

TS-SSC-92-050
Gianni Tassotto
6/16/92
Rev A

**INSTALLATION OF SPOT HEATERS/VOLTAGE TAPS
ON LOWER OUTER COIL OF SSC 50 MM MAGNET DCA321**

- 1.0 For information on spot heater/voltage tap assembly see drawing 0102-MC-292778
- 2.0 For information on outer coil voltage tap assembly see drawing 0102-MB-292777
- 3.0 For location of spot heater/voltage tap assembly see drawing 0102-MC-292773
- 4.0 For electrical wiring diagrams see drawings 0102-MB-292774, and 0102-ME-292776

5.0 PROCEDURE

- 5.1 Mark the location of lead end spot heater/voltage tap assembly on lower outer coil.
- 5.2 Using a scalpel cut a slit in the kapton insulation on the outside edge of the outer coil corresponding to the location of the each voltage tap (either side of the spot heater). DO NOT cut away any insulation, and BE CAREFUL not to cut through the coil wires. Using the same scalpel separate the Kapton insulation from the bare coil. Then, using a piece (about 1 inch) of voltage tap wire push the same between the insulation and the coil making sure NOT to puncture the insulation on the inside edge of the coil. Verify that the wire is below the second turn of kapton insulation by measuring the resistance to coil. Outer coil voltage taps are NOT soldered to the superconductor.

TWO TECHNICIANS are needed for the next step.

- 5.3 While one technician pushes (the two 1 inch pieces of VT wires) slightly upwards thereby making a little opening underneath, the second technician will start pushing both VT wires of the assembly in the holes between the 1 inch wires and the coil. As the second technician pushes the VT wires in the opening, the first technician will remove both 1 inch wires. The spot heater will then be form-bent on

top of the coil. Tape the VT assembly to the outer Coil with a piece of tape to hold it in place (it will be removed later).

Fig. 1 below shows how the assembly is placed on the coil.

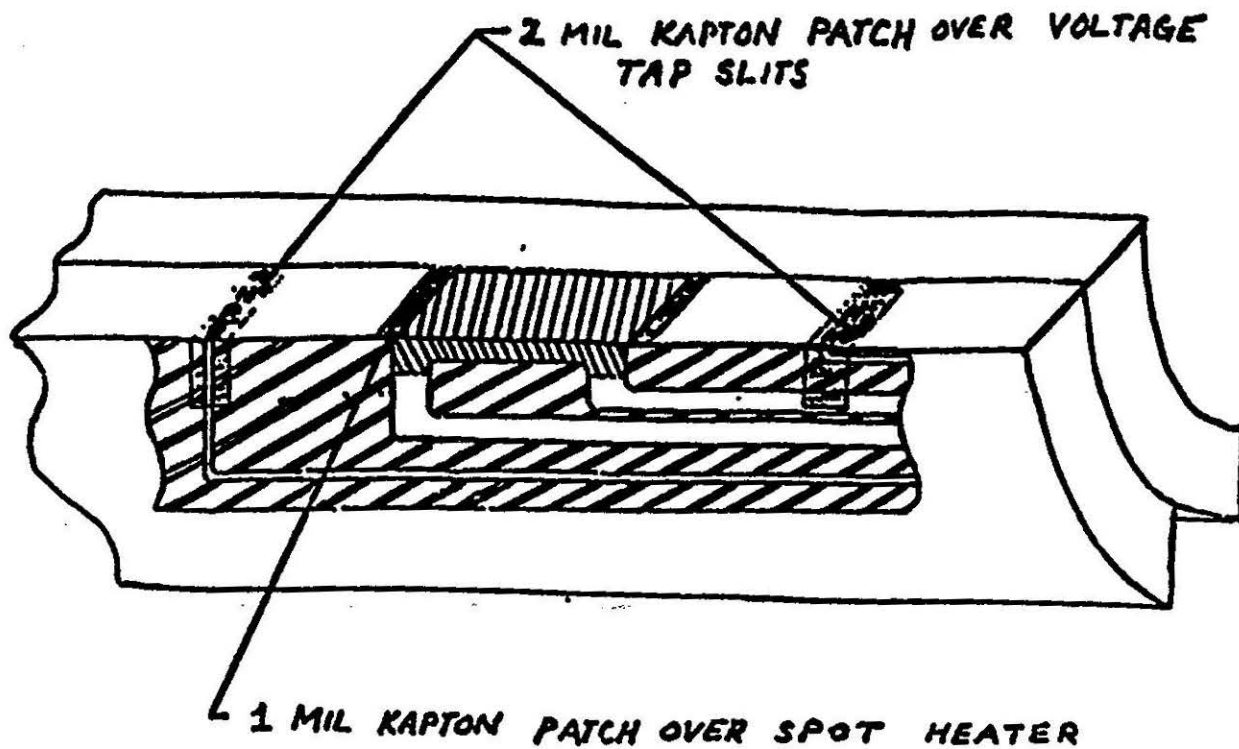


Fig. 1

- 5.4 Verify the continuity between voltage taps and coil by measuring the resistance with an H.P. meter
- 5.5 Follow traveler guidelines to hipot spot heaters to outer coil.
- 6.0 **INSTALLATION OF VOLTAGE TAP 0D**
- 6.1 Follow steps 5.1 and 5.2 that were used for the installation of voltage taps on either side of the spot heater. Being a simpler task the second technician may not be necessary. Place a 5 mm strip 0.002 inch thick of Kapton with adhesive backing over the voltage tap as done for the voltage taps on either side of the spot heater.
- 7.0 **INSTALLATION OF VOLTAGE TAP 1A**
- 7.1 In order to be able to insert this voltage tap on top of the second turn a tech will use a very thin nylon wedge to separate the turns to the left (or right) of the location of the voltage tap. Using a rubber mallet

tap the wedge between coils in order to get a opening of 1/64" at the location of the voltage tap. Then follow steps 5.1 and 5.2.

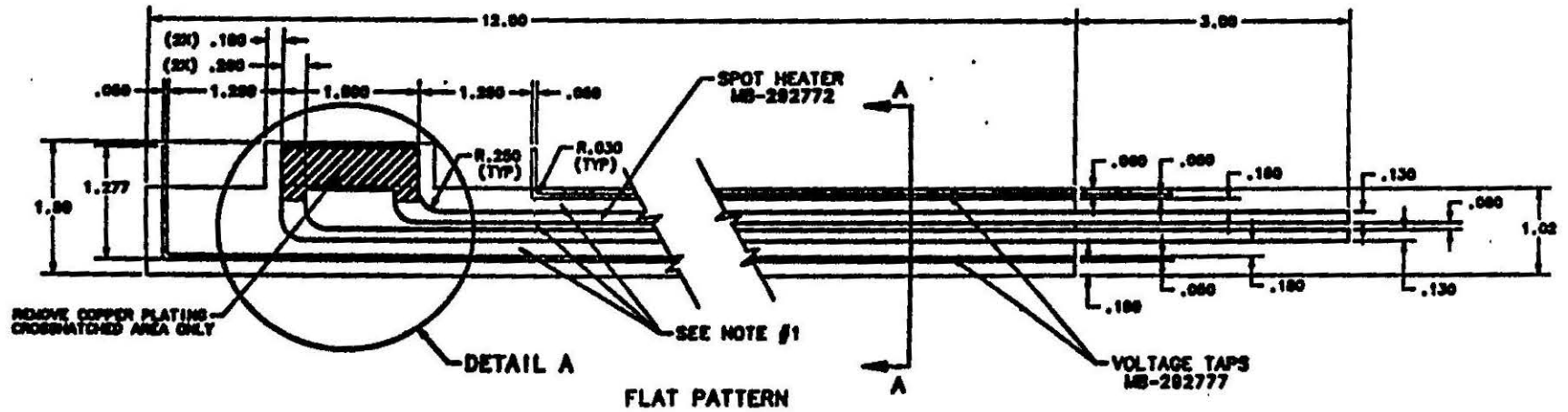
- 7.3 Verify voltage tap/coil continuity by making a resistance measurement between the voltage tap and the coil.
- 7.2 Place a strip 0.002 of an inch thick of Kapton with adhesive backing over the voltage tap.
- 7.4 In order to minimize the spot heater build-up to an average of 0.005 of an inch, the kapton ground wide-wrap insulation (MB-292053) is cut around the spot heater assembly as shown on drawing MB-292047.

8.0 SOLDERING OF THE LEADS

Both spot heater and voltage tap wires exit the magnet on the outside of the outer coil (as the quench heaters). Lead and return end-clamp insulators have been modified to allow for soldering of spot heater and voltage tap wires to 22 AWG and 28 AWG kapton coated wires following same procedure used to solder quench heaters to 14 AWG wires (see TS-SSC-91-395).

- 9.0 Reduced copies of drawings have been attached. For completeness, inner coil drawings MC-292781 (voltage taps) and MC292379 (spot heaters) have been included.

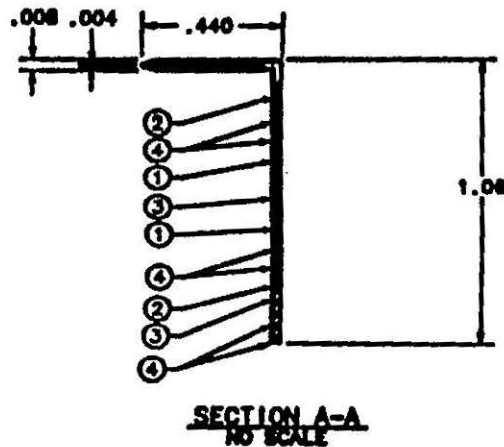
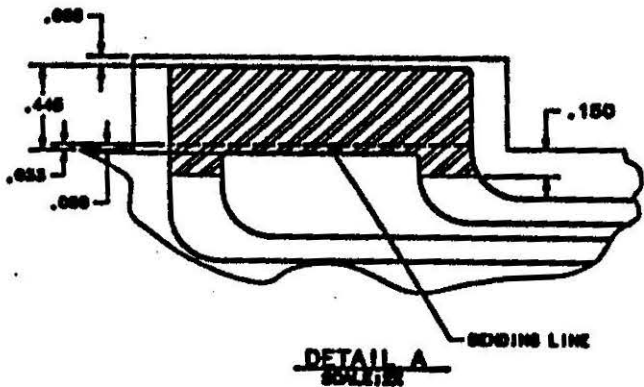
REV.	DESCRIPTION	DRWN	DAT
		APPD.	DAT
A	ADDED LEAD ON NOTE.	MTATE	4/30
		EF	5-1



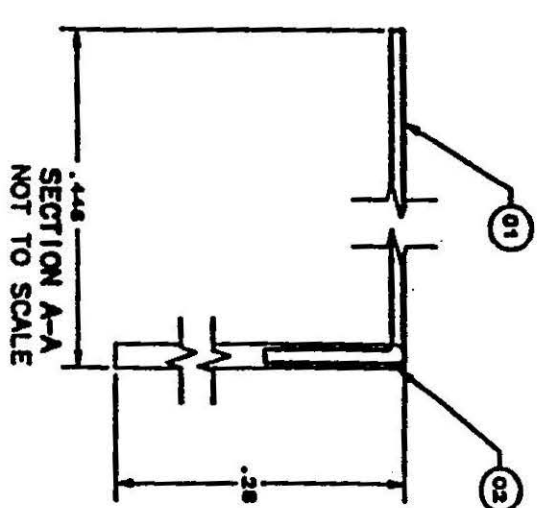
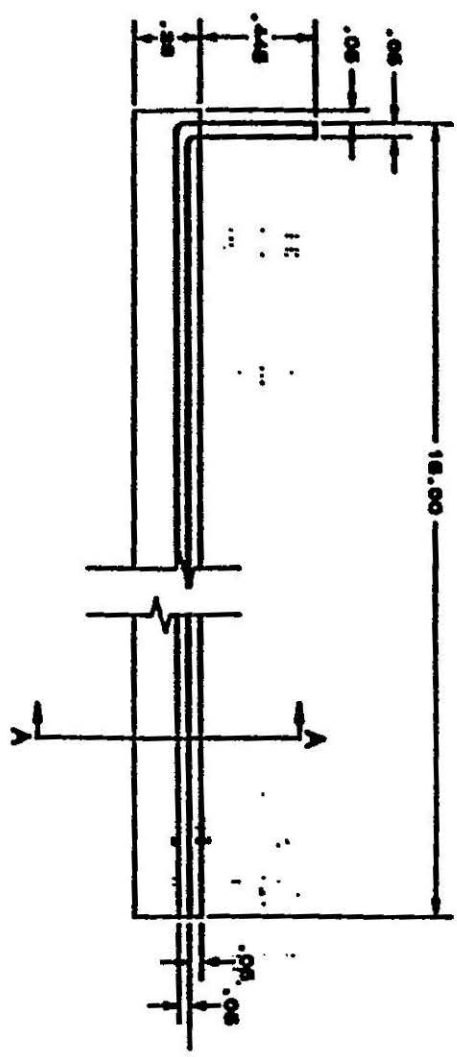
NOTES:

1. PLACE .002 IN KAPTON STRIP BETWEEN EACH LEAD

- 1 AR STAINLESS STEEL, TYPE 304, COPPER CLAD, .004 THICK
- 2 AR STAINLESS STEEL, TYPE 302, .002 THICK
- 3 AR KAPTON SHEET, TYPE H, .002 THICK
- 4 AR KAPTON TAPE, TYPE H, .001 THICK, + .0015 THICK SILICONE ADHESIVE



ITEM	PART NO.	DESCRIPTION OR SIZE	QTY.
PARTS LIST			
UNLESS OTHERWISE SPECIFIED ORIGINATOR: GIANNI TASSOTTI			
1	01	2.005	2
CHECKED		3/19/82	
APPROVED		3/19/82	
USED ON		DCA321	△
MATERIAL			
FERMI NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY			
SSC 50MM LONG COLDMASS LOWER OUTER COIL SPOT HEATER & VOLTAGE TAP ASSEMBLY			
SCALE	FILING	DESIGN NUMBER	REV.
FULL		0102-MC-292777R	A

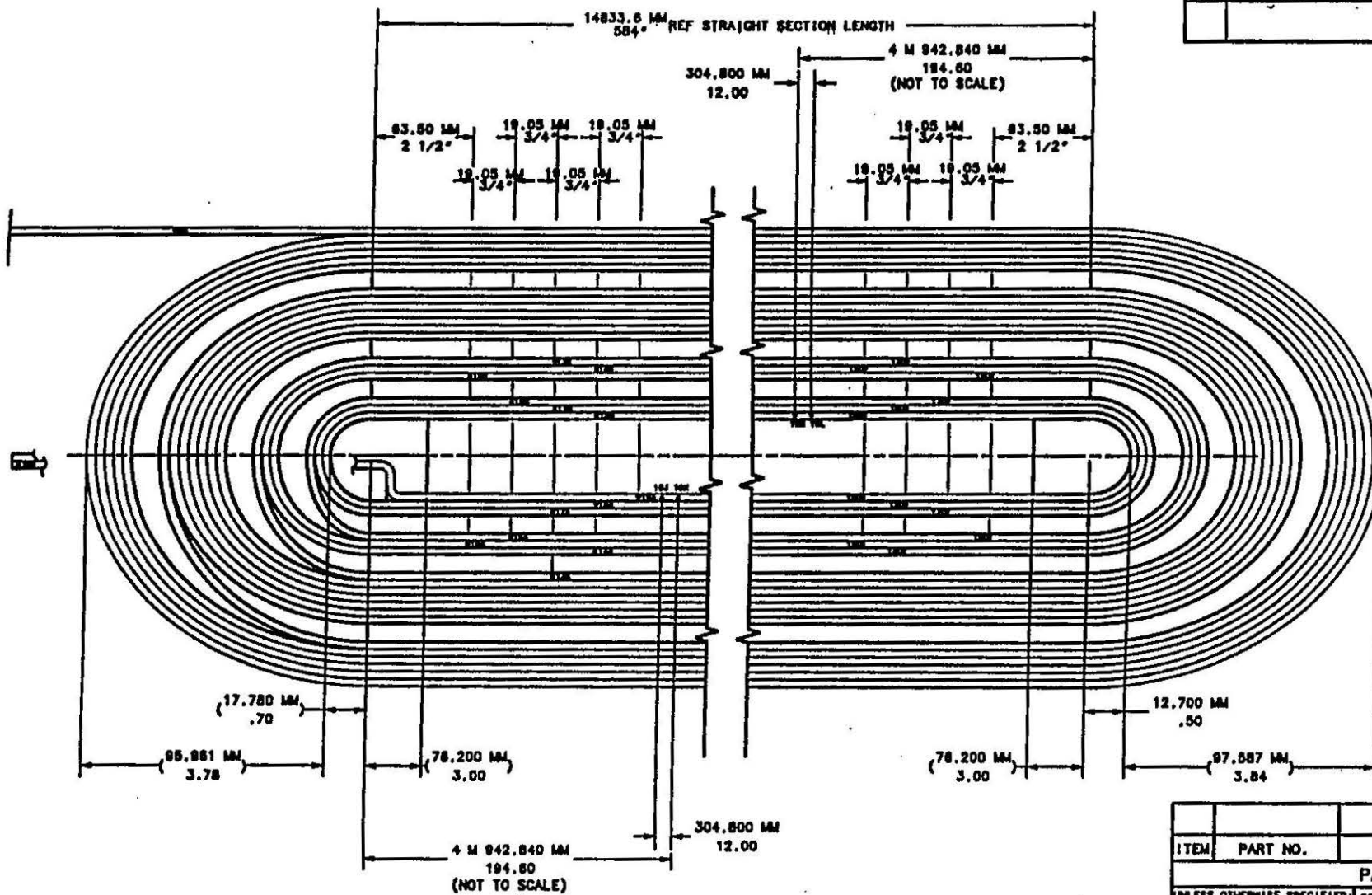


METRIC 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 INCHES 0 1 2

ITEM	PART NO.	DESCRIPTION OR SIZE
02	PURCHASE	...
01	PURCHASE	STAINLESS STEEL, TYPE 304, .002 THK

PARTS LIST	
1	...
2	...
3	...
4	...
5	...
6	...
7	...
8	...
9	...
10	...

STANFORD NATIONAL ACCELERATOR LABORATORY
 UNITED STATES DEPARTMENT OF ENERGY
 SSC SOLEM LONG COLLAUSE
 LOWER OUTER COIL,
 OUTER COIL, VOLTAGE TAP ASSEMBLY
 0102-MB-292777
 2X



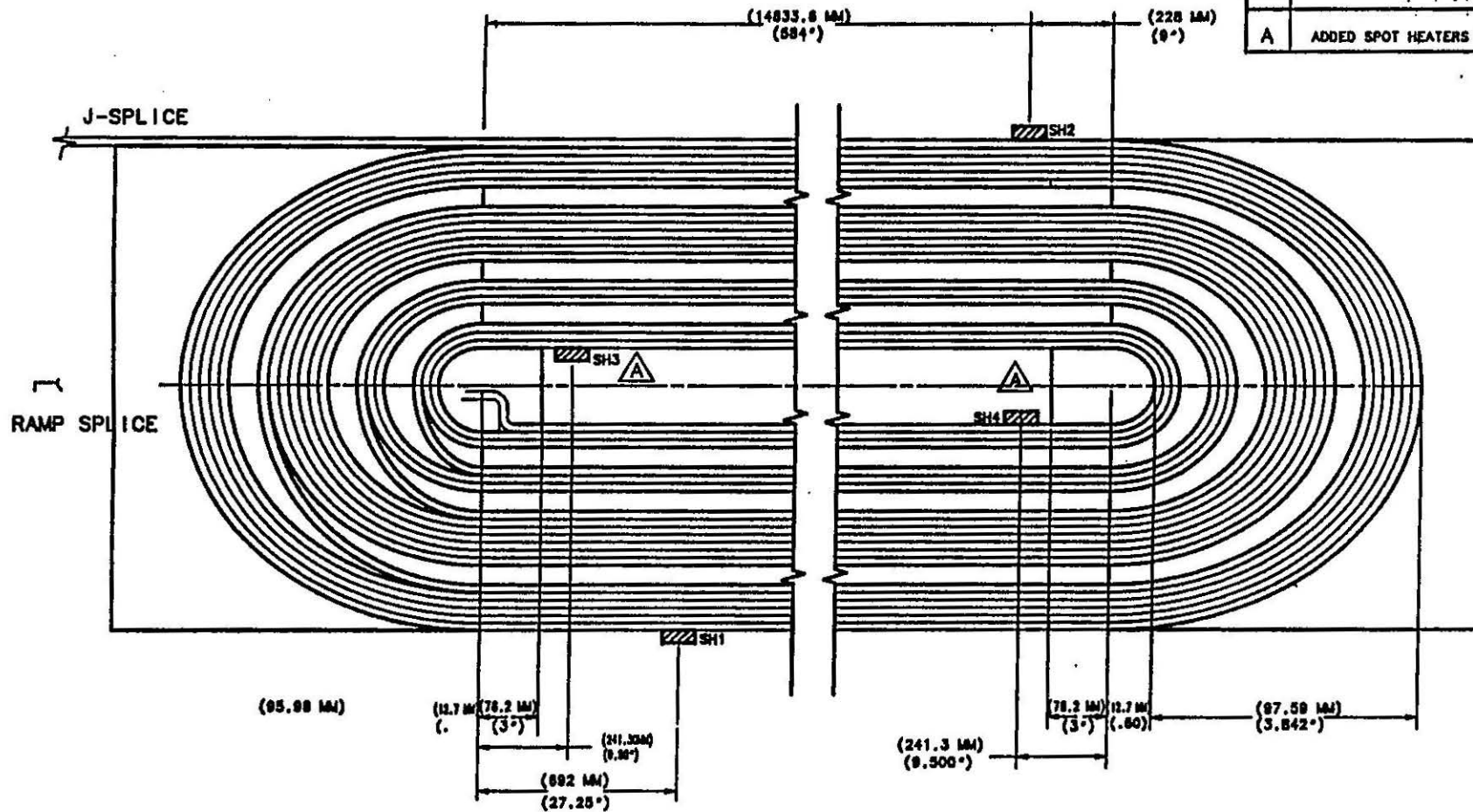
DESCRIPTION	APPRO.	D

NOTE:

1. VOLTAGE TAP WIRES FOR TAPS 0A, 19B, AND THE HALF COIL TAP ARE #22 AWG TEFLON INSULATED.
2. THE REMAINING VOLTAGE TAP WIRES ARE #30 AWG TEFLON INSULATED.
3. TAP WIRES WITH THE SAME NUMBER AT EACH END SHOULD FORM A TWISTED PAIR (A-B, C-D, J-K, AND L-M).
4. FOR WIRE ROUTING PROCEDURES SEE ES #292400
5. COIL AS VIEWED FROM INSIDE.
6. VOLTAGE TAPS 19J, 19K, 19L, AND 19M LOCATED ON LOWER INNER COIL ONLY.

ITEM	PART NO.	DESCRIPTION OR SIZE	QT
PARTS LIST			
UNLESS OTHERWISE SPECIFIED:			
1. ALL DIMENSIONS ARE IN MILLIMETERS		ORIGINATOR	STRAIT/KOSKA
2. TOLERANCES: ± 1 mm		DRAWN	MICHAEL TATE 4/1/80
3. DIMENSIONS BASED UPON ANSI Y14.2M-1982.		CHECKED	<i>G. T. ...</i> 1/2/79
4. INCH DIMENSIONS ARE FOR REFERENCE ONLY.		APPROVED	<i>...</i> 1/2/79
5. BREAK ALL SHARP EDGES.		USED ON	DCA321
6. DO NOT SCALE DRAWING.		MATERIAL	
7. MAX. ALL MACH. SURFACES			
8. DIMENSION IDENTIFICATION: MILLIMETER / INCH			
FERRIS NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY SSC			
SSC 50MM LONG COLD MASS INNER COIL ASSEMBLY VOLTAGE TAPS--INNER COIL			
DATE	FILLED	DRAWING NUMBER	TIV
IN THE		0102-MC-292711	
DRAWN WITH T-DCAS 0.0		USER NAME: IMAIE	

REV.	DESCRIPTION	DRAWN	D.
		APPO.	D.
A	ADDED SPOT HEATERS (SH) AND NOTE	MTATE	3/1
		EB	3-30

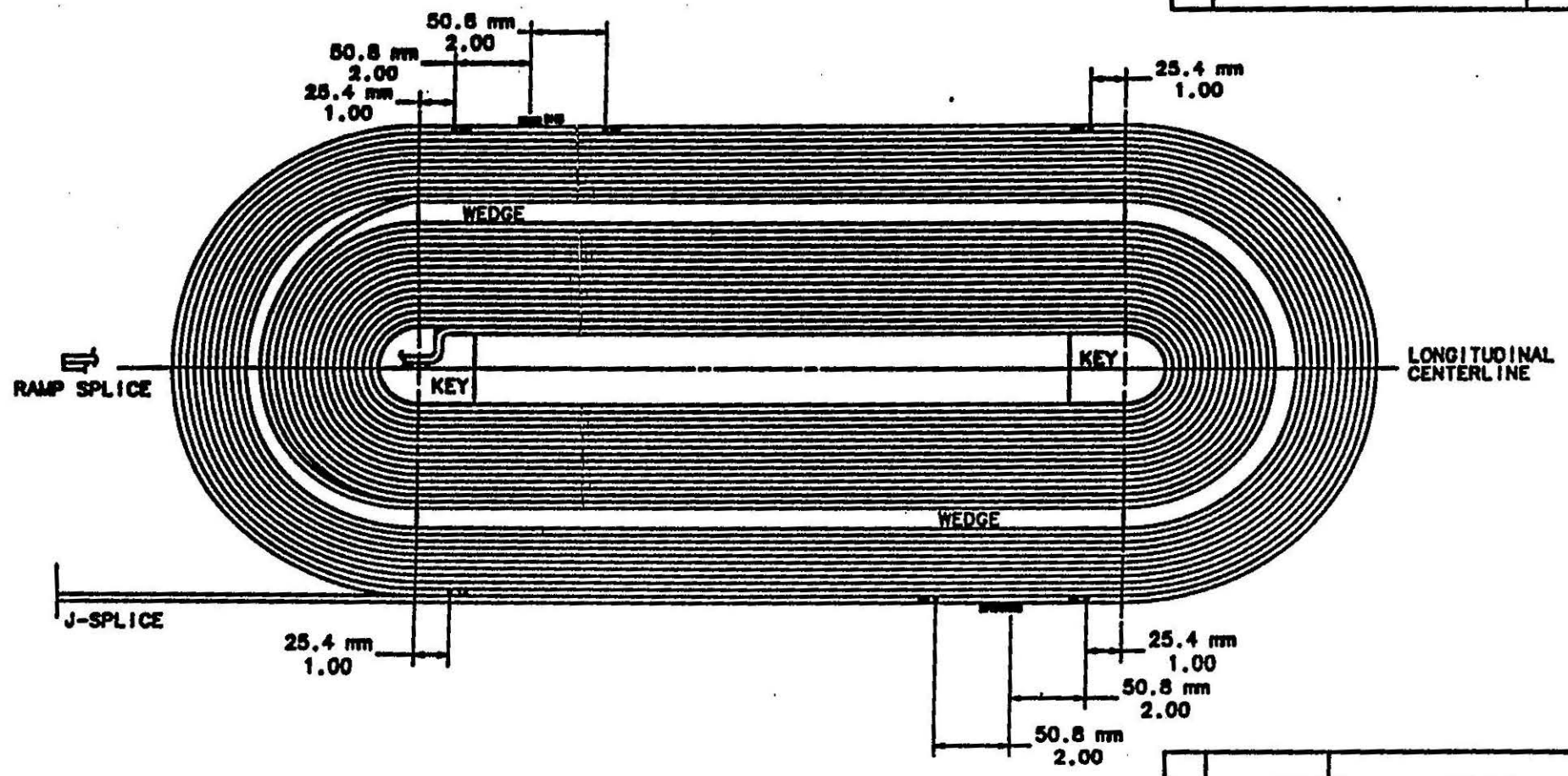


NOTE:

1. COIL AS VIEWED FROM INSIDE.
2. POLE TURN SPOT HEATERS (SH3 AND SH4) LOCATED 8 1/2° FROM WEDGES.

ITEM	PART NO.	DESCRIPTION OR SIZE	QT
PARTS LIST			
UNLESS OTHERWISE SPECIFIED:			
1. ALL DIMENSIONS ARE IN MILLIMETERS		ORIGINATOR	STRAIT/KOSKA
2. TOLERANCES: ± .1 MM		DRAWN	R. DIXON
3. DIMENSIONS BASED UPON ANSI Y14.2M-1982.		CHECKED	<i>K. Tomlin</i>
4. INCH DIMENSIONS ARE FOR REFERENCE ONLY.		APPROVED	<i>Edgar Grant</i>
5. BREAK ALL SHARP EDGES.		USED ON	DCA321
6. DO NOT SCALE DRAWING.		MATERIAL	
7. MAX. ALL MACH. SURFACES			
8. DIMENSION IDENTIFICATION: MILLIMETER / INCH			
FERMI NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY SSC			
SSC (50MM) LONG MAGNET SPOT HEATER POSITIONS LOWER INNER COIL			
SCALE	FILMED	DRAWING NUMBER	REV
NONE		0102-MC-292379	A

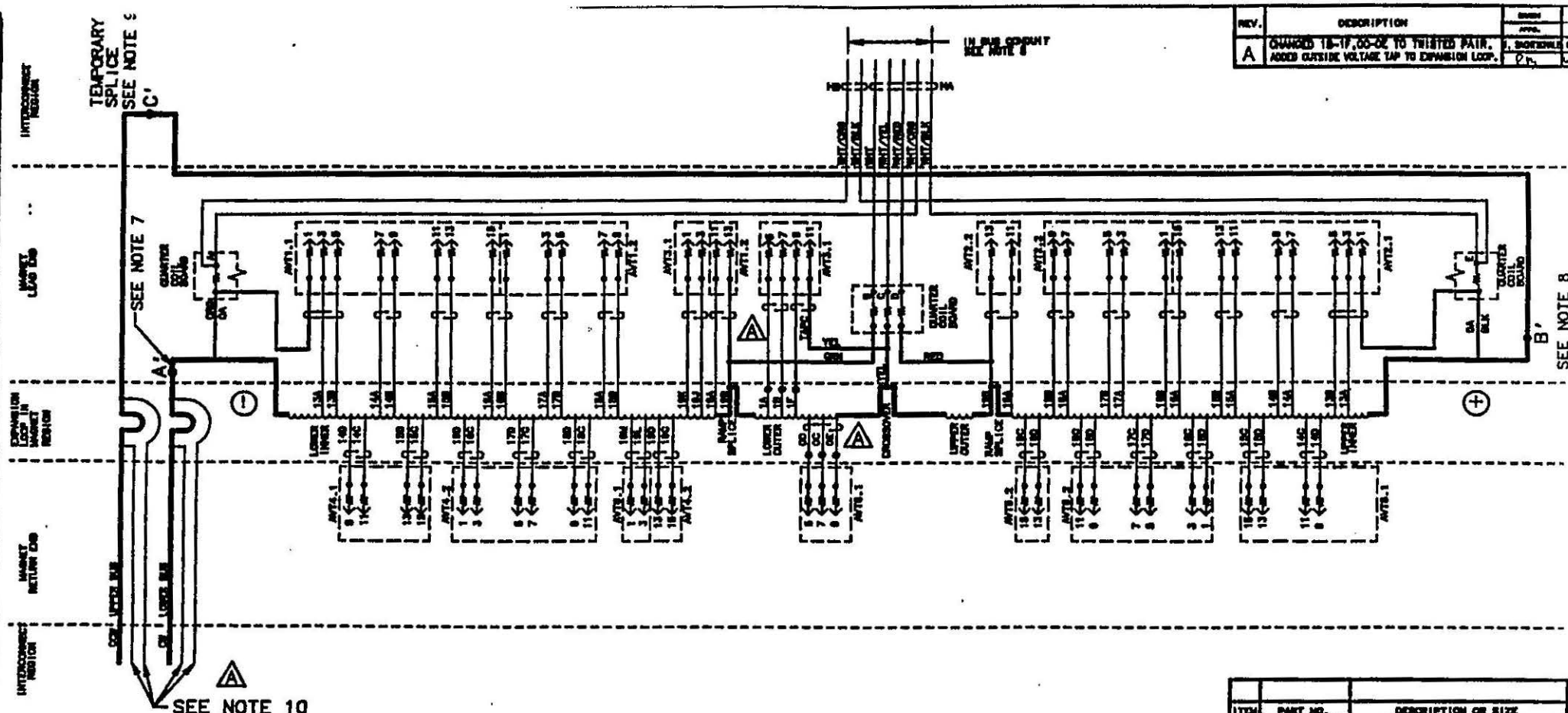
REV.	DESCRIPTION	DATE	BY



NOTE:

1. FOR ASSEMBLY OR SPOT HEATERS SH5 AND SH6 SEE DRAWING 0102-MC-292778.
2. FOR ASSEMBLY OF VOLTAGE TAPS OD AND 1A SEE DRAWING 0102-MC-292777.

ITEM	PART NO.	DESCRIPTION OR SIZE	QTY.
PARTS LIST			
UNLESS OTHERWISE SPECIFIED:		ORIGINATOR	G. TASSOTTO
1. ALL DIMENSIONS ARE IN MILLIMETERS.		DRAWN	MICHAEL TATE 3/18/92
2. TOLERANCES: ± 1 mm.		CHECKED	<i>[Signature]</i> 4/9/92
3. DIMENSIONS BASED UPON ANSI Y10.5-1982.		APPROVED	<i>[Signature]</i> 4-2-92
4. FINISH DIMENSIONS ARE FOR REFERENCE ONLY.		USED ON	DCA321
5. BREAK ALL SHARP EDGES.		MATERIAL	
6. DO NOT SCALE DRAWING.			
7. MAX. ALL MACH. SURFACES			
8. DIMENSION IDENTIFICATION: MILLIMETERS (MILLIMETER/MIN)			
SSC 50MM LONG COLD MASS OUTER COIL ASSEMBLY VOLTAGE TAPS/SPOT HEATERS			
SCALE	TITLE	DRAWING NUMBER	REV.
NONE		0102-MC-292777	

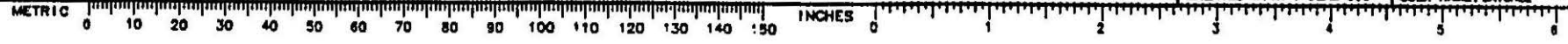


REV.	DESCRIPTION	DATE
A	CHANGED 18-17, 00-02 TO TWISTED PAIR. ADDED OUTSIDE VOLTAGE TAP TO EXPANSION LOOP.	12/80

- NOTES:**
- FOR LOCATION OF THE VOLTAGE TAPS SEE DRAWING #0102-MC-292211(INNER), MC-292773(OUTER)
 - ALL QUARTER COIL VOLTAGE TAPS INTERCONNECTION WIRES ARE #22AWG, 1KV TEFLON EE INSULATION: MIL-W-18876/5
 - ALL AUXILIARY VOLTAGE TAPS ARE #30AWG TEFLON ET: MIL-W18878/4: IS TWISTED PAIR COLOR: LOWER INNER = WHITE
UPPER INNER = BLACK
LOWER OUTER = RED #28AWG TEFLON EE
 - ALL RESISTORS ARE 200 OHM, 5 WATT, WIRE WOUND, DALE ELECTRONICS P/N CW-5-5 MIL TYPE RW67G201 UNLESS OTHERWISE SPECIFIED.
 - ALL QUARTER COIL VOLTAGE TAP RESISTORS ARE DALE ELECTRONICS #SN-5(NON-INDUCTIVE)

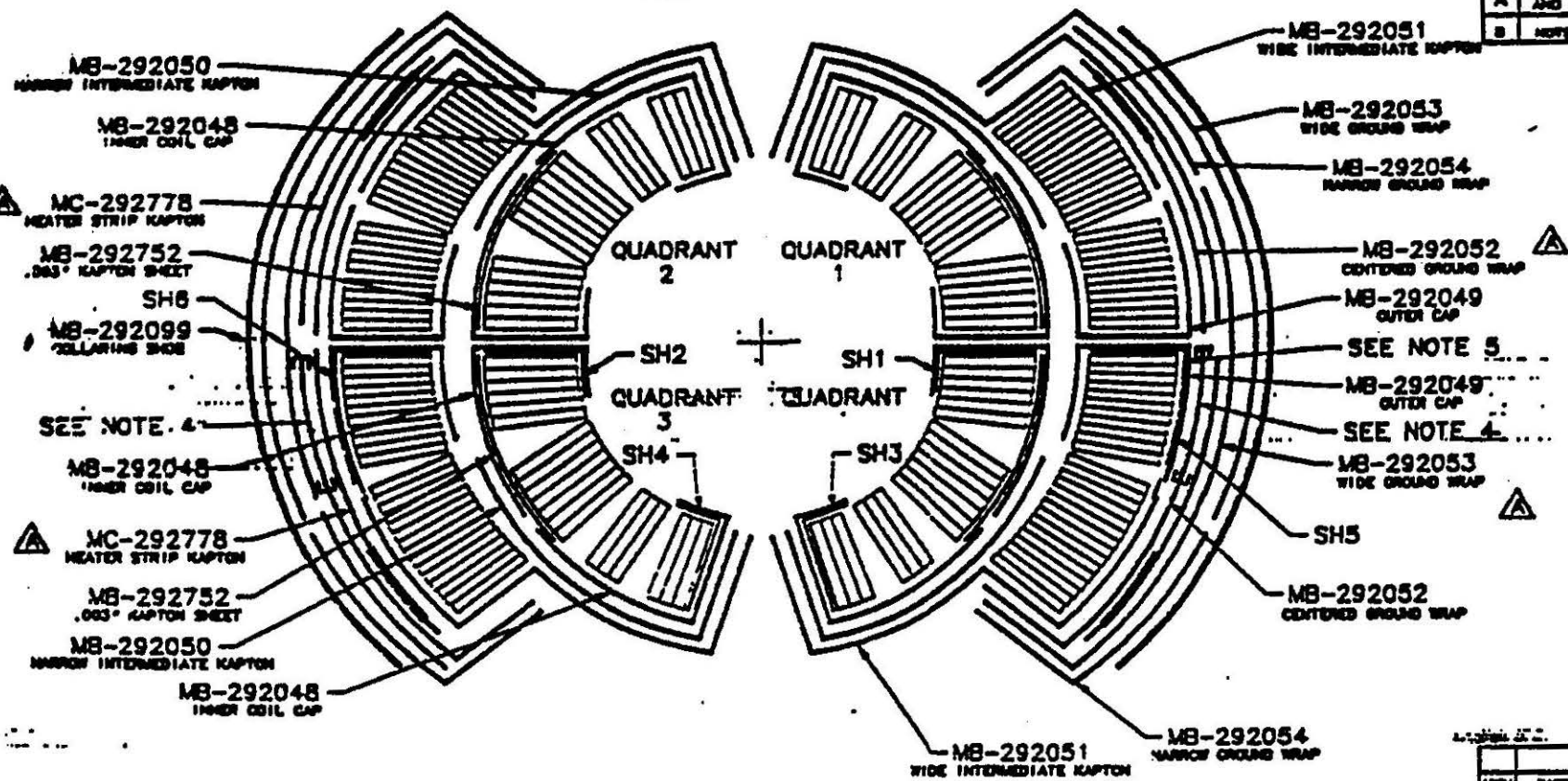
- ALL QUARTER COIL VOLTAGE TAPS ARE ROUTED TO RETURN END VIA CABLE HA & HB
- SPLICE A' FROM LOWER BUS TO LOWER INNER COIL.
- SPLICE B' FROM UPPER INNER COIL TO LOWER BUS.
- SPLICE C' FROM UPPER TO LOWER BUS.
- VOLTAGE TAPS ON BUS INSIDE AND OUTSIDE OF EXPANSION LOOP, EXIT UPPER PORT.

ITEM	PART NO.	DESCRIPTION OR SIZE
PARTS LIST		
UNLESS OTHERWISE SPECIFIED:		
1. ALL DIMENSIONS ARE TO DIM LINES.	ORIGINATOR	G. TASSOTTO
2. DIMENSIONS SHOWN IN PARENTHESIS ARE FOR REFERENCE ONLY.	DESIGNED BY	J. SACHTSCHALE 4-80
3. DIMENSIONS SHOWN IN SQUARE BRACKETS ARE FOR REFERENCE ONLY.	CHECKED BY	G. TASSOTTO 4-80
4. DIMENSIONS SHOWN IN CIRCLES ARE FOR REFERENCE ONLY.	APPROVED BY	RODGER BOSSERT 4-10
5. BREAK ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED.	USED ON	DCA 321
6. DIMENSIONS SHOWN IN SQUARE BRACKETS ARE FOR REFERENCE ONLY.	MATERIAL	
FERMILAB NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY BSC		
SSC (50MM) LONG DIPOLE COLDMASS VOLTAGE TAPS WIRING DIAGRAM (CLOCKWISE CONFIGURATION)		
SCALE	DRAWING NUMBER	SHEET
	NTS 0102-MB-292774	1 of 1
CREATED WITH I-DEAS 8.0 USER NAME: BATHOL		



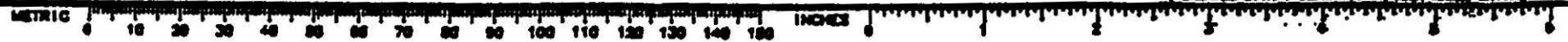
VIEW FORM LEAD END

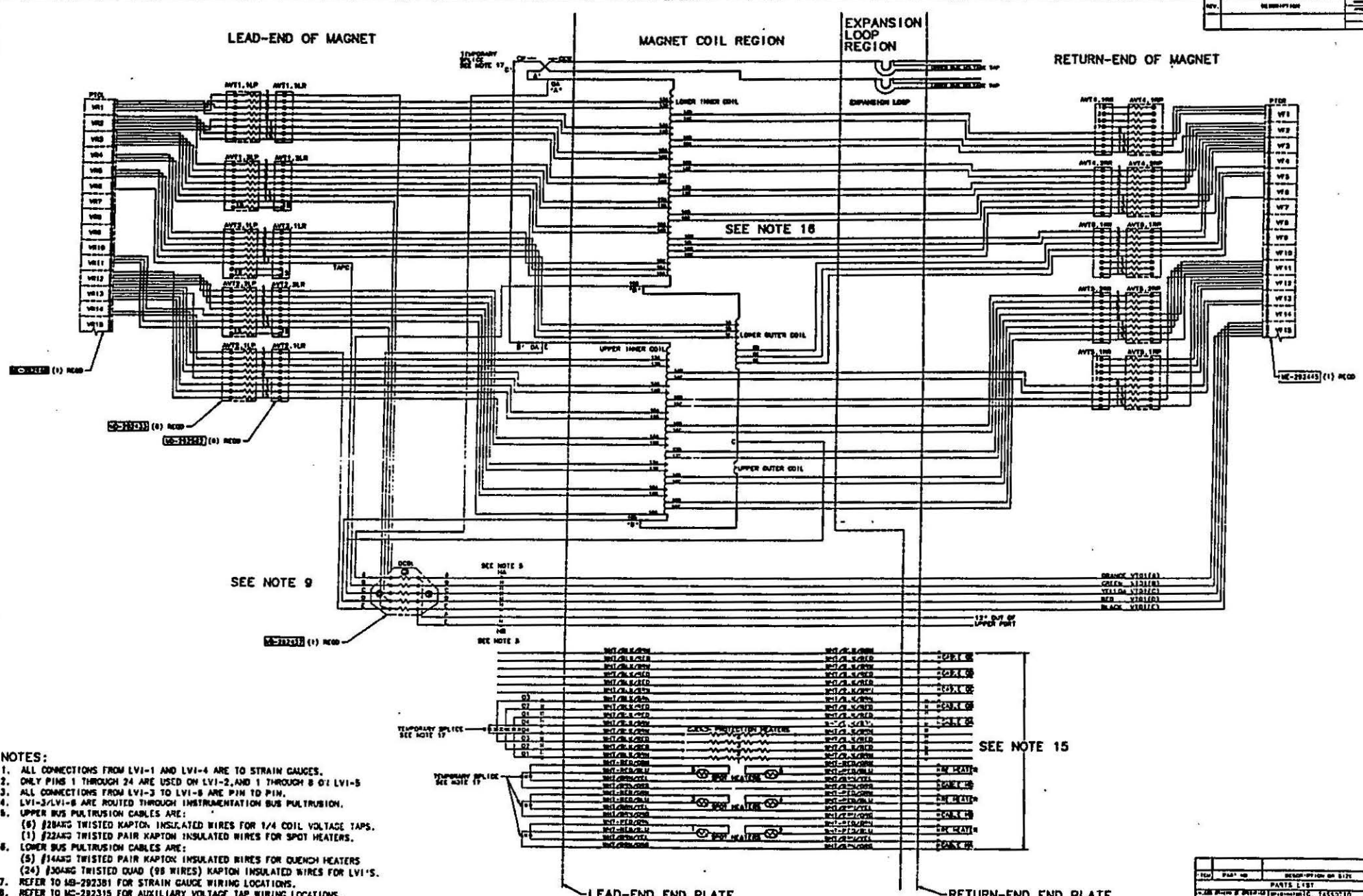
A	POSITION OF HEATER STRIP AND KAPTON CHANGED	DATE	BY
B	NOTED ADDED TO DRAWING	DATE	BY



- NOTES:**
- INNER COIL SPOT HEATERS
A. MIDPLANE SH1, SH2
B. POLE TURN SH3, SH4
 - FOR INFO ON INNER COIL SPOT HEATER SEE DWG 0102-MB-292371 AND ES-292370
 - OUTER COIL SPOT HEATERS SH5, SH6
 - CENTER GROUND WRAP WAS CUT AROUND SPOT HEATER ASSEMBLY TO REDUCE BUILD UP.
 - SPOT HEATER VOLTAGE TAP ASSEMBLY 0102-MC-292773.

ITEM	PART NO.	DESCRIPTION OR SIZE	QTY
PARTS LIST			
DESIGN SPECIFICATIONS:		ORIGINATOR: H. PLATON	
1. ALL DIMENSIONS ARE TO UNLESS OTHERWISE SPECIFIED		DESIGNER: MICHAEL TAYLOR	DATE: 8/75
2. DIMENSIONS ARE TO UNLESS OTHERWISE SPECIFIED		CHECKED: [Signature]	DATE: 7/80
3. THIS DRAWING IS THE PROPERTY OF THE UNITED STATES GOVERNMENT AND IS LOANED TO YOU. IT AND ITS CONTENTS ARE NOT TO BE DISTRIBUTED OUTSIDE YOUR ORGANIZATION.		APPROVED: [Signature]	DATE: 7/80
4. EXCEPT AS NOTED OTHERWISE, THIS DRAWING IS UNCLASSIFIED.		USED ON: DCA331	
FRENCH NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY SSC			
SSC 5086 DDC201A DIPOLE COIL MASS COIL PACKAGING INSULATION ASSEMBLY			
T. DE		0102-MB-292047	
CREATED WITH I-DEAS 4.1			

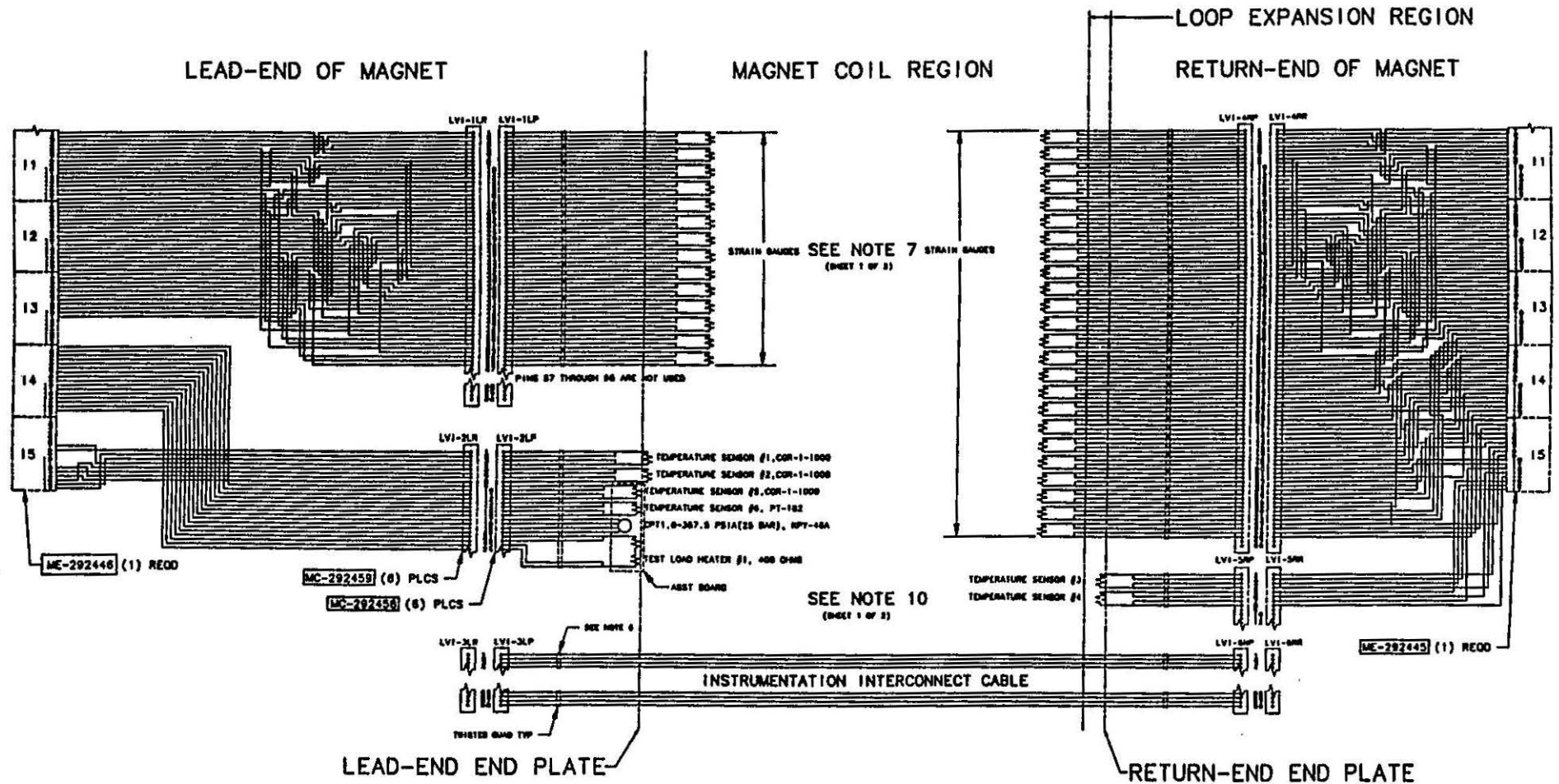




- NOTES:**
- ALL CONNECTIONS FROM LVI-1 AND LVI-4 ARE TO STRAIN GAUGES.
 - ONLY PINS 1 THROUGH 24 ARE USED ON LVI-2, AND 1 THROUGH 8 OF LVI-5.
 - ALL CONNECTIONS FROM LVI-3 TO LVI-8 ARE PIN TO PIN.
 - LVI-2/LVI-8 ARE ROUTED THROUGH INSTRUMENTATION BUS PULTRUSION.
 - UPPER BUS PULTRUSION CABLES ARE:
 - (6) #28AWG TWISTED KAPTON INSULATED WIRES FOR 1/4 COIL VOLTAGE TAPS.
 - (1) #22AWG TWISTED PAIR KAPTON INSULATED WIRES FOR SPOT HEATERS.
 - LOWER BUS PULTRUSION CABLES ARE:
 - (5) #14AWG TWISTED PAIR KAPTON INSULATED WIRES FOR QUENCH HEATERS
 - (24) #30AWG TWISTED DUAD (98 WIRES) KAPTON INSULATED WIRES FOR LVI'S.
 - REFER TO MB-292381 FOR STRAIN GAUGE WIRING LOCATIONS.
 - REFER TO MB-292315 FOR AUXILIARY VOLTAGE TAP WIRING LOCATIONS.
 - REFER TO MB-292311 FOR QUARTER COIL VOLTAGE TAP WIRING LOCATIONS.
 - REFER TO MB-292801 FOR ADDITIONAL TEMPERATURE/PRESSURE SENSOR INFORMATION.
 - ALL AVT AND LVI CONNECTORS WITH "RR" ARE RETURN-END RECEPTACLES.
 - ALL AVT AND LVI CONNECTORS WITH "RP" ARE RETURN-END PLUGS.
 - ALL AVT AND LVI CONNECTORS WITH "LP" ARE LEAD-END PLUGS.
 - ALL AVT AND LVI CONNECTORS WITH "LR" ARE LEAD-END RECEPTACLES.
 - REFER TO MB-292782 FOR ADDITIONAL SPOT AND QUENCH HEATER INFORMATION.
 - REFER TO MB-292774, 775 FOR ADDITIONAL VOLTAGE TAP INFORMATION.
 - FOR SINGLE MAGNET TEST, QUENCH HEATERS, SPOT HEATERS, AND QUARTER COIL VOLTAGE TAPS ARE ROUTED TO THE RETURN-END OF THE MAGNET.
 - ALL RESISTORS ARE 200 OHM 5 WATT, 5% UNLESS NOTED.

SEE NOTE 15

FORM	PART NO	DESCRIPTION OR SIZE	CITY
PARTS LIST			
1. 200 OHM 5 WATT RESISTOR 2. 300 OHM 5 WATT RESISTOR 3. 500 OHM 5 WATT RESISTOR 4. 1000 OHM 5 WATT RESISTOR 5. 1000 OHM 5 WATT RESISTOR 6. 1000 OHM 5 WATT RESISTOR 7. 1000 OHM 5 WATT RESISTOR 8. 1000 OHM 5 WATT RESISTOR 9. 1000 OHM 5 WATT RESISTOR 10. 1000 OHM 5 WATT RESISTOR 11. 1000 OHM 5 WATT RESISTOR 12. 1000 OHM 5 WATT RESISTOR 13. 1000 OHM 5 WATT RESISTOR 14. 1000 OHM 5 WATT RESISTOR 15. 1000 OHM 5 WATT RESISTOR 16. 1000 OHM 5 WATT RESISTOR 17. 1000 OHM 5 WATT RESISTOR 18. 1000 OHM 5 WATT RESISTOR 19. 1000 OHM 5 WATT RESISTOR 20. 1000 OHM 5 WATT RESISTOR 21. 1000 OHM 5 WATT RESISTOR 22. 1000 OHM 5 WATT RESISTOR 23. 1000 OHM 5 WATT RESISTOR 24. 1000 OHM 5 WATT RESISTOR 25. 1000 OHM 5 WATT RESISTOR 26. 1000 OHM 5 WATT RESISTOR 27. 1000 OHM 5 WATT RESISTOR 28. 1000 OHM 5 WATT RESISTOR 29. 1000 OHM 5 WATT RESISTOR 30. 1000 OHM 5 WATT RESISTOR 31. 1000 OHM 5 WATT RESISTOR 32. 1000 OHM 5 WATT RESISTOR 33. 1000 OHM 5 WATT RESISTOR 34. 1000 OHM 5 WATT RESISTOR 35. 1000 OHM 5 WATT RESISTOR 36. 1000 OHM 5 WATT RESISTOR 37. 1000 OHM 5 WATT RESISTOR 38. 1000 OHM 5 WATT RESISTOR 39. 1000 OHM 5 WATT RESISTOR 40. 1000 OHM 5 WATT RESISTOR 41. 1000 OHM 5 WATT RESISTOR 42. 1000 OHM 5 WATT RESISTOR 43. 1000 OHM 5 WATT RESISTOR 44. 1000 OHM 5 WATT RESISTOR 45. 1000 OHM 5 WATT RESISTOR 46. 1000 OHM 5 WATT RESISTOR 47. 1000 OHM 5 WATT RESISTOR 48. 1000 OHM 5 WATT RESISTOR 49. 1000 OHM 5 WATT RESISTOR 50. 1000 OHM 5 WATT RESISTOR 51. 1000 OHM 5 WATT RESISTOR 52. 1000 OHM 5 WATT RESISTOR 53. 1000 OHM 5 WATT RESISTOR 54. 1000 OHM 5 WATT RESISTOR 55. 1000 OHM 5 WATT RESISTOR 56. 1000 OHM 5 WATT RESISTOR 57. 1000 OHM 5 WATT RESISTOR 58. 1000 OHM 5 WATT RESISTOR 59. 1000 OHM 5 WATT RESISTOR 60. 1000 OHM 5 WATT RESISTOR 61. 1000 OHM 5 WATT RESISTOR 62. 1000 OHM 5 WATT RESISTOR 63. 1000 OHM 5 WATT RESISTOR 64. 1000 OHM 5 WATT RESISTOR 65. 1000 OHM 5 WATT RESISTOR 66. 1000 OHM 5 WATT RESISTOR 67. 1000 OHM 5 WATT RESISTOR 68. 1000 OHM 5 WATT RESISTOR 69. 1000 OHM 5 WATT RESISTOR 70. 1000 OHM 5 WATT RESISTOR 71. 1000 OHM 5 WATT RESISTOR 72. 1000 OHM 5 WATT RESISTOR 73. 1000 OHM 5 WATT RESISTOR 74. 1000 OHM 5 WATT RESISTOR 75. 1000 OHM 5 WATT RESISTOR 76. 1000 OHM 5 WATT RESISTOR 77. 1000 OHM 5 WATT RESISTOR 78. 1000 OHM 5 WATT RESISTOR 79. 1000 OHM 5 WATT RESISTOR 80. 1000 OHM 5 WATT RESISTOR 81. 1000 OHM 5 WATT RESISTOR 82. 1000 OHM 5 WATT RESISTOR 83. 1000 OHM 5 WATT RESISTOR 84. 1000 OHM 5 WATT RESISTOR 85. 1000 OHM 5 WATT RESISTOR 86. 1000 OHM 5 WATT RESISTOR 87. 1000 OHM 5 WATT RESISTOR 88. 1000 OHM 5 WATT RESISTOR 89. 1000 OHM 5 WATT RESISTOR 90. 1000 OHM 5 WATT RESISTOR 91. 1000 OHM 5 WATT RESISTOR 92. 1000 OHM 5 WATT RESISTOR 93. 1000 OHM 5 WATT RESISTOR 94. 1000 OHM 5 WATT RESISTOR 95. 1000 OHM 5 WATT RESISTOR 96. 1000 OHM 5 WATT RESISTOR 97. 1000 OHM 5 WATT RESISTOR 98. 1000 OHM 5 WATT RESISTOR 99. 1000 OHM 5 WATT RESISTOR 100. 1000 OHM 5 WATT RESISTOR			
PREPARED BY: DCA 321 APPROVED BY: _____ PERMITS NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY SSC 30" X LONG COLDISS MAGNET INSTRUMENTATION DISTRIBUTION COMPLETE MAGNET ELECTRICAL SCHEMATIC N/A/C-02-45-292776 Rev. 11 CREATED: 11/21/84			



TWISTED QUAD CABLE #

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
WHT/WH	1	8	15	22	29	36	43	50	57	64	71	78	85	92	99	106	113	120	127	134	141	148	155	162
WHT/BL	2	9	16	23	30	37	44	51	58	65	72	79	86	93	100	107	114	121	128	135	142	149	156	163
WHT/YL	3	10	17	24	31	38	45	52	59	66	73	80	87	94	101	108	115	122	129	136	143	150	157	164
WHT/RY	4	11	18	25	32	39	46	53	60	67	74	81	88	95	102	109	116	123	130	137	144	151	158	165

LVI-3, LVI-6 PIN NUMBERS

ITEM	PART NO.	DESCRIPTION OR SIZE	QTY
PARTS LIST			
<p>FOR WORK ORDER 1. BY: [Signature] 2. BY: [Signature] 3. BY: [Signature] 4. BY: [Signature] 5. BY: [Signature] 6. BY: [Signature]</p>			
DCA 321			
FERMI NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY BNL			
SSC 500M LONG COLDMASS MAGNET INSTRUMENTATION DISTRIBUTION COMPLETE MAGNET ELECTRICAL SCHEMATIC			
N/A 0102-ME-292776			J.W.T.
CREATED WITH: [Software Name]			