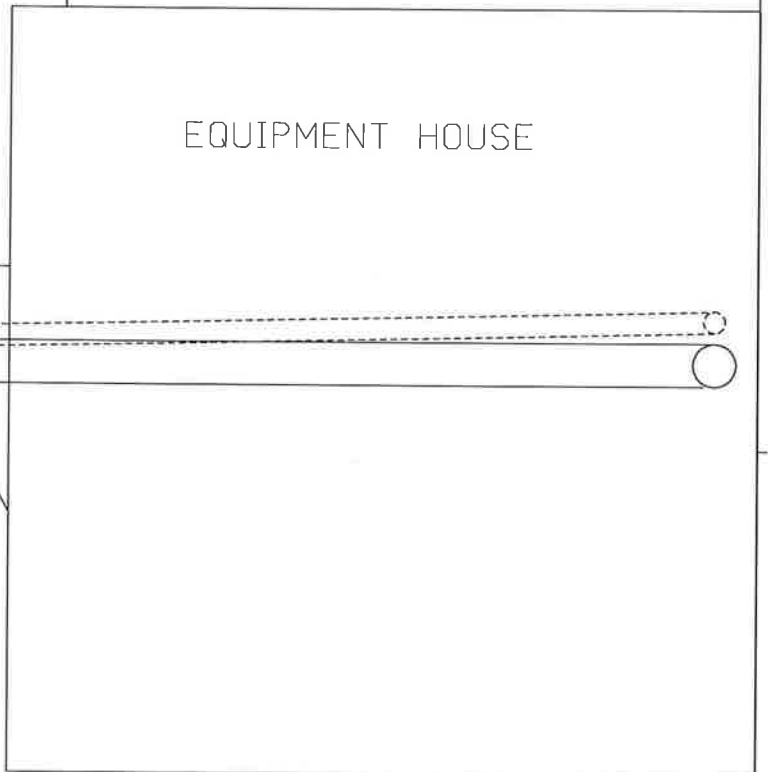


RAILROAD SUPPLIED CABLES
 2-2CØND #6 FOR POWER
 6 PAIR COMMUNICATION CABLE
 7COND #14 TO BRING STARTS INTO LOCATION



- NOTES
1. U.J. BOX LOCATED 50' FROM GAGE WITH BOTTOM OF U.J. BOX AT THE BALLAST LINE. TOP OF JUNCTION BOX IS NOT TO BE HIGHER THAN THE BOTTOM OF RAIL.
 2. ALL JOINTS MUST BE CLEANED AND GLUED
 3. H.W.D. CONDUIT AND RISER ARE 2" PVC
 4. H.W.D. RISER LOCATED 52" FROM SCANNER CENTERLINE AND 52" FROM GAGE
 5. TO MAKE 90 DEGREE CORNER, USE SWEEP 'L' OR TWO 45 DEGREE 'L' CONNECTED BY A SHORT PIECE OF PIPE.
 6. D.E.D. CABLE TO ENTER U.J.B. USING SHORT PIECE OF S/O CABLE. USE X1 AND X2 WIRES TO HOUSE.
 7. 18 FEET MINIMUM CLEARANCE TO HOUSE
40 FEET MAXIMUM CLEARANCE TO HOUSE
BOTTOM OF HOUSE TO BE 8" ABOVE GROUND LINE.
 8. PVC BURIED 36" BELOW MEAN GRADE LINE
 9. D.E.D. LOCATED WITHIN 6' OF SCANNER
 10. D.E.D. CABLE AND S/O CABLE FROM TRANSUCERS ATTACHED TO INSIDE OF RAIL USING APPROVED CLAMPS (ERICO CLAMPS)
 11. HBD SCANNER PROTECTION RAMPS AND FLANGER SIGNS TO BE INSTALLED IN ACCORDANCE WITH STANDARD PLAN CS-1502 AND MW 78460-D SCANNERS ARE NOT TO BE INSTALLED WITHOUT THIS PROTECTION
NOTE: WOOD RAMPS WILL BE REPLACED BY METAL RAMPS (SEE SHEET 12)
 12. TRACK WIRE FOR S.O.T.C. IS DIRECT BURIED AND CONNECTED TO RAIL NEAR THE HWD. WHEN SAFETRAN MOTION SENSOR MODEL 62570 IS USED ISLAND CIRCUIT IS TO BE 100'.
 13. INSTALL REFERENCE TIE ON EDGE TO ALLOW SCANNER ADJUSTMENT. REFERENCE TIE SHOULD BE CLEAR OF JOINTS SO SCANNER CAN BE MOUNTED WITHOUT ANY OBSTRUCTIONS. REMOVE ANY ANTI-CREEP DEVICES FROM BOTH SIDES OF THE REFERENCE TIE. REMOVE ALL SPIKES FROM INTENDED SCANNER LOCATION. IF DESIRED, SPIKES MAY BE PUT IN THE TIE PLATE BETWEEN RAILS.
 14. BUMPER TIE TO PROTECT UJB AND HOT WHEEL DETECTOR WILL BE BURIED WITH AT LEAST 2 FEET IN THE GROUND AND TOP AT LEAST 6" ABOVE TOP OF HWD.
 15. ALL TRANSUCER MEASUREMENTS ARE TO THE MAGNETIC CENTER.

CONRAIL

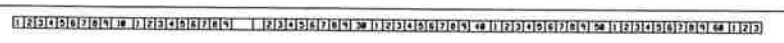
LOCATION
TRACK AND CONDUIT LAYOUT
SINGLE TRACK

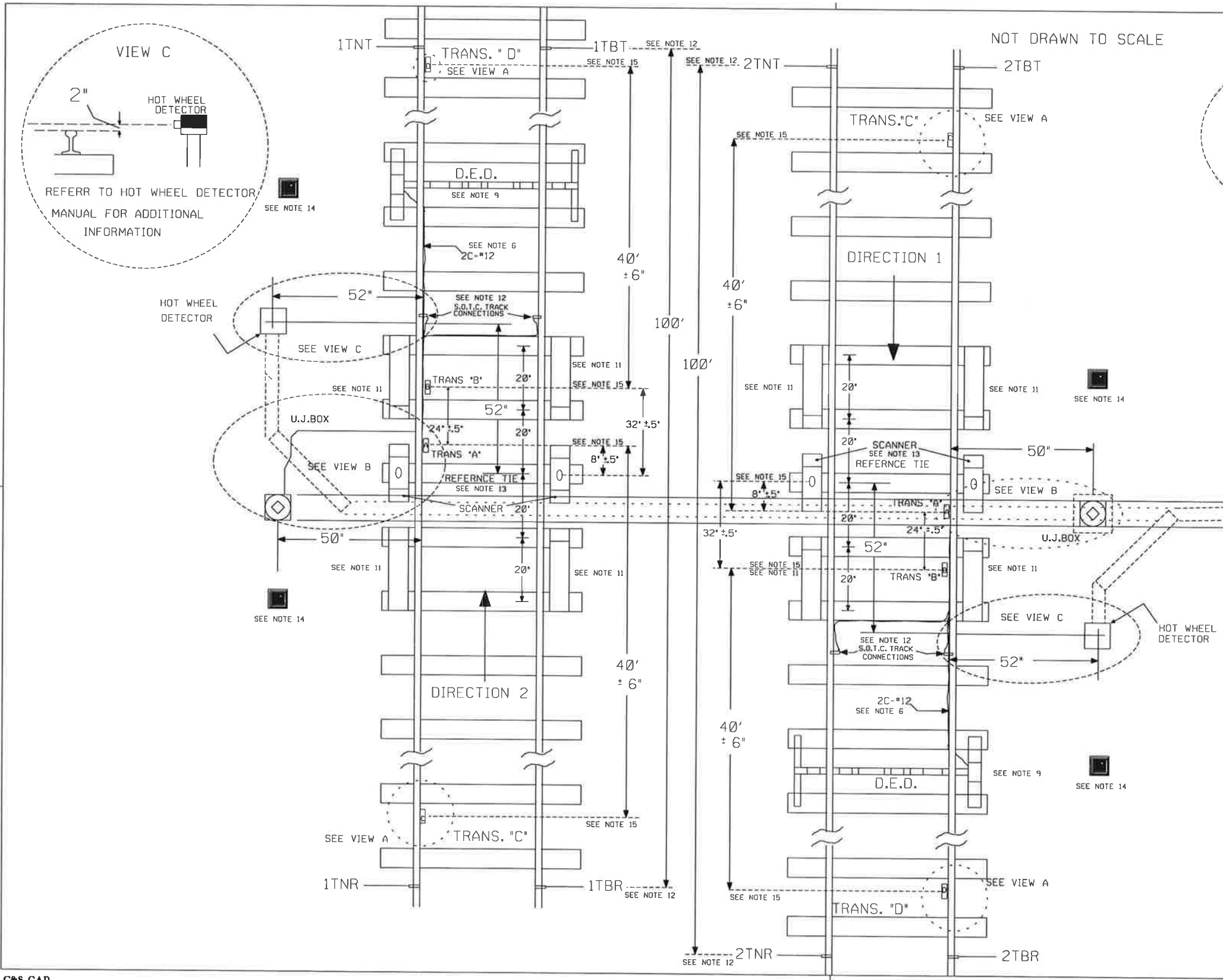
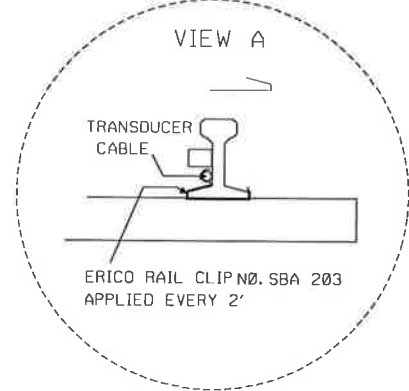
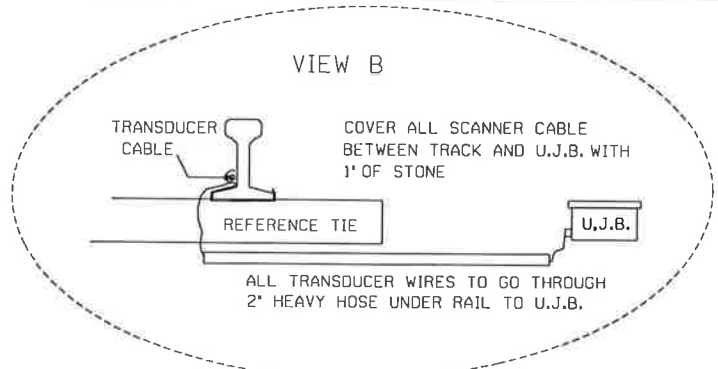
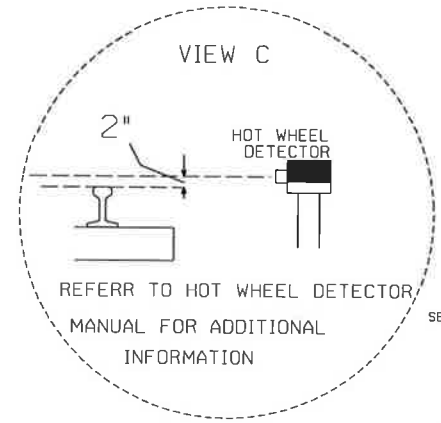
ISSUE DATE: DECEMBER 9, 1988 HBD-9000

REV. 1 SHEET 2

REV	DATE	CKD BY

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TO HBD EQUIPMENT HOUSE
SEE SHEET 2
1-4" PVC AND 1-2" PVC PER TRACK
GOING TO HBD HOUSE

NOTES FOUND ON PAGE 2

REV	DATE	CKD BY
2	7-3-89	1 L

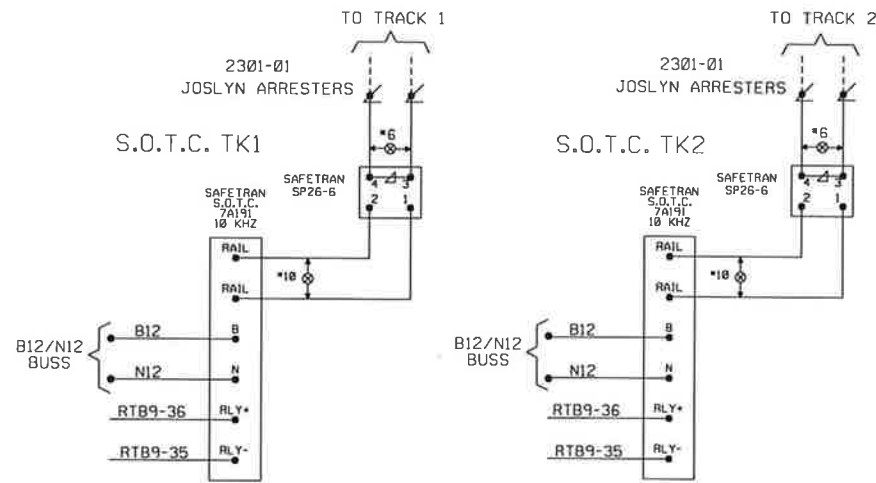
C&S CAD

CONRAIL

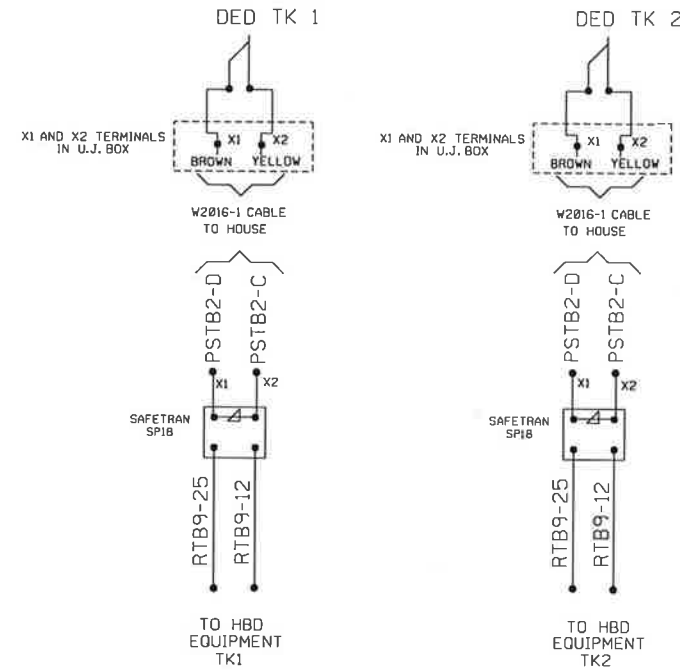
LOCATION
TRACK AND CONDUIT LAYOUT
DOUBLE TRACK

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REV. 1	SHEET 3

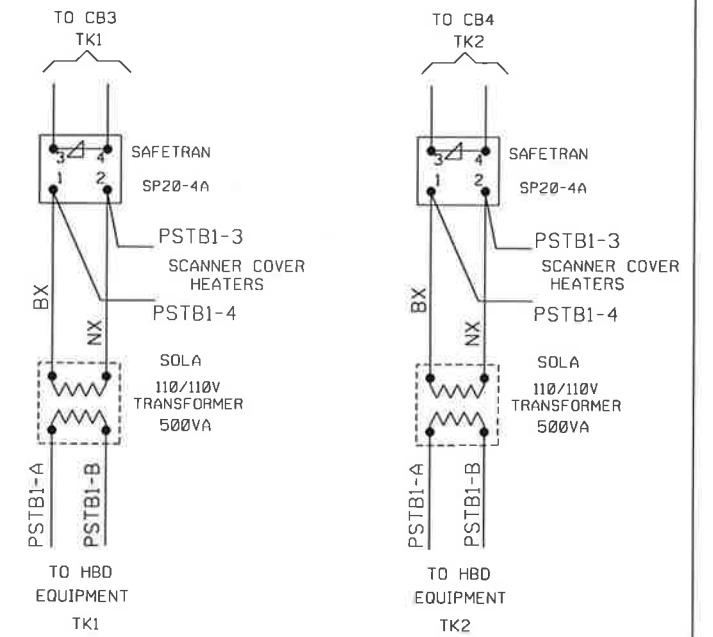
NOT REQUIRED WHEN MS IS USED FOR STARTS
USE MS ISLAND CIRCUIT IN PLACE OF S.O.T.C.



NOTE
⊗ - DENOTES TWISTED PAIR

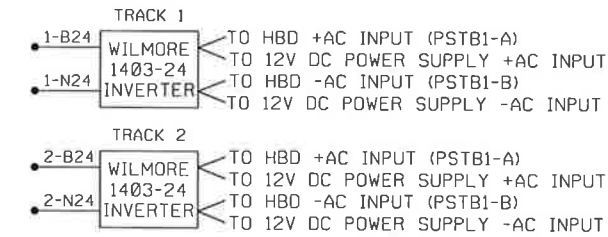
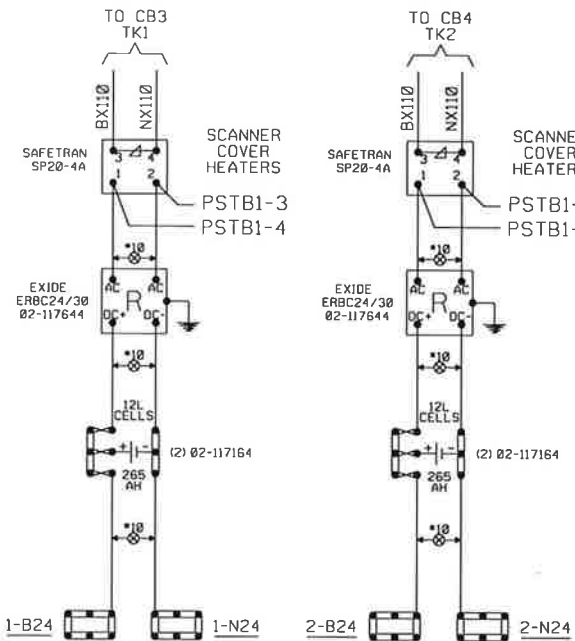


HBD EQUIPMENT POWER DISTRIBUTION



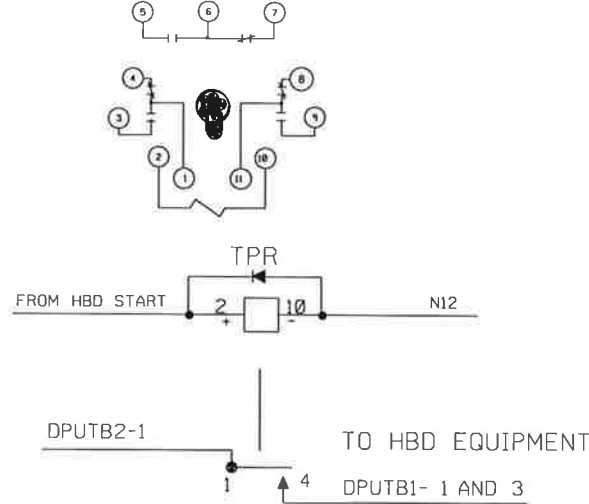
WIRE THIS WAY ONLY WHEN HBD LOCATION IS NOT TO HAVE BATTERY BACK-UP.

BATTERY BACKUP FOR HBD DOUBLE TRACK LOCATIONS.



HBD START RELAY TK1

STRUTHERS-DUNN
12 VDC RELAY CONFIGURATION
A314XCX48P-30 DELAY ON

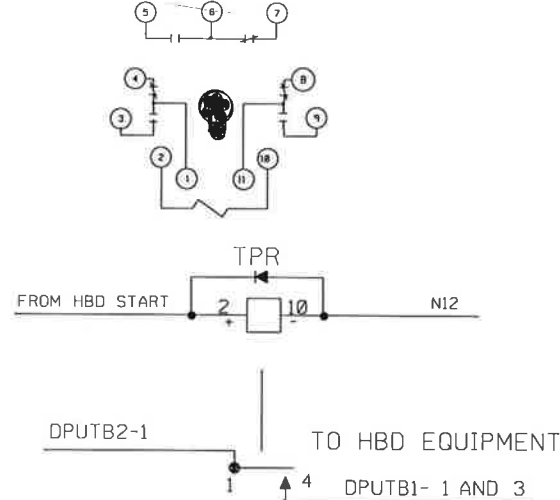


NOTE: USE HBD B12 NOT SIGNAL BATTERY B12

RELAY NOT NEEDED WHEN MOTION SENSOR IS LOCATED AT HBD LOCATION AND BEING UTILIZED FOR HBD START.

HBD START RELAY TK2

STRUTHERS-DUNN
12 VDC RELAY CONFIGURATION
A314XCX48P-30 DELAY ON



NOTE: USE HBD B12 NOT SIGNAL BATTERY B12

RELAY NOT NEEDED WHEN MOTION SENSOR IS LOCATED AT HBD LOCATION AND BEING UTILIZED FOR HBD START.

REV	DATE	CKD BY

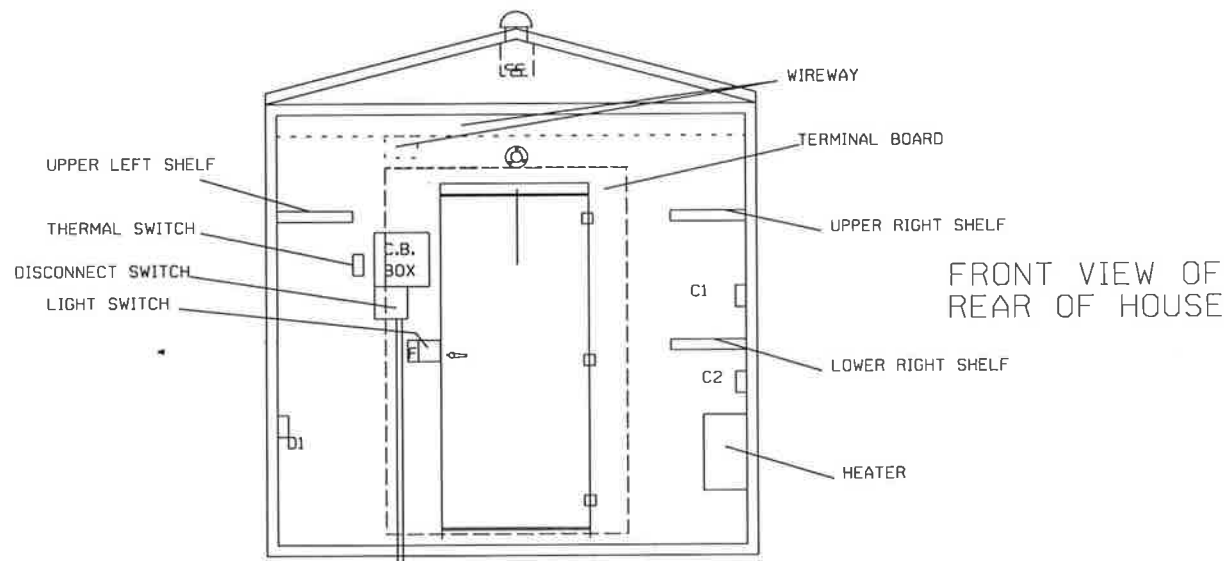
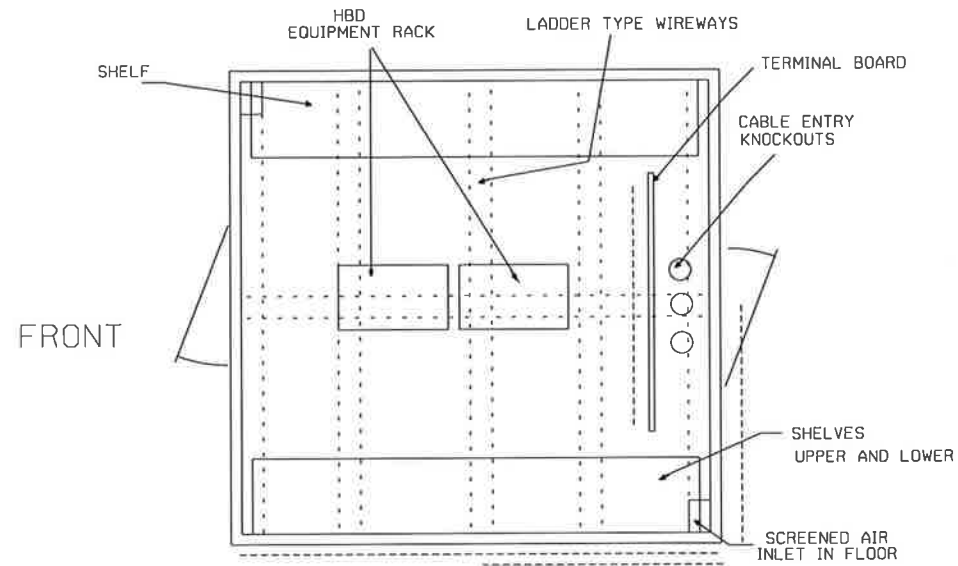
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EQUIPMENT POWER DISTRIBUTION
D.E.D. AND S.O.T.C.
HBD START RELAY

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REV. 1	SHEET 4

1123056789 101112131415 1617181920 2122232425 2627282930 3132333435 3637383940 4142434445 4647484950 5152535455 5657585960

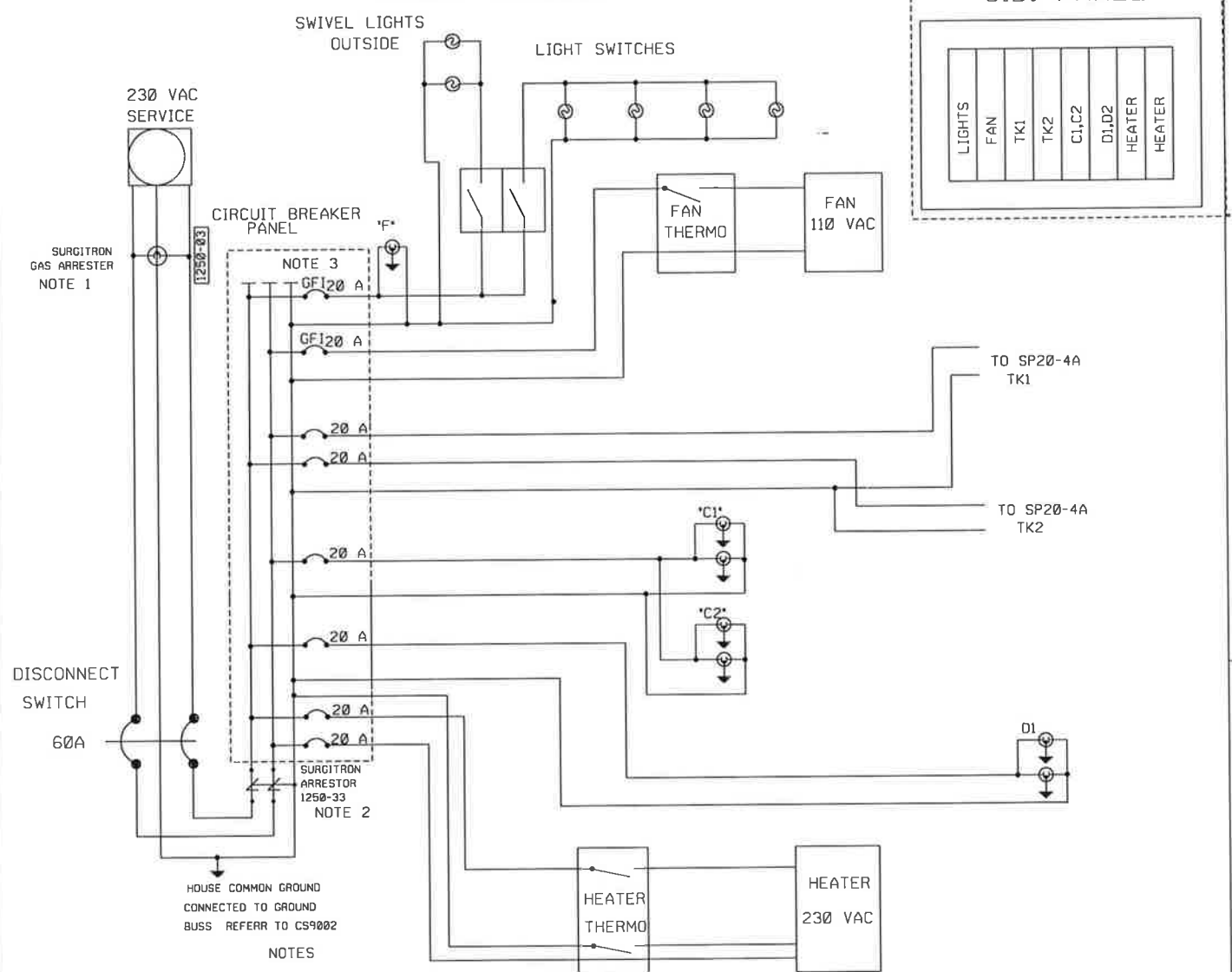


NOTE: D2 MOUNTED ON BACK WALL NOT ON TERMINAL BOARD

REV	DATE	CKD BY

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HOUSE WIRING



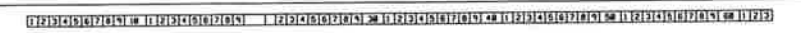
- NOTES
- ORDERING REFERENCE FOR:
 SURGITRON ARRESTER 1250-02 IS 02-675005 FOR 120V A.C.
 SURGITRON ARRESTER 1250-03 IS 02-675021 FOR 240V A.C.
 SURGITRON ARRESTER 1250-05 IS 02-675047 FOR 440V A.C.
 FIELD TO USE ONE OF THE ABOVE GAS ARRESTERS AT CONRAIL'S TAP FROM UTILITY SERVICE.
 - ORDERING REFERENCE FOR:
 JOSLYN ARRESTER 1250-32 IS 02-675062
 SURGITRON ARRESTER 1250-33 IS 02-675104
 FIELD TO USE ONE OF THE ABOVE ARRESTERS ON THE 110 /220 VAC POWER SUPPLY INTO THE HBD INSTRUMENT HOUSE.
 - ONLY BREAKER 1 SHALL BE A GROUNDFAULT INTERRUPT TYPE

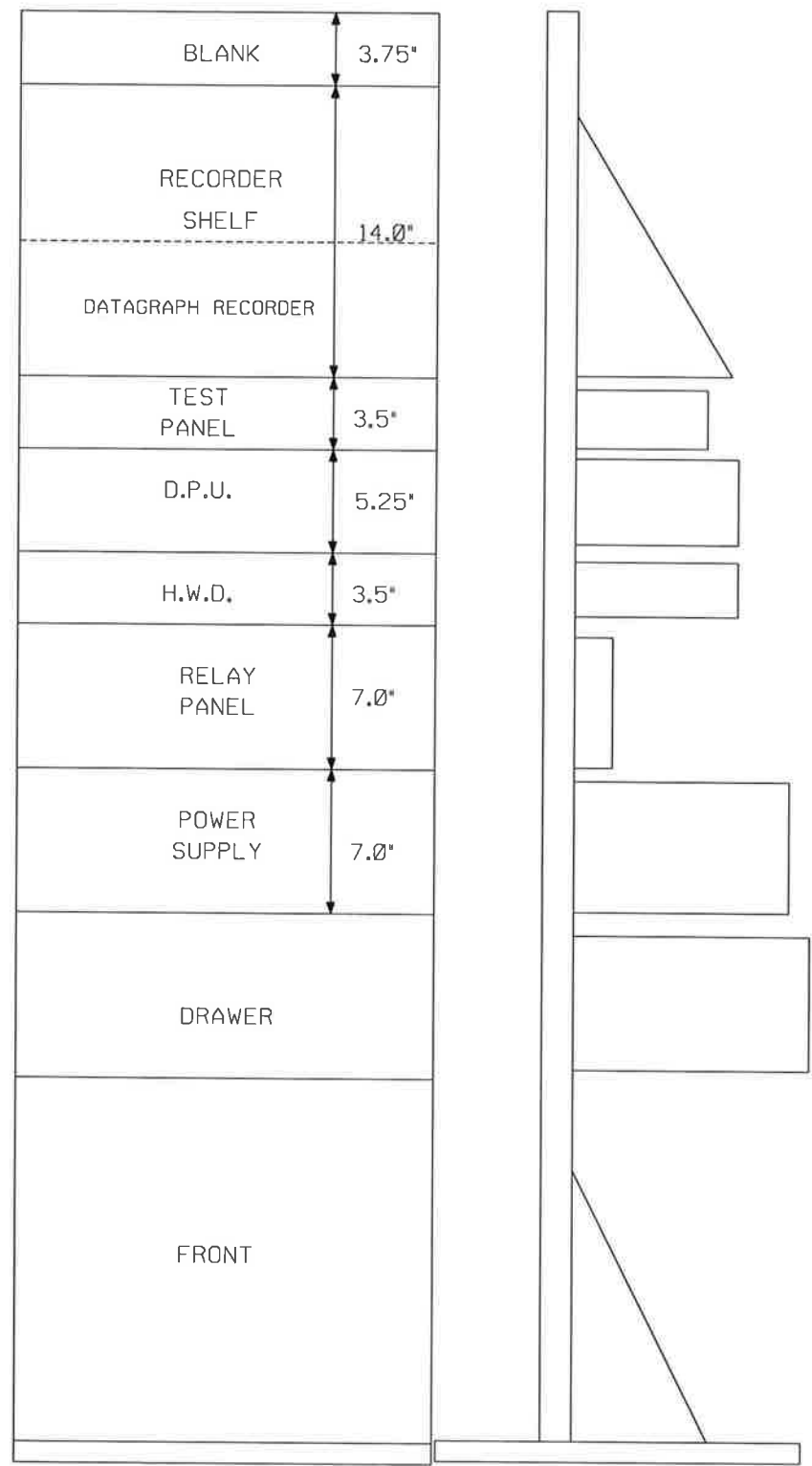


STANDARD
 8 X 8 HBD HOUSE LAYOUT
 C.B. PANEL AND COMMERCIAL POWER

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REV. 1	SHEET 6

QSA1:1100,10116X8HOUSE.DGN





NOTES

1. WHEN USING DATAGRAPH IN PLACE OF BRUSH 220 RECORDER, DISREGARD NOTES 2, 3, AND 4.
2. INSTALL CHASSIS SOCKET FOR RECORDER PLUG IN BACK CORNER OF RECORDER SHELF.
3. IF TEST PANEL IS NOT INSTALLED IN THIS RACK, LEAVE 3.5" OPENING.
4. BRUSH 220 RECORDER CONNECTIONS:
 TB302
 2. CH.1 (RAIL 1)
 3. JUMPER TO 6
 5. CH.2 (RAIL 2)
 6. JUMPER TO 7
 7. GND
 8. BEARING I.D. (LEFT EVENT)
 9. EVENT PEN COMMON
 10. ALARM (RIGHT EVENT)
 11. RECORDER START
 12. RECORDER START

ANALOG SIGNAL CONDITIONING CARD OUTPUT IS 100mv/mm WHEN R79 AND R104 ARE 15K (1%) OR 400mv/mm WHEN R79 AND R104 ARE JUMPERED OUT

REV	DATE	CKD BY

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CONRAIL

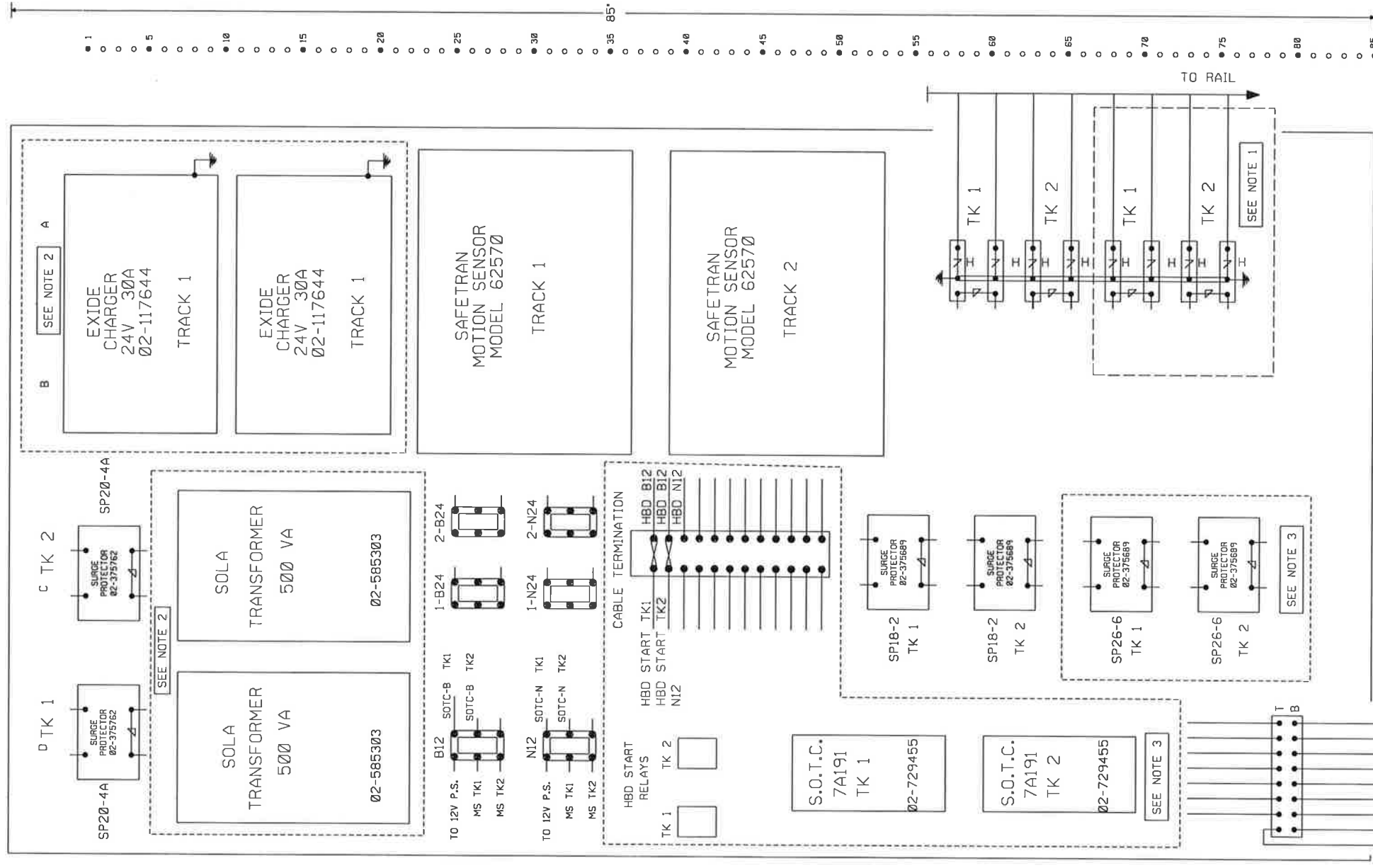
HBD EQUIPMENT RACK

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REV	DATE	CKD BY
1		RDW

C&S CAD



ALL NEW WORK
INSTALL AND CHECK
AS A WHOLE

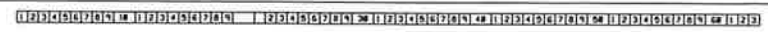
- NOTES:
- 02-037057 - 3 POST PORCELAIN BASE
 - 02-050753 - TERMINAL BLOCK FOR EQUALIZER
 - 02-048757 - TERMINAL STRIP
 - 02-150009 - BUSS LINK
 - 02-286662 - TEST LINK ASSEMBLY
 - 02-025920 - ARRESTOR, HEAVY DUTY
 - 02-025565 - ARRESTOR
 - 02-197950 - EQUALIZER
- GROUND CONNECTION TO BE IN ACCORDANCE WITH STANDARD PLAN CS-9001-A
- NOTE 1: THIS TERMINATION BLOCK IS REQUIRED ONLY AT DOUBLE TRACK LOCATIONS. WHERE A MOTION SENSOR PROVIDES THE HBD START AND ISLAND CIRCUIT.
- NOTE 2: WHEN USING A BATTERY BACKUP SYSTEM AT HBD LOCATIONS, THE SOLA TRANSFORMERS WILL NOT BE USED, SO THE EXIDE BATTERY CHARGERS CAN BE MOUNTED ON THE TERMINAL BOARD WHERE THE TRANSFORMERS WERE TO BE LOCATED.
- NOTE 3: WHEN USING A SAFETRAN MOTION SENSOR MODEL 62570 FOR HBD LOCATIONS, HBD START RELAYS AND CABLE FOR HBD STARTS ARE NOT USED.

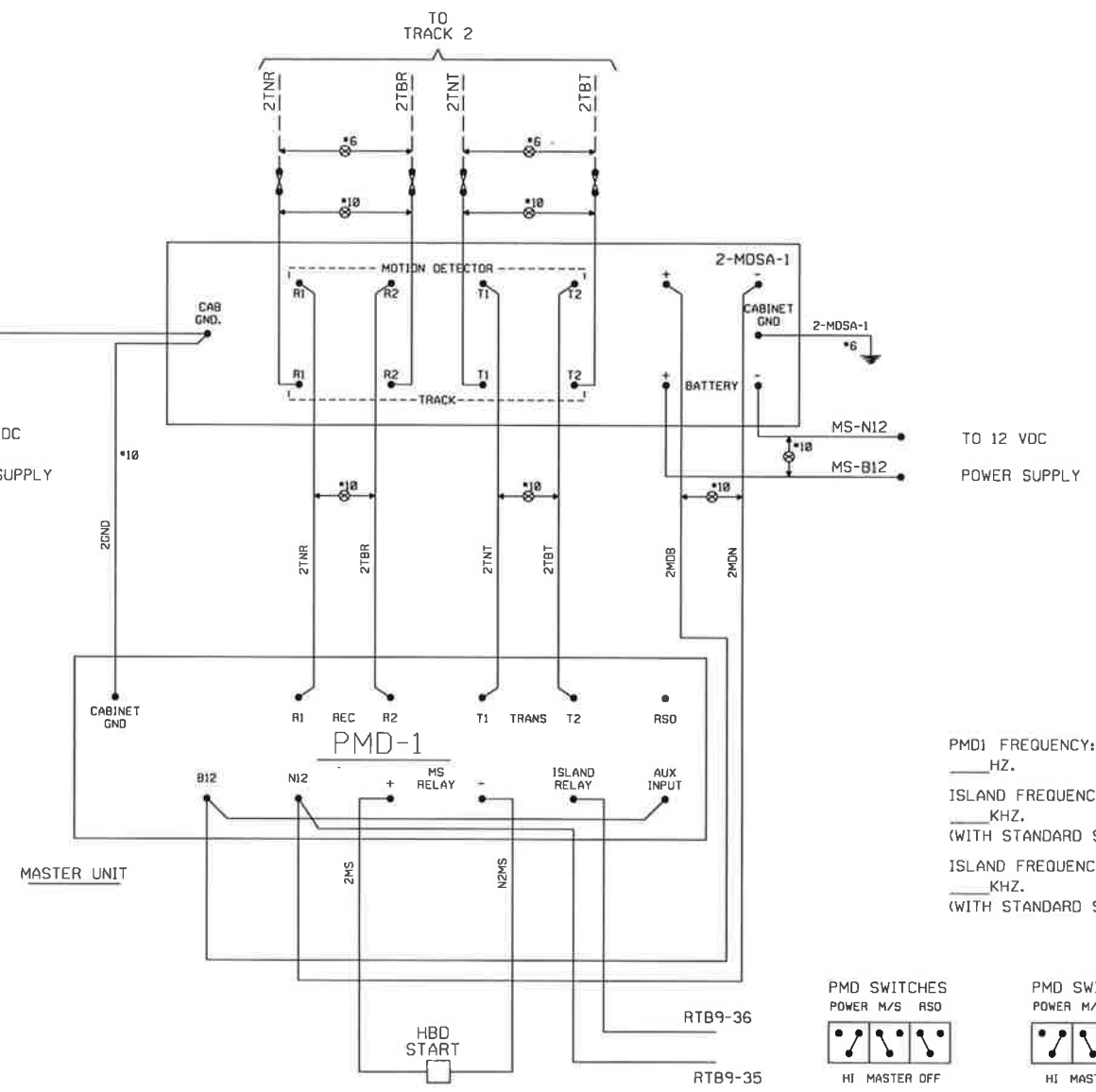
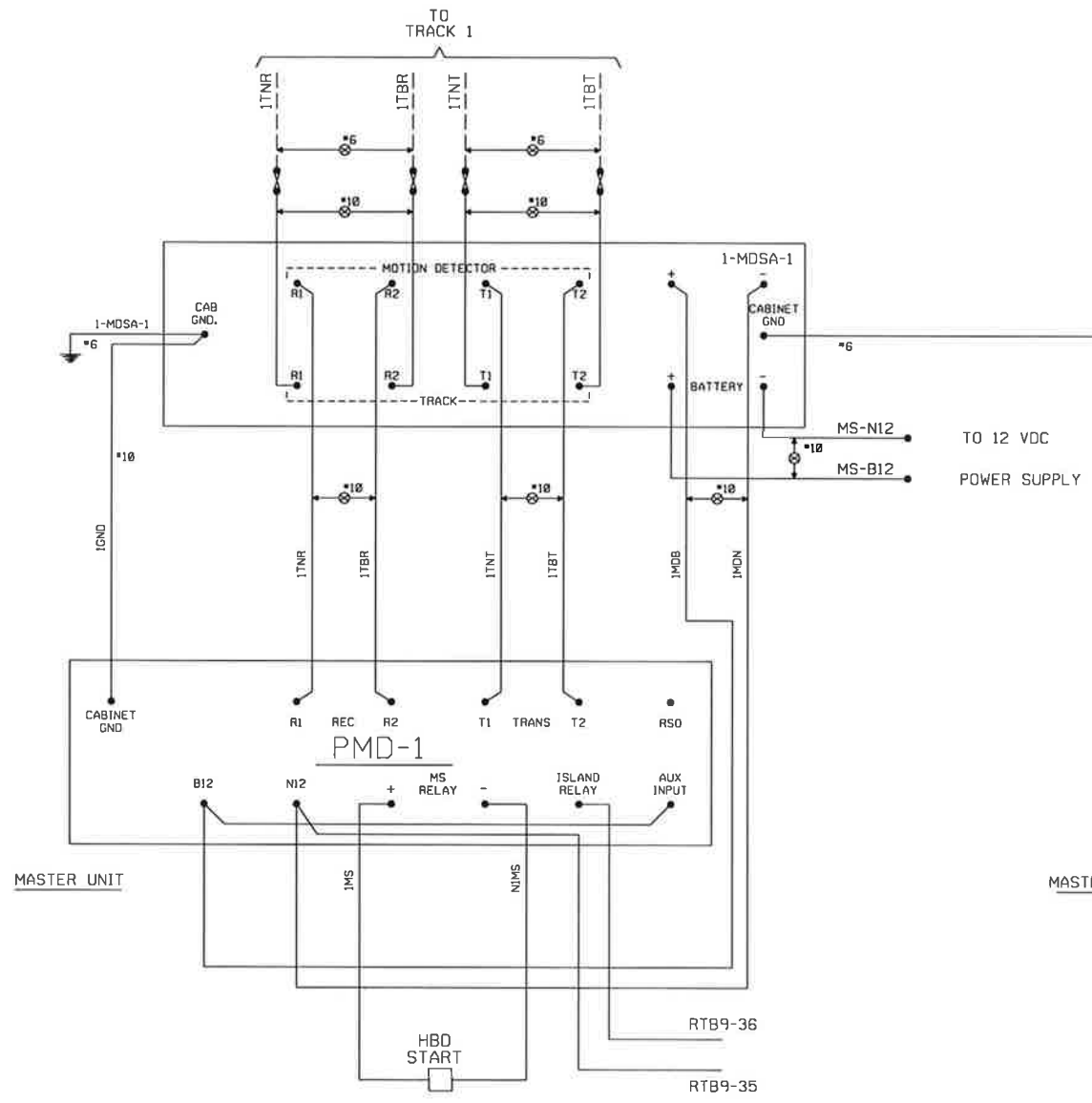
CONRAIL

TERMINAL BOARD LAYOUT

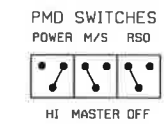
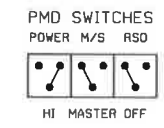
ISSUE DATE: DECEMBER 9, 1988 HBD-9000

REV. 1 SHEET 8





PMD1 FREQUENCY: TRACKS 1 AND 2
 ___ HZ.
 ISLAND FREQUENCY: TRACK 1
 ___ KHZ.
 (WITH STANDARD SUBTONE)
 ISLAND FREQUENCY: TRACK 2
 ___ KHZ.
 (WITH STANDARD SUBTONE)



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CONRAIL

HBD START
 USING MOTION SENSORS
 HARMON PMD-1 CIRCUITS

ISSUE DATE: DECEMBER 9, 1988 HBD9000

REV. 1 SHEET 11



