-855-974) AS A COMPLETE ASSEMBLY. FOR DETAILS SEE STANDARD DRAWING AA-036157
 18. FOR GAS ACCUMULATOR, THERMITE WELD CABLE TO ACCUMULATOR AND INSTALL 2-27 KG ANODES EACH SIDE OF BOTTLE. 3-PIN TEST STATION IS REQUIRED.
 19. FOR BURIED NON-HYDROCARBON VALVES AND ISOLATED FITTINGS, ANODES TO BE THERMITE WELDED DIRECTLY TO VALVE/FITTING WITH NO ABOVEGROUND TEST FACILITY.
 20. A FLUSH SOIL ACCESS TEST BOX (17-890-500) WITH SHUNT (17-889-500) MAY BE USED AS A GALVANIC ANODE JUNCTION BOX IN PAVED OR CONGESTED AREAS.

REFERENCE DRAWINGS

CATHODIC PROTECTION MARKER PLATE DETAILS	AA-036351
THERMITE WELDING OF CATHODIC PROTECTION CABLES & COATING REPAIRS TO BURIED PIPELINES	AB-036381
MOUNTING INSTALLATION DETAILS	AB-036540
BONDING STATION DETAILS ONSHORE PIPELINE AND FLOWLINE	AA-036674
CATHODIC PROTECTION PIPELINE KM MARKER & CP TEST STATIONS	AB-036907
CATHODIC PROTECTION GALVANIC ANODE 3-PIN TEST STATION	AA-036157

DRAWING RESPONSIBILITY:
CATHODIC PROTECTION & COATING COMMITTEE

REV. NO.	DATE	BY	JO/EWO	DESCRIPTION	CHKD.	CERT.	APPD.
SAUDI ARABIAN OIL COMPANY							
DRAWN BY: MAQ CHECKED BY: WED SCALE: NONE							
DATE STARTED: DATE COMPLETED:							
OPR'G. DEPT. ENG. DEPT.							
APP'D. FOR CONST.							
THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OR FOR ORDERING MATERIAL UNTIL CERTIFIED AND DATED							
CERTIFIED BY: DATE:							

DETAILS OF INSTALLATION
GALVANIC ANODES FOR ROAD & CAMEL PIPELINE CROSSING

STD. DWG.	METRIC
PLANT NO. INDEX	DRAWING NUMBER SHT. NO. REV. NO.
990 X	AA-036352 002 00