

- (1) Number of pages _____
- (2) Date of repair _____
- (3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

*Showing the
training line*

G.O. No.	381-82	Press
B.P. No.		Mis. ✓
Dated	12-2-	1876.

*M. 44
135-50
74-75*

Not to be folded or roughly handled

*no chains
233-25
no 36 chains*

RAILWAY DEPARTMENT

CONSULTING ENGINEER'S OFFICE.

Madras, 27 January 1876.

No. 51

From

LIEUT.-COLONEL J. H. M. SHAW-STEWART, R.E.,

Consulting Engineer for Railways,

To

MAJOR-GENERAL G. W. WALKER, R.E.,

Secretary to Government,

Public Works Department,

Fort Saint George.

SIR,

With reference to the
 Proceedings of Government Nos 373 dated
 December 1874, I have the honour to forward
 the accompanying Statements showing the
 results of the testing of the following line
 on the Madras Railway
North-west line.

Cheyass

M. 155-57

Gniddapah

Pottawunka or Kishrapuram

Pampigree

174-95

Jotlor

Bridge at 232 miles 40 chains

Pennar

233-45

Bridge at 248 miles 56 chains

TS
 * With letter from the Agent to the Ry. No 2480 of 24 Feb 76 with Memo
 do do No 290 of 3 June 76
 do do No 85 of 23 Jan 75 with report from
 the Agent.
 do do No 1099 of 27 Dec 75 with descriptive list
 do do No 77 of 24 Jan 76 with Memo
 do do No 80 of 24 - do - with Memo No 178 of 179

Bridge at 248 miles to chains _____
" 287 " _____
Tongabudra _____ 330-20
South-west line
Coelhanes Canal bridge _____
Bridge at 295 miles _____
Bridges on Keilgherry branch _____

A memorandum is
also enclosed giving the nature of the
to which were applied to the follow-
ing bridges.

Giddapah
Histrasporam
Pampugnee
Tongabudra
Keilgherry branch bridges.

I also submit a
drawing showing a cross section of the
girders of each of the large bridges on
the Madras Railway. The span in
all cases is 70 feet from centre to centre
of

of piers, the depth of the girder is 4 feet,
the thickness of the web is $\frac{3}{8}$ of an inch,
the top and bottom flanges are similar
and are composed of two plates each $\frac{5}{8}$
of an inch thick. In eight bridges
the width of the flanges is 10 inches,
but in the remaining four the girders for
which have been received more recently
the width is 12 inches; the angle irons
are also heavier than those formerly
used. The girders are continuous over
two openings the only exception being
in the case of bridges of an odd number
of spans where one of the end spans is
crossed by a noncontinuous girder.

In the Proceedings of
Government

B.
Government No 2919 dated 13th October 1874
is embodied as list from the Agent of
the Madras Railway showing the
bridges over which it is desirable for
the present to limit the speed of trains.

Also 05. It will be observed
from the Agent's letter No 77 that some
of the information now submitted
reached this office only yesterday.

b. I beg that 25 printed
copies of the Order of Government may
be forwarded to this office.

Yours
I have the honour to be

Sir
F. H. Proctor Esq. Secy.
R.E. Captain

For Secy. Engineer for Railways

No 135 July 174 No 1879
 .. 134 Oct .. 2919
 .. 135 Dec .. 3373

No. 248

MADRAS RAILWAY.

AGENT AND MANAGERS' OFFICE.

Madras, 2nd April 1873.

From
 Robert B. Shwin Esq
 Agent and Manager of the R.M.
 To
 Lieutenant A. H. M. Shaw Stewart Esq
 Consulting Engineer for Railways.

I have the pleasure
 to enclose for your information
 a copy of a memorandum furnished
 by the Chief Engineer showing the
 result of the testing of the Bridge
 over Lochmair Canal on the
 Salt Pans Branch.

I have the pleasure to
 Sir
 remain most obedt servt
 Wm. J. Shwin
 Agent and Manager.

D. W. 1876 22/4/73
 RAILWAY DEPARTMENT
 No. 51
 318
 Dated 27th January 1876.
 Recd. 1876
 318 No. 51
 381-2. 12.2.73

To
 The Secretary to Government,
 P. W. Department,
 Fort Saint George.

From
 The Consulting Engineer
 for Railways,

Submitting the
 result and the nature
 of tests applied to
 similar bridges in the
 Madras Railway.

Memorandum

Two Enquies nos 55 and 68 with their Tenders,
the Enquies being Coupled head to head.

Freight of each Engine - 26-13-4
do " " Tender - 19-8-4.

The weight distributed over 64 feet was made up thus, viz:-

		S. C. &	
2	Leagies measuring	44' 2"	weight - 53-8-0
1	Leagles from Buffer to Centre of 3 rd wheel	15' 6"	19-8-4
1	Leagles from Buffer to Centre of 1 st wheel	4' 4"	5-7-0
		64. 0	78.3.4

being a load of 78-3-4 distributed
over the 64 feet opening -

The deflections were

The Agent and Manager
To
The Consulting Engineer

for highways.

Dated
Recd.
8^d
March
1973

No. 248

Wondering they
of a thousand and
of mine he do by the
I had to give when
ing the result of the
docting of the bridge
over each mine is
Canal -

as follows

Western pair of Girders

Left Girder	1st Opening	Right Girder
Direct deflection	Contrary flexure	Direct deflection
$\frac{4}{8}$	$\frac{3}{16}$	$\frac{5}{8}$
$\frac{4}{8}$	$\frac{1}{8}$	$\frac{2}{8}$
$\frac{6}{8}$	$\frac{1}{16}$	$\frac{2}{8}$
$\frac{4}{8}$	$\frac{1}{8}$	$\frac{2}{16}$
Average $\frac{12}{64}$		

Eastern pair of Girders

Left Girder	1st Opening	Right Girder
Direct deflection	Contrary flexure	Direct deflection
$\frac{9}{16}$	$\frac{3}{16}$	$\frac{4}{16}$
$\frac{9}{16}$	$\frac{10}{16}$	$\frac{2}{8}$
$\frac{9}{16}$	$\frac{9}{16}$	$\frac{3}{16}$
$\frac{5}{8}$	$\frac{1}{8}$	$\frac{6}{8}$
Average $\frac{44}{64}$		

1/2 inch copy

Agent & Engineer

J. H. Goring

Note:

The large deflection in the Eastern pair of Girders is owing to them being ~~not~~ newly placed in position they have not yet taken a permanent set.

2. The cause of the right girders being more deflected than the left is that the bridge is built straight while the line is on a curve of 60 chains. Consequently the weight is not equally distributed, but is heavier on the right than on the left girders. L.H.

as follows

Western pair of Girders

Left Girder	1st Opening	Right Girder
Direct deflection	Contrary flexure	Direct deflection
$\frac{4}{8}$	$\frac{3}{16}$	$\frac{5}{8}$
$\frac{4}{8}$	$\frac{1}{8}$	$\frac{2}{8}$
$\frac{6}{8}$	$\frac{1}{16}$	$\frac{2}{8}$
$\frac{4}{8}$	$\frac{1}{8}$	$\frac{2}{16}$
Average $\frac{12}{64}$		

Eastern pair of Girders

Left Girder	1st Opening	Right Girder
Direct deflection	Contrary flexure	Direct deflection
$\frac{9}{16}$	$\frac{3}{16}$	$\frac{4}{16}$
$\frac{9}{16}$	$\frac{10}{16}$	$\frac{2}{8}$
$\frac{9}{16}$	$\frac{9}{16}$	$\frac{3}{16}$
$\frac{5}{8}$	$\frac{1}{8}$	$\frac{6}{8}$
Average $\frac{44}{64}$		

1/2 inch copy

Agent & Engineer

J. H. Goring

Note:

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as follows

Western pair of Girders

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Direct deflection	Contrary flexure	Direct deflection
$\frac{4}{8}$	$\frac{3}{16}$	$\frac{5}{8}$
$\frac{4}{8}$	$\frac{1}{8}$	$\frac{2}{8}$
$\frac{6}{8}$	$\frac{1}{16}$	$\frac{2}{8}$
$\frac{4}{8}$	$\frac{1}{8}$	$\frac{2}{16}$
Average $\frac{12}{64}$		

Eastern pair of Girders

Left Girder	1st Opening	Right Girder
Direct deflection	Contrary flexure	Direct deflection
$\frac{9}{16}$	$\frac{3}{16}$	$\frac{4}{16}$
$\frac{9}{16}$	$\frac{10}{16}$	$\frac{2}{8}$
$\frac{9}{16}$	$\frac{9}{16}$	$\frac{3}{16}$
$\frac{5}{8}$	$\frac{1}{8}$	$\frac{6}{8}$
Average $\frac{4}{64}$		

1/2 inch copy

Agent & Engineer

J. H. Goring

Note:

The large deflection in the Eastern pair of Girders is owing to them being ~~not~~ newly placed in position they have not yet taken a permanent set.

2. The cause of the right girders being more deflected than the left is that the bridge is built straight while the line is on a curve of 60 chains. Consequently the weight is not equally distributed, but is heavier on the right than on the left girders. L.H.

No. 390

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

Madras, 3rd June 1873.

From

Wm Barton Wright
Acting Agent and Manager. M.W.

To

Lieut Colonel J. H. McShaw Stewart
Consulting Engineer for Railways. R.E.

Sir,

With reference to
paragraph 2 of my letter
N 353 of the 28th ultimo I
have the honour to inform you
that the Acting Chief Engineer
furnished the following particulars
of the test of the girders of the
Bridge at the $\frac{286}{12}$ mile on the
Bellary Branch, vizt

"Engine 38 and 39, each
"with tenders following were used
"and after being allowed to stand
"on each pair of girders were
"run over at speed.
"The weight on a

"pair of riders over the clear
 "span was then 79 tons 5 cwt.
 "the deflection measures
 "were as follows: with

- * " East span $15\frac{15}{32}$
- " with standing load - $7\frac{1}{16}$
- " " running - do - $8\frac{1}{16}$
- " West span $\frac{15}{32}$
- * $\frac{16}{32}$ " with standing load - $17\frac{1}{32}$
- * $\frac{17}{32}$ " " running - do - $8\frac{1}{16}$

I have the honor to acknowledge
 Sir
 your most obedient servant
Wm. M. W. W.
 Atty. Agent & Manager

Tide gauge, 1870-71, 72-73, 74-75, 76-77, 78-79, 80-81, 82-83, 84-85, 86-87, 88-89, 90-91, 92-93, 94-95, 96-97, 98-99, 100-101, 102-103, 104-105, 106-107, 108-109, 110-111, 112-113, 114-115, 116-117, 118-119, 120-121, 122-123, 124-125, 126-127, 128-129, 130-131, 132-133, 134-135, 136-137, 138-139, 140-141, 142-143, 144-145, 146-147, 148-149, 150-151, 152-153, 154-155, 156-157, 158-159, 160-161, 162-163, 164-165, 166-167, 168-169, 170-171, 172-173, 174-175, 176-177, 178-179, 180-181, 182-183, 184-185, 186-187, 188-189, 190-191, 192-193, 194-195, 196-197, 198-199, 200-201, 202-203, 204-205, 206-207, 208-209, 210-211, 212-213, 214-215, 216-217, 218-219, 220-221, 222-223, 224-225, 226-227, 228-229, 230-231, 232-233, 234-235, 236-237, 238-239, 240-241, 242-243, 244-245, 246-247, 248-249, 250-251, 252-253, 254-255, 256-257, 258-259, 260-261, 262-263, 264-265, 266-267, 268-269, 270-271, 272-273, 274-275, 276-277, 278-279, 280-281, 282-283, 284-285, 286-287, 288-289, 290-291, 292-293, 294-295, 296-297, 298-299, 300-301, 302-303, 304-305, 306-307, 308-309, 310-311, 312-313, 314-315, 316-317, 318-319, 320-321, 322-323, 324-325, 326-327, 328-329, 330-331, 332-333, 334-335, 336-337, 338-339, 340-341, 342-343, 344-345, 346-347, 348-349, 350-351, 352-353, 354-355, 356-357, 358-359, 360-361, 362-363, 364-365, 366-367, 368-369, 370-371, 372-373, 374-375, 376-377, 378-379, 380-381, 382-383, 384-385, 386-387, 388-389, 390-391, 392-393, 394-395, 396-397, 398-399, 400-401, 402-403, 404-405, 406-407, 408-409, 410-411, 412-413, 414-415, 416-417, 418-419, 420-421, 422-423, 424-425, 426-427, 428-429, 430-431, 432-433, 434-435, 436-437, 438-439, 440-441, 442-443, 444-445, 446-447, 448-449, 450-451, 452-453, 454-455, 456-457, 458-459, 460-461, 462-463, 464-465, 466-467, 468-469, 470-471, 472-473, 474-475, 476-477, 478-479, 480-481, 482-483, 484-485, 486-487, 488-489, 490-491, 492-493, 494-495, 496-497, 498-499, 500-501, 502-503, 504-505, 506-507, 508-509, 510-511, 512-513, 514-515, 516-517, 518-519, 520-521, 522-523, 524-525, 526-527, 528-529, 530-531, 532-533, 534-535, 536-537, 538-539, 540-541, 542-543, 544-545, 546-547, 548-549, 550-551, 552-553, 554-555, 556-557, 558-559, 560-561, 562-563, 564-565, 566-567, 568-569, 570-571, 572-573, 574-575, 576-577, 578-579, 580-581, 582-583, 584-585, 586-587, 588-589, 590-591, 592-593, 594-595, 596-597, 598-599, 600-601, 602-603, 604-605, 606-607, 608-609, 610-611, 612-613, 614-615, 616-617, 618-619, 620-621, 622-623, 624-625, 626-627, 628-629, 630-631, 632-633, 634-635, 636-637, 638-639, 640-641, 642-643, 644-645, 646-647, 648-649, 650-651, 652-653, 654-655, 656-657, 658-659, 660-661, 662-663, 664-665, 666-667, 668-669, 670-671, 672-673, 674-675, 676-677, 678-679, 680-681, 682-683, 684-685, 686-687, 688-689, 690-691, 692-693, 694-695, 696-697, 698-699, 700-701, 702-703, 704-705, 706-707, 708-709, 710-711, 712-713, 714-715, 716-717, 718-719, 720-721, 722-723, 724-725, 726-727, 728-729, 730-731, 732-733, 734-735, 736-737, 738-739, 740-741, 742-743, 744-745, 746-747, 748-749, 750-751, 752-753, 754-755, 756-757, 758-759, 760-761, 762-763, 764-765, 766-767, 768-769, 770-771, 772-773, 774-775, 776-777, 778-779, 780-781, 782-783, 784-785, 786-787, 788-789, 790-791, 792-793, 794-795, 796-797, 798-799, 800-801, 802-803, 804-805, 806-807, 808-809, 810-811, 812-813, 814-815, 816-817, 818-819, 820-821, 822-823, 824-825, 826-827, 828-829, 830-831, 832-833, 834-835, 836-837, 838-839, 840-841, 842-843, 844-845, 846-847, 848-849, 850-851, 852-853, 854-855, 856-857, 858-859, 860-861, 862-863, 864-865, 866-867, 868-869, 870-871, 872-873, 874-875, 876-877, 878-879, 880-881, 882-883, 884-885, 886-887, 888-889, 890-891, 892-893, 894-895, 896-897, 898-899, 900-901, 902-903, 904-905, 906-907, 908-909, 910-911, 912-913, 914-915, 916-917, 918-919, 920-921, 922-923, 924-925, 926-927, 928-929, 930-931, 932-933, 934-935, 936-937, 938-939, 940-941, 942-943, 944-945, 946-947, 948-949, 950-951, 952-953, 954-955, 956-957, 958-959, 960-961, 962-963, 964-965, 966-967, 968-969, 970-971, 972-973, 974-975, 976-977, 978-979, 980-981, 982-983, 984-985, 986-987, 988-989, 990-991, 992-993, 994-995, 996-997, 998-999, 1000-1001, 1002-1003, 1004-1005, 1006-1007, 1008-1009, 1010-1011, 1012-1013, 1014-1015, 1016-1017, 1018-1019, 1020-1021, 1022-1023, 1024-1025, 1026-1027, 1028-1029, 1030-1031, 1032-1033, 1034-1035, 1036-1037, 1038-1039, 1040-1041, 1042-1043, 1044-1045, 1046-1047, 1048-1049, 1050-1051, 1052-1053, 1054-1055, 1056-1057, 1058-1059, 1060-1061, 1062-1063, 1064-1065, 1066-1067, 1068-1069, 1070-1071, 1072-1073, 1074-1075, 1076-1077, 1078-1079, 1080-1081, 1082-1083, 1084-1085, 1086-1087, 1088-1089, 1090-1091, 1092-1093, 1094-1095, 1096-1097, 1098-1099, 1100-1101, 1102-1103, 1104-1105, 1106-1107, 1108-1109, 1110-1111, 1112-1113, 1114-1115, 1116-1117, 1118-1119, 1120-1121, 1122-1123, 1124-1125, 1126-1127, 1128-1129, 1130-1131, 1132-1133, 1134-1135, 1136-1137, 1138-1139, 1140-1141, 1142-1143, 1144-1145, 1146-1147, 1148-1149, 1150-1151, 1152-1153, 1154-1155, 1156-1157, 1158-1159, 1160-1161, 1162-1163, 1164-1165, 1166-1167, 1168-1169, 1170-1171, 1172-1173, 1174-1175, 1176-1177, 1178-1179, 1180-1181, 1182-1183, 1184-1185, 1186-1187, 1188-1189, 1190-1191, 1192-1193, 1194-1195, 1196-1197, 1198-1199, 1200-1201, 1202-1203, 1204-1205, 1206-1207, 1208-1209, 1210-1211, 1212-1213, 1214-1215, 1216-1217, 1218-1219, 1220-1221, 1222-1223, 1224-1225, 1226-1227, 1228-1229, 1230-1231, 1232-1233, 1234-1235, 1236-1237, 1238-1239, 1240-1241, 1242-1243, 1244-1245, 1246-1247, 1248-1249, 1250-1251, 1252-1253, 1254-1255, 1256-1257, 1258-1259, 1260-1261, 1262-1263, 1264-1265, 1266-1267, 1268-1269, 1270-1271, 1272-1273, 1274-1275, 1276-1277, 1278-1279, 1280-1281, 1282-1283, 1284-1285, 1286-1287, 1288-1289, 1290-1291, 1292-1293, 1294-1295, 1296-1297, 1298-1299, 1300-1301, 1302-1303, 1304-1305, 1306-1307, 1308-1309, 1310-1311, 1312-1313, 1314-1315, 1316-1317, 1318-1319, 1320-1321, 1322-1323, 1324-1325, 1326-1327, 1328-1329, 1330-1331, 1332-1333, 1334-1335, 1336-1337, 1338-1339, 1340-1341, 1342-1343, 1344-1345, 1346-1347, 1348-1349, 1350-1351, 1352-1353, 1354-1355, 1356-1357, 1358-1359, 1360-1361, 1362-1363, 1364-1365, 1366-1367, 1368-1369, 1370-1371, 1372-1373, 1374-1375, 1376-1377, 1378-1379, 1380-1381, 1382-1383, 1384-1385, 1386-1387, 1388-1389, 1390-1391, 1392-1393, 1394-1395, 1396-1397, 1398-1399, 1400-1401, 1402-1403, 1404-1405, 1406-1407, 1408-1409, 1410-1411, 1412-1413, 1414-1415, 1416-1417, 1418-1419, 1420-1421, 1422-1423, 1424-1425, 1426-1427, 1428-1429, 1430-1431, 1432-1433, 1434-1435, 1436-1437, 1438-1439, 1440-1441, 1442-1443, 1444-1445, 1446-1447, 1448-1449, 1450-1451, 1452-1453, 1454-1455, 1456-1457, 1458-1459, 1460-1461, 1462-1463, 1464-1465, 1466-1467, 1468-1469, 1470-1471, 1472-1473, 1474-1475, 1476-1477, 1478-1479, 1480-1481, 1482-1483, 1484-1485, 1486-1487, 1488-1489, 1490-1491, 1492-1493, 1494-1495, 1496-1497, 1498-1499, 1500-1501, 1502-1503, 1504-1505, 1506-1507, 1508-1509, 1510-1511, 1512-1513, 1514-1515, 1516-1517, 1518-1519, 1520-1521, 1522-1523, 1524-1525, 1526-1527, 1528-1529, 1530-1531, 1532-1533, 1534-1535, 1536-1537, 1538-1539, 1540-1541, 1542-1543, 1544-1545, 1546-1547, 1548-1549, 1550-1551, 1552-1553, 1554-1555, 1556-1557, 1558-1559, 1560-1561, 1562-1563, 1564-1565, 1566-1567, 1568-1569, 1570-1571, 1572-1573, 1574-1575, 1576-1577, 1578-1579, 1580-1581, 1582-1583, 1584-1585, 1586-1587, 1588-1589, 1590-1591, 1592-1593, 1594-1595, 1596-1597, 1598-1599, 1600-1601, 1602-1603, 1604-1605, 1606-1607, 1608-1609, 1610-1611, 1612-1613, 1614-1615, 1616-1617, 1618-1619, 1620-1621, 1622-1623, 1624-1625, 1626-1627, 1628-1629, 1630-1631, 1632-1633, 1634-1635, 1636-1637, 1638-1639, 1640-1641, 1642-1643, 1644-1645, 1646-1647, 1648-1649, 1650-1651, 1652-1653, 1654-1655, 1656-1657, 1658-1659, 1660-1661, 1662-1663, 1664-1665, 1666-1667, 1668-1669, 1670-1671, 1672-1673, 1674-1675, 1676-1677, 1678-1679, 1680-1681, 1682-1683, 1684-1685, 1686-1687, 1688-1689, 1690-1691, 1692-1693, 1694-1695, 1696-1697, 1698-1699, 1700-1701, 1702-1703, 1704-1705, 1706-1707, 1708-1709, 1710-1711, 1712-1713, 1714-1715, 1716-1717, 1718-1719, 1720-1721, 1722-1723, 1724-1725, 1726-1727, 1728-1729, 1730-1731, 1732-1733, 1734-1735, 1736-1737, 1738-1739, 1740-1741, 1742-1743, 1744-1745, 1746-1747, 1748-1749, 1750-1751, 1752-1753, 1754-1755, 1756-1757, 1758-1759, 1760-1761, 1762-1763, 1764-1765, 1766-1767, 1768-1769, 1770-1771, 1772-1773, 1774-1775, 1776-1777, 1778-1779, 1780-1781, 1782-1783, 1784-1785, 1786-1787, 1788-1789, 1790-1791, 1792-1793, 1794-1795, 1796-1797, 1798-1799, 1800-1801, 1802-1803, 1804-1805, 1806-1807, 1808-1809, 1810-1811, 1812-1813, 1814-1815, 1816-1817, 1818-1819, 1820-1821, 1822-1823, 1824-1825, 1826-1827, 1828-1829, 1830-1831, 1832-1833, 1834-1835, 1836-1837, 1838-1839, 1840-1841, 1842-1843, 1844-1845, 1846-1847, 1848-1849, 1850-1851, 1852-1853, 1854-1855, 1856-1857, 1858-1859, 1860-1861, 1862-1863, 1864-1865, 1866-1867, 1868-1869, 1870-1871, 1872-1873, 1874-1875, 1876-1877, 1878-1879, 1880-1881, 1882-1883, 1884-1885, 1886-1887, 1888-1889, 1890-1891, 1892-1893, 1894-1895, 1896-1897, 1898-1899, 1900-1901, 1902-1903, 1904-1905, 1906-1907, 1908-1909, 1910-1911, 1912-1913, 1914-1915, 1916-1917, 1918-1919, 1920-1921, 1922-1923, 1924-1925, 1926-1927, 1928-1929, 1930-1931, 1932-1933, 1934-1935, 1936-1937, 1938-1939, 1940-1941, 1942-1943, 1944-1945, 1946-1947, 1948-1949, 1950-1951, 1952-1953, 1954-1955, 1956-1957, 1958-1959, 1960-1961, 1962-1963, 1964-1965, 1966-1967, 1968-1969, 1970-1971, 1972-1973, 1974-1975, 1976-1977, 1978-1979, 1980-1981, 1982-1983, 1984-1985, 1986-1987, 1988-1989, 1990-1991, 1992-1993, 1994-1995, 1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005, 2006-2007, 2008-2009, 2010-2011, 2012-2013, 2014-2015, 2016-2017, 2018-2019, 2020-2021, 2022-2023, 2024-2025, 2026-2027, 2028-2029, 2030-2031, 2032-2033, 2034-2035, 2036-2037, 2038-2039, 2040-2041, 2042-2043, 2044-2045, 2046-2047, 2048-2049, 2050-2051, 2052-2053, 2054-2055, 2056-2057, 2058-2059, 2060-2061, 2062-2063, 2064-2065, 2066-2067, 2068-2069, 2070-2071, 2072-2073, 2074-2075, 2076-2077, 2078-2079, 2080-2081, 2082-2083, 2084-2085, 2086-2087, 2088-2089, 2090-2091, 2092-2093, 2094-2095, 2096-2097, 2098-2099, 2100-2101, 2102-2103, 2104-2105, 2106-2107, 2108-2109, 2110-2111, 2112-2113, 2114-2115, 2116-2117, 2118-2119, 2120-2121, 2122-2123, 2124-2125, 2126-2127, 2128-2129, 2130-2131, 2132-2133, 2134-2135, 2136-2137, 2138-2139, 2140-2141, 2142-2143, 2144-2145, 2146-2147, 2148-2149, 2150-2151, 2152-2153, 2154-2155, 2156-2157, 2158-2159, 2160-2161, 2162-2163, 2164-2165, 2166-2167, 2168-2169, 2170-2171, 2172-2173, 2174-2175, 2176-2177, 2178-2179, 2180-2181, 2182-2183, 2184-2185, 2186-2187, 2188-2189, 2190-2191, 2192-2193, 2194-2195, 2196-2197, 2198-2199, 2200-2201, 2202-2203, 2204-2205, 2206-2207, 2208-2209, 2210-2211, 2212-2213, 2214-2215, 2216-2217, 2218-2219, 2220-2221, 2222-2223, 2224-2225, 2226-2227, 2228-2229, 2230-2231, 2232-2233, 2234-2235, 2236-2237, 2238-2239, 2240-2241, 2242-2243, 2244-2245, 2246-2247, 2248-2249, 2250-2251, 2252-2253, 2254-2255, 2256-2257, 2258-2259, 2260-2261, 2262-2263, 2264-2265, 2266-2267, 2268-2269, 2270-2271, 2272-2273, 2274-2275, 2276-2277, 2278-2279, 2280-2281, 2282-2283, 2284-2285, 2286-2287, 2288-2289, 2290-2291, 2292-2293, 2294-2295, 2296-2297, 2298-2299, 2300-2301, 2302-2303, 2304-2305, 2306-2307, 2308-2309, 2310-2311, 2312-2313, 2314-2315, 2316-2317, 2318-2319, 2320-2321, 2322-2323, 2324-2325, 2326-2327, 2328-2329, 2330-2331, 2332-2333, 2334-2335, 2336-2337, 2338-2339, 2340-2341, 2342-2343, 2344-2345, 2346-2347, 2348-2349, 2350-2351, 2352-2353, 2354-2355, 2356-2357, 2358-2359, 2360-2361, 2362-2363, 2364-2365, 2366-2367, 2368-2369, 2370-2371, 2372-2373, 2374-2375, 2376-2377, 2378-2379, 2380-2381, 2382-2383, 2384-2385, 2386-2387, 2388-2389, 2390-2391, 2392-2393, 2394-2395, 2396-2397, 2398-2399, 2400-2401, 2402-2403, 2404-2405, 2406-2407, 2408-2409, 2410-2411, 2412-2413, 2414-2415, 2416-2417, 2418-241

No. 85

MADRAS RAILWAY.

AGENT AND MANAGERS' OFFICE.

Madras, 23rd January 1875.

From

Robert B. Elwin Esq

Agent and Manager. M. R. Company

To

Lieut Colonel J. H. M. Shaw Stewart Esq

Consulting Engineer for Railways.

Sir,

With reference to your letter No 1145 of the 4th ultimo I have the honour to enclose you a copy of the Acting Chief Engineer's letter No 55 of the 2nd instant together with the tracing alluded to therein showing a cross section of the girders of each of the large bridges on the Madras Railway.

I also forward you herewith the statements showing the results of the testing of the bridges mentioned in the third paragraph of Mr. Young's letter.

I have the honour to be,

Your most obedient servant.

W. B. Elwin

Agent and Manager

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated 23rd Dec 1874

Recd

4th

No 290

Enclosing herewith
- copy of the letter
of the Chief Eng^r
of the bridge at
288 mile on the
Mullaly Branch

2/96

Madras Railway Company
Chief Engineer's Office
Madras 21st January 1875.

N^o 58.

The Agent and Manager
Dear Sir

Consulting Engineer's letter N^o 148 of 4th ultimo
I have the pleasure to enclose a tracing showing
a cross section of the girders of each of the large
bridges on the Madras Railway.

2. The span in all cases is 70 feet from Centre
to Centre of piers; the depth of the girder is 4 feet;
the thickness of the web is $\frac{3}{8}$ of an inch; the top
and bottom flanges are similar and are composed
of two plates each $\frac{5}{8}$ of an inch thick; in
eight bridges the width of the flanges is
10 inches in the remaining four the girders for
which have been received more recently the
width is 12 inches, the angle irons are also
heavier than those formerly used.

The girders are continuous over two openings
the only exception being in the case of bridges
of an odd number of spans when one of the
end spans is crossed by a non-continuous girder.

3. I regret that I am unable to furnish particulars
of the testing of girders on the S.W. line with the
exception of those at 39.5 mile and on the
Neilgherry Branch which have lately been
put up. The results of the testing of the
following bridges on the N.W. line are enclosed

Chayair
Boddapah
Pollawonka or Kistnapoorem
Paupugnee
Jootoor

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated 23rd Jan'y. 1875.
Recd. 25th Jan'y.

No. 85

Forwarding further
information from
the C. & G. Engineer
as to the girders of each
of the large bridges on
the Madras Railway

Bridge at 232 ms. 40 lbs.
Pennair
Bridge at 248 ms. 36 lbs.
" " 248 " 60 "
Tongabudra.

Yours L^c
W. H. Goring
Sg. Chief Engineer

/ True copy /
W. H. Goring
Agent and Manager.

Mr. G. S. / 76

Results of tests applied to
Girder Bridges
on the Madras Railway
South West Line

Bridge at 395 ms. 23 chs.

Extract from a letter from J. A. Pinson Esq^r
dated Belloor 5th October 1863

I have to report the completion of the
Bridge at the 395th mile. We tested it on Saturday
last, the 3rd instant, with two heavy Engines, which
finally ran over at considerable speed. The greatest
part of the Bridge proved to be, as anticipated, at
the junction of the two 37 ft girders which span the
first opening on the South side. By gauges fixed
at this spot we ascertained the maximum deflection
to be $\frac{13}{16}$ " and the maximum lateral play to be $\frac{6}{16}$ "

Mr. 699/96

Statement shewing the Deflection of Girders on the

	No. of Opening	De. or Right
Two 64 feet Girder Bridge at 5 ms 29 chs		
do do do	1	1
do do do	2	1
Four 64 feet Girder Bridge at 5 ms 68 chs		
do do do	1	1
do do do	2	1
do do do	3	1
do do do	4	1
Two 64 feet Girder Bridge at 10 ms 11 chs		
do do do	1	1
do do do	2	1
Four 64 feet Girder Bridge at 11 ms 7 chs		
do do do	1	1
do do do	2	1
do do do	3	1
do do do	4	1
Two 64 feet Girder Bridge at 12 ms 3 chs		
do do do	1	1
do do do	2	9
Four 64 feet Girder Bridge at 19 ms 4 chs		
do do do	1	1
do do do	2	1
do do do	3	1
do do do	4	1

anch. taken on the 28th August 1873 -

Def. in inch		Contra deflection of Girders in 16 th of an inch			
Loading	West or Left Girder	Running		Standing	
		East or Right Girder	West or Left Girder	East or Right Girder	West or Left Girder
	8	1	2	3	3
	8	4	3	3	3
	11	2	1	4	4
	13	4	4	4	4
	14	2	2	4	4
	12	5	—	5	—
	8	2	2	3	4
	11	4	4	4	3
	11	2	1	4	5
	13	5	4	4	5
	12	2	2	4	5
	12	5	—	4	—
	10	2	1	3	3
	8	4	4	3	3
	9	1	1	4	4
	13	5	4	3	4
	11	1	2	4	4
	11	4	3	4	4

North West Line

Cheyair Bridge

Test of Girders over restored portion of Cheyair Bridge. Engines No 86 and 106 each weighing 34 Tons of Cuts end to end, wheel base 43' 6" 68 Tons 18 Cuts being thus loaded on a length of 43' 6". The two Tenders were attached at each end.

The deflections were as follows:

	Load Stationary		Load Running 30 miles per hour	
	Left West	Right East	Left West	Right East
15 th Opening Oto Cheyair Girder	13/16"	7/8"	13/16"	1"
16 th " " "	3/4"	7/8"	13/16"	1"
17 th " Huggy Girder	3/4"	not tested	13/16"	not tested
18 th " " "	3/4"	"	13/16"	"
19 th " " "	7/8"	"	15/16"	"
20 th " " "	13/16"	"	15/16"	"

As this was the first heavy load on the Girders we may set down 7/8" of the total deflection as due to the Compression of the sheet lead on the Caps of the Piers.

Mr. G. S. / 76.

WALKER'S
HAWK
COUNTRY
1911

15

Buddapah Bridge:

Opening from South to North		Average depth of girders
No.	1	9/16"
	2	3/4"
	3	1/2"
	4	5/8"
	5	5/8"
	6	1/2"
	7	9/16"
	8	7/16"

Pollavunka. or Ristnapootum Bridge

Number of Opening from South to North		Average for pair of girders
No.	1	1/2"
	2	3/8"
	3	3/8"
	4	3/8"
	5	5/8"
	6	5/8"
	7	3/8"
	8	3/8"
	9	3/8"

Panpugnee Bridge

Number of Opening from South to North		Average Depression for Pair of Girders
No	1	1/2"
	2	11/16"
	3	11/16"
	4	5/8"
	5	9/16"
	6	5/8"
	7	1/2"
	8	1/2"
	9	5/8"
	10	5/8"
	11	11/16"
	12	5/8"
	13	11/16"
	14	1/2"
	15	1/2"
	16	3/8"
	17	5/8"
	18	5/8"
	19	5/8"
	20	1/4"

30th 16

Result obtained in testing the Iron Girders of the
 Bridge on the North West Line Madras Railway
 Dist 9. Sec 2. at 18 miles. 40 chains

Clear Span = 64 feet Length of Girders continuous over
 2 Openings = 140 ft weight of two Engines coupled together
 = 60 Tons and extending over one opening Total number
 of Openings 4.

Number of Openings Commencing at end nearest Madras	Deflexion in Centre with Stationary Load		Deflexion in Centre Engines in motion	
	Left Girder	Right Girder	Left Girder	Right Girder
1 st	7-16	7-16	8-16	8-16
2 nd	8-"	8-"	12-"	11-"
3 rd	8-"	8-"	9-"	8-"
4 th	8-"	8-"	8-"	6-"
	31/16	31/16	37/16	36/16

Remarks:

$31/16 \div 4$ No: of Openings = . 4547 Average deflexion 11' ✓
 $31/16 \div 1$ " " " = . 4547 " " " 3'
 $37/16 \div 1$ " " " = . 5781 " " " 2'
 $36/16 \div 1$ " " " = . 5625 " " " 1'
 Maximum deflexion under Stationary load = . 5000 17'
 " " " " " " " = . 4375 8'
 " " " " " " " = . 7500 5'
 " " " " " " " = . 5000 6'
 Average deflexion standing load = . 4547 9' 10"
 " " " " " " " = . 5703 10 9'

Results obtained in testing the Iron Girders of the
 Bridge on the North West India Madras Railway
 Dist G. Sec 2. at 18 miles 68 chains

Clear span = 64 feet Length of Girders continuous over
 2 Openings = 140 ft weight of two Engines coupled together
 = 60 Tons and extending over one opening Total number of
 openings (2).

No of Open- ings Common to both at and nearest Madras	Deflection in Centre with Stationary Load		Deflection in Centre Engines in Motion		Remarks
	Left Girder	Right Girder	Left Girder	Right Girder	
1 st	7-16	8-16	8-16	7-16	
2 ^d	8--	7--	11--	9--	
	15/16	15/16	19/16	15 1/16	

$15/16 \div 4$ no: of openings = . 4688 Average deflection 11
 $15/16 \div 4$ " " = . 4688 " " 31
 $19/16 \div 4$ " " = . 5937 " " 21
 $18/16 \div 4$ " " = . 5625 " " 11
 Maximum Deflection under Stationary load = . 5000 ✓
 do do do " = . 4735 ✓
 do do do Speed = . 6875 51
 do do do do = . 5000 51
 Average Deflection Standing load = . 4688 ✓ 10
 do do when in motion = . 5781 ✓ 91

e: 2

Total Deflections

63
86✓
10✓
9✓

Results obtained in testing the Iron Girders
of the Bridge on the North West Line
Madras Railway Dist 10 Dec 2 at 14 miles 15 chains

Clear Span = 64 ft Length of Girders, continuous over
2 Openings = 140 ft weight of two girders coupled together
= 60 Tons and extending over one opening. Total number
of Openings (4)

Number of Openings commencing at and nearest Madras	Deflection in Centre with Stationary Load		Deflections in Centre when in motion	
	Left Girders	Right Girders	Left Girders	Right Girders
1 st	6-16	4-16	8-16	7-16
2 nd	8-	10-	9-	12-
3 rd	6-	4-	12-	8-
4 th	8-	10-	10-	10-
	28-16	31-16	39-16	37-16

$28/16 \div 4$ no of Openings = .4375 Average Deflection 4
 $31/16 \div 4$ " " " = .4547 " " " 3
 $39/16 \div 4$ " " " = .6094 " " " 2
 $37/16 \div 4$ " " " = .5781 " " " 1
 Maximum deflection under Stationary Load = .6250 7
 " " " " " = .2500 8
 " " " " " Speed = .7500 5
 " " " " " = .4375 6
 " " " " " do = .4375 10
 Average deflection Standing Load = .5937 9
 " " " " " when in motion = .5937 9

20

Results obtained in testing the Iron Girders of the
Bridge on the N.W. Line Madras Railway Dist 10 sec. 2
at 14. Miles 41 Chains

Clear span = 64 ft Length of Girder, continuous over
2. Openings = 140 ft weight of two Engines coupled together
= 60 Tons and extending over one opening Total number of
Openings (2)

Number of Openings Commencing at end nearest Madras	Deflexion in Cuts with Stationary Load		Deflexion in Cuts Engine in motion		Remarks
	Left Girders	Right Girders	Left Girders	Right Girders	
1 st	7-16	7-16	8-16	8-16	
2 nd	7-16	8-16	10-16	11-16	
	14-16	15-16	18-16	19-16	

$14/16 \div 4$ No of openings = .4375 Average deflexion 1'
 $15/16 \div 4$ " " " = .4688 " " " 2'
 $18/16 \div 4$ " " " = .5625 " " " 3'
 $19/16 \div 4$ " " " = .5937 " " " 4'
 Maximum deflexion under Stationary load = .500 ✓ 7'
 do do do do = .4375 8'
 do do do Speed " = .6875 5'
 do do do do " = .5000 6'
 Average deflexion Standing Load " = .4687 ✓ 10'
 do do when in motion " = .5937 ✓ 9'

Demagabudra Chirag

[illegible]

No. 1099

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 27th October 1875.

From Robert B. Elwin Esq.
Agent and Manager. M. R. Company

To Lieut Colonel J. W. Mc. Shaw Stewart R.E.
Consulting Engineer for Railways,

SIR,

In accordance with the request contained in your letter No. 213. of the 16th of February last I have the honor to send you herewith a descriptive list prepared by the Chief Engineers of the iron bridges on the Madras Railway showing the maximum speed at which it is safe to run Engines and trains over them.

I have the honor to be
Sir
Your most Obedient Servant
R. B. Elwin
Agent and Manager

Madras Railway
South West Line
List of Girder Bridges.

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated

29th October 1875

At

No. 1099

For sending on request
a description list of
the girder bridges on
the Madras Railway

Madia
1st Division

Mile	Set Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Name of River
0	14	4	7 ft.	139' - 10"	4	Cochran's pond
				Continuous over two openings		
106	5	5	64 (Skew)	355' - 6"	4	
				Continuous over five openings		
		14	32 (Skew)	36' - 9"	3	Palar
1	14	1	50	55 - 0	3 1/2	
1	14	2	25 (Skew)	35 - 0	2 1/2	Cochran's pond
105	11	2	30	35 - 0	3	
123	23	4	30	35 - 0	3	Mailputty
125	21	12	28' - 3" (Skew)	34 - 0	2 1/2	Vaniembady
1	0	1	213' (Skew)	26 - 0	1 1/2	Godaar
99	12	1	20	24 - 0	1 1/2	
112	9	5	20	24 - 0	1 1/2	
112	2	1	194' (Skew)	24 - 0	1 1/2	
122	7	1	15	18 - 0	1 1/3	
127	12	3	124' (Skew)	18 - 0	1 1/3	
10	8	1	12	14 - 6	1 1/8	
33	11	1	12	14 - 6	1 1/8	
34	18	1	12	14 - 6	1 1/8	
59	3	1	12	14 - 6	1 1/8	
59	6	1	12	14 - 6	1 1/8	
60	5	1	12	14 - 6	1 1/8	
64	17	1	12	14 - 6	1 1/8	
67	3	1	12	14 - 6	1 1/8	
67	13	1	12	14 - 6	1 1/8	
68	8	1	12	14 - 6	1 1/8	
71	15	1	12 (Skew)	14 - 6	1 1/8	

Railway
S. W. Line.

[illegible]

1st Division

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River
72	5	1	12	14'-6"	1'6"	Masonry Pier	
74	6	1	12	14-6	1'6"	do	
74	12	2	12	14-6	1'6"	do	
79	3	1	12	14-6	1'6"	do	
83	4	3	12	14-6	1'6"	do	
84	4	3	12	14-6	1'6"	do	
85	9	2	12	14-6	1'6"	do	
88	6	1	12	14-6	1'6"	do	
97	14	1	12	14-6	1'6"	do	
101	10	3	12	14-6	1'6"	do	
101	13	1	12	14-6	1'6"	do	
102	12	1	12	14-6	1'6"	do	
103	5	2	12	14-6	1'6"	do	
103	12	4	12	14-6	1'6"	do	
103	16	2	12	14-6	1'6"	do	
104	1	2	12	14-6	1'6"	do	
104	6	2	12	14-6	1'6"	do	
104	14	1	12	14-6	1'6"	do	
110	6	1	12	14-6	1'6"	do	
111	8	1	12	14-6	1'6"	do	
113	12	1	12	14-6	1'6"	do	
114	14	3	12	14-6	1'6"	do	
118	10	3	12	14-6	1'6"	do	
119	19	4	12	14-6	1'6"	do	
120	5	2	12	14-6	1'6"	do	
120	8	2	12	14-6	1'6"	do	
121	4	6	12	14-6	1'6"	do	
121	9	2	12	14-6	1'6"	do	
124	16	1	12	14-6	1'6"	do	

1st Division

Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River
1	18	1	9	12'-0"	1	Masonry Pier
2	7	1	9	12-0	1	do
2	3	1	9	12-0	1	do
1	5	2	9	12-0	1	do
1	10	1	9	12-0	1	do
1	10	1	9	12-0	1	do
1	1	1	9	12-0	1	do
1	18	1	9	12-0	1	do
1	14	1	9	12-0	1	do
1	20	1	9	12-0	1	do
12	4	1	9	12-0	1	do
13	3	1	9	12-0	1	do
14	5	1	9	12-0	1	do
15	7	1	9	12-0	1	do
16	16	1	9	12-0	1	do
17	3	1	9	12-0	1	do
17	17	1	9	12-0	1	do
19	4	1	9	12-0	1	do
20	20	1	9	12-0	1	do
30	22	5	9	12-0	1	do
31	10	1	9	12-0	1	do
34	21	3	9	12-0	1	do
39	7	1	9	12-0	1	do
40	17	1	9	12-0	1	do
42	4	1	9	12-0	1	do
43	8	3	9	12-0	1	do
44	14	5	9	12-0	1	do
48	1	3	9	12-0	1	do
48	8	1	9	12-0	1	do

S. W. Line

25

Maximum Safe
Speed of Train
over Bridge

Remarks-

60 miles an hour

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

S. W. Line

26

Maximum Safe
Speed of Train
over Bridge

Remarks-

40 miles an hour

do

do

Not on main line

do

do

60 miles an hour

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

do

Royapooram Branch

do

do

Salt Lake Line

do

Salt Siding

2nd Division

S. W. Line

2 nd Division										2 nd Div.
Miles	Stk. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks	
			Ft.		Ft.					
57	6	2	9	12'-0"	1	Masonry Piers		60 miles an hour		
58	8	1	9	12-0	1			do		
60	10	1	9	12-0	1			do		
67	8	1	9	12-0	1			do		
79	15	1	9	12-0	1			do		
83	1	3	9	12-0	1			do		
83	3	1	9	12-0	1			do		
84	11	1	9	12-0	1			do		
85	1	2	9	12-0	1			do		
86	15	1	9	12-0	1			do		
90	11	1	9	12-0	1			do		
90	13	1	9	12-0	1			do		
101	12	2	9	12-0	1			do		
102	6	1	9	12-0	1			do		
104	2	1	9	12-0	1			do		
107	8	1	9	12-0	1			do		
113	1	1	9	12-0	1			do		
116	7	1	9	12-0	1			do		
125	7	3	9	12-0	1			do		
131	7	2	9	12-0	1			do		
2 nd Division										
Main Line										
143	14	3	20	24'-0"	1 1/2	do		do		
144	8	2	20	24'-0"	1 1/2			do		
145	10	2	20	24'-0"	1 1/2			do		
132	12	1	12	14-6	1 1/2			do		
133	15	1	12	14-6	1 1/2			do		
135	2	5	12	14-6	1 1/2			do		

3rd Division

S. M. Line

3 rd Division								S. M. Line
Miles	Rel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge
135	5	3	12	14'-6"	1 7/8	Masonry Piers	Thunoonoon Salava	60 miles an hour
140	2	1	12	14-6	1 7/8	do		do
156	18	1	12	14-6	1 7/8	do		do
146	5	1	9	12-0	1	do		do
170	11	1	9	12-0	1	do		do
Bangalore Branch								
175	5	1	54 7/8	59-6	4	Masonry Piers	Koputthar	40 miles an hour
		1	30	35-0	3	do		
		1	20	24-0	1 1/2	do		
145	16	2	50	55-0	3 1/2	Screw Piles	Hoonounbully	20 miles an hour
164	16	1	27-9 (Skew)	35-0	2 1/2	Masonry Piers		Jungle Stream
132	15	1	12	14-6	1 7/8	do		do
134	11	1	12	14-6	1 7/8	do		do
135	8	1	12	14-6	1 7/8	do		do
136	19	1	12	14-6	1 7/8	do		do
140	16	1	12	14-6	1 7/8	do		do
144	8	1	12	14-6	1 7/8	do		do
163	12	1	12	14-6	1 7/8	do		do
188	3	2	12	14-6	1 7/8	do		do
200	7	1	12	14-6	1 7/8	do		do
3 rd Division								
241	11	20	63'-8"	139'-8"	4	Masonry Piers	Lawery	30 miles an hour
247	6	2	62	Continuous over two Openings	2 1/2	do		60 miles an hour
285	10	2	30	35-0	2 1/2	do		do
230	11	1	22	26-0	1 1/2	do		do
182	5	2	20	24-0	1 1/2	do		do

Remarks.

3rd Division S. W. Line

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders Supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks -
			ft.		ft.				
183	4	1	20	24'-0"	1 1/2	Masonry Piers		60 miles an hour	
		2	12	14-6	1 1/8				
188	6	1	20 (Skew)	24-0	1 1/2	do		do	
190	17	3	20 (Skew)	24-0	1 1/2	do		do	
191	2	3	20 (Skew)	24-0	1 1/2	do		do	
242	14	5	20 (Skew)	24-0	1 1/2	do		do	
182	8	3	19 (Skew)	24-0	1 1/2	do		do	
244	10	1	15	18-0	1 3/8	do		do	
250	10	1	15	18-0	1 3/8	do		do	
262	9	1	15	18-0	1 3/8	do		do	
190	10	1	12	14-6	1 1/8	do		do	
206	14	2	10 (Skew)	14-6	1 1/8	do		do	
208	11	2	12	14-6	1 1/8	do		do	
212	19	1	12	14-6	1 1/8	do		do	
219	2	1	12	14-6	1 1/8	do		do	
219	6	4	12	14-6	1 1/8	do		do	
219	15	1	12	14-6	1 1/8	do		do	
222	2	1	12	14-6	1 1/8	do		do	
228	18	2	12	14-6	1 1/8	do		do	
256	9	3	12	14-6	1 1/8	do		do	
260	7	1	12	14-6	1 1/8	do		do	
260	14	1	12	14-6	1 1/8	do		do	
262	11	1	12	14-6	1 1/8	do		do	
263	7	1	12	14-6	1 1/8	do		do	
264	10	1	10	14-6	1 1/8	do		do	
287	3	1	12	14-6	1 1/8	do		do	
288	10	1	12	14-6	1 1/8	do		do	
185	3	1	10	12-0	1	do		do	
188	19	1	10	12-0	1	do		do	

3rd Division

S. M. Line

30

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
			ft.		ft.				
189	4	1	10	12' 0"	1	Masonry Piers		60 miles an hour	
198	12	1	9	12 — 0	1	do		do	
200	18	1	9	12 — 0	1	do		do	
216	8	1	9	12 — 0	1	do		do	
218	0	3	9	12 — 0	1	do		do	
220	14	1	9	12 — 0	1	do		do	
222	8	1	9	12 — 0	1	do		do	
222	15	1	9	12 — 0	1	do		do	
223	8	1	9	12 — 0	1	do		do	
224	14	1	9	12 — 0	1	do		do	
226	16	2	9	12 — 0	1	do		do	
229	15	2	9	12 — 0	1	do		do	
230	4	2	9	12 — 0	1	do		do	
231	18	2	9	12 — 0	1	do		do	
232	16	2	9	12 — 0	1	do		do	
234	16	2	9	12 — 0	1	do		do	
236	10	2	9	12 — 0	1	do		do	
242	7	1	8	12 — 0	1	do		do	
242	8	1	9	12 — 0	1	do		do	
247	14	1	9	12 — 0	1	do		do	
248	10	1	9	12 — 0	1	do		do	
252	16	1	9	12 — 0	1	do		do	
253	9	1	9	12 — 0	1	do		do	
253	15	1	9	12 — 0	1	do		do	
288	18	2	9	12 — 0	1	do		do	
298	14	1	9	12 — 0	1	do		do	
298	20	1	9	12 — 0	1	do		do	
299	3	2	9	12 — 0	1	do		do	
			9	12 — 0	1	do			

4th Division

S. M. Line

31

Miles	Sett. Post	Number of Opening	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
373	12	12	7 th Division Main Line 62 (Skew)	141' - 10"	4	Masonry Piers	Shoother	40 Miles an hour	
387	12	6	One 65' - 10"	139' - 10"	4	Screw Pile Piers	Tinnot	10 Miles an hour	
395	5	3	Three 66' - 2"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
403	5	12	One 57' - 8"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
403	11	8	One 21' - 2"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
408	3	1	68' - 9"	211' - 2"	4	Screw Pile Piers		10 Miles an hour	
434	5	3	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
472	10	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
477	6	3	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
477	13	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
481	11	4	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
485	10	5	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
491	17	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
494	17	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
496	16	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
497	7	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
498	1	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	

4th Division

S. M. Line

31

Miles	Sett. Post	Number of Opening	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
373	12	12	7 th Division Main Line 62 (Skew)	141' - 10"	4	Masonry Piers	Shoother	40 Miles an hour	
387	12	6	One 65' - 10"	139' - 10"	4	Screw Pile Piers	Tinnot	10 Miles an hour	
395	5	3	Three 66' - 2"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
403	5	12	One 57' - 8"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
403	11	8	One 21' - 2"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
408	3	1	68' - 9"	211' - 2"	4	Screw Pile Piers		10 Miles an hour	
434	5	3	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
472	10	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
477	6	3	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
477	13	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
481	11	4	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
485	10	5	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
491	17	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
494	17	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
496	16	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
497	7	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	
498	1	1	66' - 0"	139' - 10"	4	Screw Pile Piers		10 Miles an hour	

4th Division

S. W. Linn

32

Mile	Post	Number of Opening	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	maximum safe speed of Train over Bridge	Remarks
307	1	1	12	14 - 6	1 1/8	Masonry Piers		60 miles an hour.	
308	13	1	12	14 - 6	1 1/8	do		do	
309	4	4	12	14 - 6	1 1/8 + 1/2	do		do	
312	11	1	12	14 - 6	1 1/8	do		do	
314	11	1	12	14 - 6	1 1/8	do		do	
345	5	2	12	14 - 6	1 1/8	do		do	
345	8	2	12	14 - 6	1 1/8	do		do	
371	10	1	12	14 - 6	1 1/8	do		do	
404	9	1	11-3 (Skew)	14 - 6	1 1/8	do		do	
309	12	1	9-0	12 - 0	1	do		do	
343	2	1	9-6	12 - 0	1 1/2	do		do	
345	13	1	9-6	12 - 0	1	do		do	
346	"	1	10-2	12 - 0	1 1/2	do		do	
353	21	1	9-0	12 - 0	1	do		do	
356	6	1	9-0	12 - 0	1	do		do	
360	17	1	9-0	12 - 0	1	do		do	
371	1	2	9-6	12 - 0	1	do		do	
371	7	2	9-6	12 - 0	1	do		do	
380	6	1	9-0	12 - 0	1	do		do	
380	14	2	9-0	12 - 0	1	do		do	
381	17	2	9-9	12 - 0	1	do		do	
382	13	3	9-3	12 - 0	1	do		do	
385	9	1	9-0	12 - 0	1	do		do	
307	17	2	Neilgerry Branch 64-0	139-10	4	do		do	
308	7	4	Two 66-3 Two 64-11	139-10 continuous over two openings	4	Screw Pile Piers		40 miles an hour.	

4th Division

S. W. Lurie

33

Mile	Miles	Post	Number of Opening	Span of each Opening	Length of Girders over each Opening	Depth of Girder	Girders supported on	Name of River	Maximum safe load of Trains or Bridge	Remarks
37	312	13	2	74	139'-10" Continuous over two openings	4	Masonry Piers			
37	313	12	4	Two 66'-3"	139'-10" Continuous over two openings	4	Screw Pile Piers			miles an hour.
38	314	10	2	Two 64'-0"	139'-10" Continuous over two openings	4	Masonry Piers			40 miles an hour.
38	321	13	4	64'-0"	139'-10" Continuous over two openings	4	do			60 miles an hour.
39	309	3	3	30'-0"	35'-0"	3	do			do
39	312	1	1	30'-0"	35'-0"	3	do			do
39	302	19	1	19'-8"	24'-0"	1 1/2	do			do
40	303	2	1	20'-0"	24'-0"	1 1/2	do			do
40	303	9	1	20'-0"	24'-0"	1 1/2	do			do
40	305	1	1	20'-0"	24'-0"	1 1/2	do			do
40	310	5	1	20'-0"	24'-0"	1 1/2	do			do
40	313	16	1	20'-0"	24'-0"	1 1/2	do			do
40	314	1	1	20'-0"	24'-0"	1 1/2	do			do
40	314	6	1	20'-0"	24'-0"	1 1/2	do			do
40	315	4	1	20'-0"	24'-0"	1 1/2	do			do
40	316	13	1	20'-0"	24'-0"	1 1/2	do			do
40	318	15	1	20'-0"	24'-0"	1 1/2	do			do
40	319	3	1	20'-0"	24'-0"	1 1/2	do			do
40	320	6	1	20'-0"	24'-0"	1 1/2	do			do
40	321	2	1	20'-0"	24'-0"	1 1/2	do			do
40	304	12	2	15'-0"	18'-0"	1 1/3	do			do
40	317	11	1	15'-0"	18'-0"	1 1/3	do			do
40	311	2	1	15'-0"	18'-0"	1 1/3	do			do
40	303	3	1	12'-0"	14'-6"	1 1/8	do			do

4th Division

J. W. Linn

31

Miles	Rel. Post	Number of Opening	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of the
			ft.		ft.		
304	5	1	12	14'-6"	1'-8"	Masonry Pier	
306	4	1	12	14'-6"	1'-8"	do	
309	10	1	12	14'-6"	1'-8"	do	
315	7	1	12	14'-6"	1'-8"	do	
319	10	1	12	14'-6"	1'-8"	do	
322	5	1	12	14'-6"	1'-8"	do	
323	12	1	11'-10"	14'-6"	1'-8"	do	
303	14	1	9-6	12-0	1	do	
306	3	1	9-4	12-0	1	do	
311	6	1	9-4	12-0	1	do	

Maximum Safe
Load of Train
over Bridge

Remarks.

60 Miles an hour
do
do
do
do
do
do
do
do
do
do

Chief Engineer's Office
20th October 1895

W. J. Linn
Agent & Manager

Blusfel Guehner -
Chief Engineer
W. J.

Madras Railway
North West Line
List of Girder Bridges -

12/96

Madras
1st Division

1st Division

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River
135	9	14	64	139'-10"	4	Masonry Piers	Chera
		1	30	35 ft. for a single opening	3	Masonry and Screw Pile Piers	
		2	66	139'-10"	4	Screw Pile Piers	
		6	66	139'-10"	4	Screw Pile Piers	
		3	33	139'-10"	4	Two Screw Piles	
		10	64	139'-10"	4	Masonry Piers	
		2	51	125'-3"	4	Two Screw Piles and Masonry Piers	
		2	65	139'-10"	4	Screw Piles and Masonry Piers	
		2	66 (Skew)	139'-10"	4	do	
		2	50	54'-3"	3 1/2	Screw Pile Piers	
142	9	2	66 (Skew)	139'-10"	4	do	Co-door
70	2	1	50	54'-3"	3 1/2	Screw Pile Piers	
79	13	1	50	55'-0"	3 1/2	Masonry Piers	
95	13	1	50	55'-0"	3 1/2	do	
107	10	5	59 (Skew)	55'-0"	3 1/2	do	
93	4	2	30	35'-0"	2 1/2	do	
153	11	4	30	35'-0"	2 1/2	do	
104	2	1	28 (Skew)	35'-0"	2 1/2	do	
130	8	3	30	35'-0"	3	do	

Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River
12	4	24 (Skew)	29'-0"	1 1/2	Masonry Piers	
4	2	22 1/2 (Skew)	27'-3"	1 1/2	do	
13	2	22	26'-0"	1 1/2	do	
✓	1	20	24'-0"	1 1/2	do	
14	1	20	24'-0"	1 1/2	Screw Pile Piers	
13	4	20	24'-0"	1 1/2	Masonry Piers	
9	5	20	24'-0"	1 1/2	do	
5	1	20 (Skew)	24'-0"	1 1/2	do	
4	8	20	24'-0"	1 1/2	do	
9	2	20	24'-0"	1 1/2	do	
	2	20 (Skew)	26'-0"	1 1/2	do	
	2	20	24'-0"	1 1/2	do	
	2	20	24'-0"	1 1/2	do	
	1	20	24'-0"	1 1/2	do	
	3	18 (Skew)	22'-0"	1 1/3	do	
	3	15 1/2 (Skew)	1'-24"	1 1/2	do	
	4	15 1/2	19'-6"	1 1/2	do	
	1	15	18'-0"	1 1/3	do	
	1	15	18'-0"	1 1/3	do	
	1	15	18'-0"	1 1/3	do	
	1	15	18'-0"	1 1/3	do	
	2	15	18'-0"	1 1/3	do	
	3	15	18'-0"	1 1/3	do	
	1	15	18'-0"	1 1/3	do	
	2	15	18'-0"	1 1/3	do	
	1	15	18'-0"	1 1/3	do	

Railway- N. W. Line

Maximum Safe
Speed of Trains
over Bridge

Remarks

5 miles an hour

40 miles an hour
60 miles an hour

do

40 miles an hour

60 miles an hour

do

do

do

N. W. Line

Maximum Safe
Speed of Trains
over Bridge

Remarks

40 miles an hour

60 miles an hour

do

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40 miles an hour

60 miles an hour

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1st Division

N. W. Line

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
138	13	1	7 ft. 15 (Skew)	18' 0"	1 1/2	Masonry Pier		60 miles an hour	
45	16	3	12	14 - 6	1 1/8	do		do	
52	1	1	12	14 - 6	1 1/8	do		do	
53	7	1	12	14 - 6	1 1/8	do		do	
53	10	2	12	14 - 6	1 1/8	do		do	
53	14	1	12	14 - 6	1 1/8	do		do	
54	4	1	12	14 - 6	1 1/8	do		do	
54	7	1	12	14 - 6	1 1/8	do		do	
57	7	1	12	14 - 6	1 1/8	do		do	
60	12	1	12	14 - 6	1 1/8	do		do	
64	12	3	12 (Skew)	14 - 6	1 1/8	do		do	
64	15	2	12	14 - 6	1 1/8	do		do	
65	7	3	12	14 - 6	1 1/8	do		do	
66	10	1	12	14 - 6	1 1/8	do		do	
80	5	1	12	14 - 6	1 1/8	do		do	
88	15	2	12	14 - 6	1 1/8	do		do	
95	2	3	12	14 - 6	1 1/8	do		do	
111	11	3	12	14 - 6	1 1/8	do		do	
113	11	1	12	14 - 6	1 1/8	do		do	
114	6	1	12	14 - 6	1 1/8	do		do	
114	8	2	12	14 - 6	1 1/8	do		do	
117	3	2	12	14 - 6	1 1/8	do		do	
118	13	1	12	14 - 6	1 1/8	do		do	
119	14	1	12	14 - 6	1 1/8	do		do	
123	8	1	12 (Skew)	14 - 6	1 1/8	do		do	
124	5	1	12	14 - 6	1 1/8	do		do	
124	12	1	12	14 - 6	1 1/8	do		do	
124	15	2	12	14 - 6	1 1/8	do		do	
125	14	1	12	14 - 6	1 1/8	do		do	

1st Division

N.W. Line

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
12	13	1	12	14-6"	1 1/8	Masonry Piers		60 miles an hour	
132	14	2	12	14-6	1 1/8	do		do	
134	1	1	12	14-6	1 1/8	do		do	
134	15	1	12	14-6	1 1/8	do		do	
139	6	1	12	14-6	1 1/8	do		do	
144	8	1	12	14-6	1 1/8	do		do	
146	10	2	12	14-6	1 1/8	do		do	
144	1	1	12	14-6	1 1/8	do		do	
144	16	1	12	14-6	1 1/8	do		do	
150	1	1	12	14-6	1 1/8	do		do	
154	3	1	12	14-6	1 1/8	do		do	
158	10	1	12	14-6	1 1/8	do		do	
160	7	1	12	14-6	1 1/8	do		do	
160	11	1	12	14-6	1 1/8	do		do	
160	13	1	12	14-6	1 1/8	do		do	
161	4	3	12	14-6	1 1/8	do		do	
120	11	4	11 1/2	14-6	1 1/8	do		do	
43	5	2	9	12-0	1	do		do	
44	1	1	9	12-0	1	do		do	
45	9	1	9	12-0	1	do		do	
45	13	1	9	12-0	1	do		do	
46	14	1	9	12-0	1	do		do	
56	8	1	9	12-0	1	do		do	
74	10	2	9	12-0	1	do		do	
86	12	1	9	12-0	1	do		do	
84	2	1	9	12-0	1	do		do	
88	13	1	9	12-0	1	do		do	
90	14	1	9	12-0	1	do		do	
99	1	1	9	12-0	1	do		do	

2 nd Division									N. W. Line	Remarks.
Miles	Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Train over Bridge	
127	99	7	1	9	12'-0"	1	Masonry	Beira	60 miles an hour	
132	101	10	2	9	12'-0"	1	do		do	
134	101	14	1	9	12'-0"	1	do		do	
134	113	15	1	9	12'-0"	1	do		do	
139	114	3	1	9	12'-0"	1	do		do	
142	106	2	1	9	12'-0"	1	do		do	
146	144	16	1	9	12'-0"	1	do		do	
147	145	4	2	9	12'-0"	1	do		do	
147	147	12	1	9	12'-0"	1	do		do	
150	150	5	2	9 (Skew)	12'-0"	1	do		do	
151	151	8	1	9	12'-0"	1	do		do	
152	153	3	1	9	12'-0"	1	do		do	
160	154	16	1	9	12'-0"	1	do		do	
160	156	8	3	9	12'-0"	1	do		do	
160	157	1	1	9	12'-0"	1	do		do	
160	159	13	1	9	12'-0"	1	do		do	
162	160	2	1	9	12'-0"	1	do		do	
164	161	3	3	9	12'-0"	1	do		do	
164	161	14	1	9	12'-0"	1	do		do	
165	162	5	8	62 (Skew)	135'-11"	4	Masonry	Beira	40 miles an hour	
165	165	15	9	61 (Skew)	139'-10"	4	do	Kistnawunda	do	

2nd Division

N.H. Line

65

Remarks

Mile	Miles	Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders Supported on	Name of River	Maximum Safe Speed of Trains over Bridge
12				31		31			
13									
13									
13	175	3	2	65	Nine Girders 139'-10" long each. Continuous over two large openings - One Girder 115 1/2 ft. long. Continuous over a large and a small opening - One Girder 35 ft. long over a single small opening.	4	Screw Pile Piers	Paupungnee	Speed restricted to 4 miles an hour.
14			2	31					
14									
14	180	15	7	61 1/2 (Skew)	139'-10" Continuous over two openings	4	Masonry Piers	Matagapully	40 miles an hour.
15									
15			11	64	Eighteen Girders 139'-10" long each. Continuous over two large openings - Two Girders 104'-10" long each. Continuous over a large and a small opening - One Girder 70 ft. long over a single large opening.	4	11 Masonry Piers 29 Screw Pile Piers	Chithavully	Speed restricted to 4 miles an hour.
16			27	66					
16			1	65					
16	211	14	1	31					
17			1	30					
18									
18	232	3	4	64	139'-10" Continuous over two openings	4	Masonry Piers	Jooteer	60 miles an hour.
19									
19	232	10	2	64	139'-10" Continuous over two openings	4	do		do
20									
20	233	12	24	64	139'-10" Continuous over two openings	4	do	Permai	Speed restricted to 4 miles an hour.
21									
21	248	9	4	64	139'-10" Continuous over two openings	4	do	Conarouka	60 miles an hour.
22									
22	248	15	2	64	139'-10" Continuous over two openings	4	do	Chinnarouka	do

2nd Division

N. W. Line

Miles	Miles	Rel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
	258	11	4	74	139'—10" Continuous over two Openings	4	Masonry Arch	Basanapully Venka	60 miles an hour.	
	263	3	4	64	139'—10" Continuous over two Openings	4	do	Luigala Venka	do	
175	179	1	5	50	55—0"	3 1/2	do	Gopaulpoooram	do	
	205	7	3	42 (Skew)	49—9	3	do	Codacanapully Venka	40 miles an hour.	
	210	18	2	34 (Skew)	39—0	3 1/2	do	do	do	
	170	14	7	30	35—0	3	do	Perzodpatt Venka	60 miles an hour.	
	196	1	3	35 (Skew)	39—6	3	do	Moodanoor Venka	40 miles an hour.	
186	198	6	1	30	35—0	3	do	do	60 miles an hour.	
	200	1	2	38 (Skew)	50—0	3	do	Boondlacondah Venka	40 miles an hour.	
	207	4	2	30	35—0	3	do	do	60 miles an hour.	
	207	6	3	30	35—0	3	do	do	do	
	215	11	1	30	35—0	3	do	do	do	
	216	3	4	30	35—0	3	do	Baganapully Venka	do	
21	226	8	1	30	35—0	3	do	Jogupoor Venka	do	
	238	7	6	30	35—0	3	do	Yenagoo Venka	do	
	245	12	3	30	35—0	3	do	Vannulpand Venka	do	
	249	2	2	30	35—0	3	do	do	do	
2	250	8	2	30	35—0	3	do	Cuttacul Venka	do	
	254	11	2	30	35—0	3	do	Cohela Venka	do	
2	257	13	5	30	35—0	3	do	do	do	
	264	1	1	30	35—0	3	do	Chuttanapully Venka	do	
2	270	1	2	30	35—0	3	do	do	do	
	196	8	1	25 1/2 (Skew)	30—0	2 1/2	do	do	do	
2	163	10	1	21	26—0	1 1/2	do	do	do	
	179	16	28	21 (Skew)	26—0	1 1/2	do	do	do	
2	182	3	2	20 1/2 (Skew)	26—0	1 1/2	do	Yenagoodpand.	40 miles an hour.	
	201	13	1	20 (Skew)	24—0	1 1/2	do	do	60 miles an hour.	
	168	4	1	20	24—0	1 1/2	do	do	do	

2nd Division

N. W. Line

Miles	Miles	Rel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
	258	11	4	74	139'—10" Continuous over two Openings	4	Masonry Arch	Basanapully Venka	60 miles an hour.	
	263	3	4	64	139'—10" Continuous over two Openings	4	do	Luigala Venka	do	
175	179	1	5	50	55—0"	3 1/2	do	Gopaulpoooram	do	
	205	7	3	42 (Skew)	49—9	3	do	Codacanapully Venka	40 miles an hour.	
	210	18	2	34 (Skew)	39—0	3 1/2	do	do	do	
	170	14	7	30	35—0	3	do	Perzodpatt Venka	60 miles an hour.	
	196	1	3	35 (Skew)	39—6	3	do	Moodanoor Venka	40 miles an hour.	
186	198	6	1	30	35—0	3	do	do	60 miles an hour.	
	200	1	2	38 (Skew)	50—0	3	do	Boondlacondah Venka	40 miles an hour.	
	207	4	2	30	35—0	3	do	do	60 miles an hour.	
	207	6	3	30	35—0	3	do	do	do	
	215	11	1	30	35—0	3	do	do	do	
	216	3	4	30	35—0	3	do	Baganapully Venka	do	
21	226	8	1	30	35—0	3	do	Jogupoor Venka	do	
	238	7	6	30	35—0	3	do	Yenagoo Venka	do	
	245	12	3	30	35—0	3	do	Vannulpand Venka	do	
	249	2	2	30	35—0	3	do	do	do	
2	250	8	2	30	35—0	3	do	Cuttacul Venka	do	
	254	11	2	30	35—0	3	do	Cohela Venka	do	
2	257	13	5	30	35—0	3	do	do	do	
	264	1	1	30	35—0	3	do	Chuttanapully Venka	do	
2	270	1	2	30	35—0	3	do	do	do	
	196	8	1	25 1/2 (Skew)	30—0	2 1/2	do	do	do	
2	163	10	1	21	26—0	1 1/2	do	do	do	
	179	16	28	21 (Skew)	26—0	1 1/2	do	do	do	
2	182	3	2	20 1/2 (Skew)	26—0	1 1/2	do	Yenagoodpand.	40 miles an hour.	
	201	13	1	20 (Skew)	24—0	1 1/2	do	do	60 miles an hour.	
	168	4	1	20	24—0	1 1/2	do	do	do	

2nd Division

N. W. Line.

Mile	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
172	8	1	20	24'-0"	1 1/2	Masonry Piers		60 miles an hour	
173	1	1	20	24'-0"	1 1/2	do		do	
173	9	1	20	24'-0"	1 1/2	do		do	
178	12	1	20	24'-0"	1 1/2	do		do	
209	12	1	20	24'-0"	1 1/2	do		do	
214	11	3	20	24'-0"	1 1/2	do		do	
214	16	1	20	24'-0"	1 1/2	do		do	
215	2	2	20	24'-0"	1 1/2	do		do	
216	13	1	20	24'-0"	1 1/2	do		do	
216	14	1	20	24'-0"	1 1/2	do		do	
222	6	1	20	24'-0"	1 1/2	do		do	
223	3	3	20	24'-0"	1 1/2	do		do	
223	14	1	20	24'-0"	1 1/2	do		do	
224	2	4	20	24'-0"	1 1/2	do		do	
228	4	1	20	24'-0"	1 1/2	do	Sullawully Banks	do	
228	7	2	20	24'-0"	1 1/2	do		do	
228	12	1	20	24'-0"	1 1/2	do		do	
229	1	1	20	24'-0"	1 1/2	do		do	
230	1	1	20	24'-0"	1 1/2	do		do	
231	8	1	20	24'-0"	1 1/2	do		do	
231	10	1	20	24'-0"	1 1/2	do		do	
244	9	1	20	24'-0"	1 1/2	do		do	
247	2	2	20	24'-0"	1 1/2	do	Bellary Road	do	
252	1	1	20	24'-0"	1 1/2	do		do	
252	7	1	20	24'-0"	1 1/2	do		do	
252	11	1	20	24'-0"	1 1/2	do		do	
253	3	4	20	24'-0"	1 1/2	do		do	
255	11	2	20	24'-0"	1 1/2	do		do	
256	1	1	20	24'-0"	1 1/2	do		do	
259	13	1	20	24'-0"	1 1/2	do		do	

2nd Division

Mile	Rel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Supports	Name of River
			ft.		ft.		
260	8	1	20	24' 0"	1 1/2	Masonry Piers	
164	15	1	15	18' 0"	1 1/8	do	
168	1	1	15	18' 0"	1 1/8	do	
		2	12	14' 6"	1 7/8	do	
182	16	1	15 (Skew)	18' 0"	1 1/8	do	
220	8	1	15	18' 0"	1 1/8	do	
166	2	1	12	14' 6"	1 7/8	do	
166	11	1	12	14' 6"	1 7/8	do	
177	17	1	12	14' 6"	1 7/8	do	
181	13	1	12	14' 6"	1 7/8	do	
183	13	1	12	14' 6"	1 7/8	do	
184	7	1	12	14' 6"	1 7/8	do	
186	9	1	12	14' 6"	1 7/8	do	
187	1	1	12	14' 6"	1 7/8	do	
187	8	1	12	14' 6"	1 7/8	do	
187	16	1	12	14' 6"	1 7/8	do	
194	5	1	12	14' 6"	1 7/8	do	
198	14	1	12	14' 6"	1 7/8	do	
204	7	1	12	14' 6"	1 7/8	do	
223	16	1	12	14' 6"	1 7/8	do	
225	9	1	12	14' 6"	1 7/8	do	
226	12	1	12	14' 6"	1 7/8	do	
239	14	1	12	14' 6"	1 7/8	do	
265	1	1	12	14' 6"	1 7/8	do	
266	6	1	12	14' 6"	1 7/8	do	
267	11	1	12	14' 6"	1 7/8	do	
268	1	1	12	14' 6"	1 7/8	do	
268	3	1	12	14' 6"	1 7/8	do	
269	9	1	12	14' 6"	1 7/8	do	

N.W. Line

Maximum Safe Speed of Trains over Bridge

Remarks

60 miles an hour

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3rd Division

Main Line

Mile	Miles	Tel. Post	Number of Openings	Span of each Opening	Length of bridge over each Opening	Depth of bridge	Kind of bridge	Name of River	Maximum Safe Speed of Train over Bridge	Remarks
260	270	11	1	12	14'-6"	1 1/2	Masonry Piers		40 miles an hour	
164	270	13	1	12	14-6	1 1/2	do		do	
168	164	4	2	9	12-0	1	do		do	
168	168	10	1	9	12-0	1	do		do	
182	170	9	1	9	12-0	1	do		do	
220	217	12	2	9	12-0	1	do		do	
160	219	6	1	9	12-0	1	do		do	
160	237	10	1	9	12-0	1	do		do	
171							do		do	
181										
182										
181			58	114	139'-10"	4	Masonry Piers	Jongabasha	40 miles an hour	
181	276	7	1	30	35'-0"	3	do		60 miles an hour	
181	277	4	1	30	35-0	3	do		do	
181	278	4	1	30	35-0	3	do		do	
19	279	10	1	30	35-0	3	do		do	
19	279	13	1	30	35-0	3	do		do	
20	280	7	1	30	35-0	3	do		do	
22	281	4	1	30	35-0	3	do		do	
22	281	7	1	30	35-0	3	do		do	
22	282	11	1	30	35-0	3	do		do	
22	285	11	3	30	35-0	3	do		do	
22	285	14	1	30	35-0	3	do	Hindry	do	
22	287	6	1	30	35-0	3	do		do	
22	289	1	2	30	35-0	3	do		do	
22	290	7	2	30	35-0	3	do		do	
22	290	13	2	30	35-0	3	do		do	
22	293	7	1	30	35-0	3	do		60 miles an hour	
							do		do	

3rd Division, Main Line

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Train over Bridge	Remarks
2	293	14	1	30	35' 0"	3	do	do	
1	295	8	2	30	35-0	3	Macony River	60 miles an hour	
1	297	7	1	30	35-0	3	do	do	
	300	14	1	30	35-0	3	do	do	
	304	13	2	30	35-0	3	do	do	
2	305	1	1	30	35-0	3	do	do	
	307	2	2	30	35-0	3	do	do	
	312	1	1	30	35-0	3	do	do	
	314	6	1	30	35-0	3	do	do	
	315	13	3	30	35-0	3	do	do	
	318	12	1	30	35-0	3	do	do	
	321	15	2	30	35-0	3	do	do	
	326	5	1	30	35-0	3	do	do	
2	327	3	3	30	35-0	3	do	do	
2	274	6	1	20	24-0	1 1/2	do	do	
2	275	3	1	20	24-0	1 1/2	do	do	
2	276	5	1	20	24-0	1 1/2	do	do	
	280	3	1	20	24-0	1 1/2	do	do	
	281	8	1	20	24-0	1 1/2	do	do	
2	281	11	1	20	24-0	1 1/2	do	do	
2	282	10	1	20	24-0	1 1/2	do	do	
	284	4	1	20	24-0	1 1/2	do	do	
	284	5	1	20	24-0	1 1/2	do	do	
	286	8	1	20	24-0	1 1/2	do	do	
	286	13	1	20	24-0	1 1/2	do	do	
	294	4	1	20	24-0	1 1/2	do	do	
	297	10	1	20	24-0	1 1/2	do	do	
	298	7	2	20	24-0	1 1/2	do	do	
	298	14	1	20	24-0	1 1/2	do	do	

3rd Division

Main Line

49

Miles	Tel. Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks
			<i>ft.</i>		<i>ft.</i>				
2 303	4	1	20	24'-0"	1 1/2	Masonry Pier			
2 306	3	1	20	24-0	1 1/2	do			60 miles an hour
2 306	8	1	20	24-0	1 1/2	do			do
3 308	10	1	20	24-0	1 1/2	do			do
3 310	5	1	20	24-0	1 1/2	do			do
3 310	8	1	20	24-0	1 1/2	do			do
3 313	2	1	20	24-0	1 1/2	do			do
3 314	13	1	20	24-0	1 1/2	do			do
3 314	7	1	20	24-0	1 1/2	do			do
3 319	5	1	20	24-0	1 1/2	do			do
3 319	11	1	20	24-0	1 1/2	do			do
3 322	11	1	20	24-0	1 1/2	do			do
3 322	12	1	20	24-0	1 1/2	do			do
3 323	6	1	20	24-0	1 1/2	do			do
2 323	15	1	20	24-0	1 1/2	do			do
2 349	4	1	20	24-0	1 1/2	do			do
2 246	2	1	15	18-0	1 1/3	do			do
2 308	12	1	15	18-0	1 1/3	do			do
2 324	7	2	15	18-0	1 1/3	do			do
2 308	13	1	12	14-6	1 7/8	do			do
2 309	8	1	12	14-6	1 7/8	do			do
2 309	12	1	12	14-6	1 7/8	do			do
2 310	3	1	12	14-6	1 7/8	do			do
2 311	5	1	12	14-6	1 7/8	do			do
2 311	13	1	12	14-6	1 7/8	do			do
2 314	9	2	12	14-6	1 7/8	do			do
2 316	8	1	12	14-6	1 7/8	do			do
2 325	1	1	12	14-6	1 7/8	do			do
2 325	8	1	12	14-6	1 7/8	do			do

3rd Division

Bellary Branch

ICE.

Mile	Post	Number of Openings	Span of each Opening	Length of Girders over each Opening	Depth of Girders	Girders Supported on	Name of River	Maximum Safe Speed of Trains over Bridge	Remarks.
			<i>ft.</i>	<i>ft.</i>	<i>ft.</i>				
326	1	1	12	14-6	1 1/4	Masonry Piers		60 miles an hour	
334	2	1	12	14-6	1 1/4	do		do	
335	3	1	12	14-6	1 1/4	do		do	
336	11	1	12	14-6	1 1/4	do		do	
341	5	1	12	14-6	1 1/4	do		do	
342	9	1	12	14-6	1 1/4	do		do	
349	7	1	12	14-6	1 1/4	do		do	
350	1	1	12	14-6	1 1/4	do		do	
244	2	1	9	12-0	1	do		do	
283	5	1	9	12-0	1	do		do	
283	8	1	9	12-0	1	do		do	
291	13	1	9	12-0	1	do		do	
292	8	1	9	12-0	1	do		do	
296	1	1	9	12-0	1	do		do	
296	3	1	9	12-0	1	do		do	
301	2	1	9	12-0	1	do		do	
302	14	1	9	12-0	1	do		do	
304	3	1	9	12-0	1	do		do	
305	6	1	9	12-0	1	do		do	
307	1	1	9	12-0	1	do		do	
316	2	1	9	12-0	1	do		do	
334	15	1	9	12-0	1	do		do	
335	2	1	9	12-0	1	do		do	
335	6	1	9	12-0	1	do		do	
339	4	1	9	12-0	1	do		do	
349	10	1	9	12-0	1	do		do	
Bellary Branch								In Course of Construction	
296	14	34	66	139-10	4	Cast Iron Cylinder Piers	Theragry		
				Continuous over two openings					

3rd Division

Bellamy Branch.

No.	Mile Post	Vel.	Number of Openings	Span of each Opening	Length of Bridge over each Opening	Depth of Bridge	Kind of Bridge	Name of River	Maximum Speed of Transit over Bridge	Remarks.
3	286	12	2	14	139' 10"	4	Masonry Piers		60 miles an hour	
3	275	11	2	30	35' 0"	3	do		do	
3	277	8	5	30	35' 0"	3	do		do	
3	284	12	7	30	35' 0"	3	do		do	
3	286	10	3	30	35' 0"	3	do		do	
3	290	5	2	30	35' 0"	3	do		do	
3	296	2	2	30	35' 0"	3	do		do	
2	275	3	1	20	24' 0"	1 1/2	do		do	
2	276	5	1	20	24' 0"	1 1/2	do		do	
2	276	10	1	20	24' 0"	1 1/2	do		do	
2	280	9	1	20	24' 0"	1 1/2	do		do	
3	281	5	1	20	24' 0"	1 1/2	do		do	
3	285	3	1	20	24' 0"	1 1/2	do		do	
2	285	9	1	12	14' 6"	1 1/8	do		do	
2	291	12	1	12	14' 6"	1 1/8	do		do	
2	296	9	1	12	14' 6"	1 1/8	do		do	
2	297	1	1	12	14' 6"	1 1/8	do		do	
2	298	8	1	12	14' 6"	1 1/8	do		do	
2	299	10	1	12	14' 6"	1 1/8	do		do	
2	305	4	1	12	14' 6"	1 1/8	do		do	
2	283	7	1	9	12' 0"	1	do		do	

Chief Engineer's Office
20th October 1875

Alfred Mansel

Respectfully Anchored
Chief Engineer

No. 77

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE

Madras, 16 Jan 1876

From

Robert B. Irvine Esqr

Agent and Manager.

To

Lieut. Col. H. M. Swan Stanley

Consulting Engineer for Railways.

Sir,

In accordance with the request contained in your letter of the 3rd of November 1875, No 1182, I have the honour to enclose you a Memorandum giving the nature of the tests which were applied to the Bridges referred to by you vizt

The Maddur Bridge

— Kistnapuram —

— Pampunee —

— Tongabudra —

— Kesherry Branch Bridges

The results of the tests applied to the Cochrane's Canal Bridge, and to the bridge at the 28th mile Bellary Branch were communicated to you in my letters No 268

dated

M. 649/76

Per 12th Feb 76 B.M.

dated the 2^d of April 1873, and 1870 added
the 3^d June 1873.

I have the honour to be
Sir

Your most obedient Servant

Wm. H. Miller

Agent and Manager.

500. 52
5

Memorandum

Buddapah Bridge

The span of each opening of the Buddapah Bridge tested 29 August 1866 was 62 feet.

The weight of the running load (Engine N^o 100 with tender and a heavy loaded wagon) on each opening was } Tons - Cuts - Quo
64 - 18 - 3

Kistnapoorum Bridge

Span of each opening of the Kistnapoorum Bridge tested 29 August 1875 was 61 feet.

The weight of running load similar to that of Buddapah.

Paupugnee Bridge

Spans of openings of the Paupugnee Bridge tested 29 August 1875 were 65 and 66 feet.

The weight of running load similar to that of Buddapah

80 Tons

Toongabudra Bridge

The span of each opening of the Toongabudra Bridge tested 23 January 1871 was 64 feet.

The weight of the running load (Engines N^{os} 77 and 111 on each opening) was } Tons: Cuts: Quo
91 - 3 - 2

Bridges

From
MADRAS RAILWAY.
To
The Agent and Manager.

The Consulting Engineer

for Railways.

Dated 24 January 1876
No. 77

Respecting a Memorandum
concerning the nature of
the tests which
were applied to the
Buddapah referred to
before Sept. 1866
of the 30th Nov 1875

Mr 699/76

Bridges on the Neilgherry Branch.

Spans of the various Bridges on Neilgherry Branch tested 28th August 1873 consisted of 64, 65 and 66 feet.

The weight of running load (Engines Nos 85 and 89 on each — } Long - Cuts - 2 openings was } 88 - 8 - 2

Madras Railway
Chief Engineer's Office
Madras 21st January 1876

[Sd/] W. R. Robinson
Acting Chief Engineer

/True copy/

W. R. Robinson
Agent and Manager

Mr 645/96
15/76

10/76

SP 53
50

No. 80

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE

Madras, 24 January 1876.

From

Colt. B. Davis Esq.
Agent and Manager of the M.R.

To

Lieut Colonel J. H. M. Shaw Stewart Esq.
Consulting Engineer for Railways.

Sir,

In continuation of my letter of the 10th Oct No 77, I have the honour to forward you herewith two tracings showing deflection of Girders in testing the Pampuneri and Chittoor Bridges - The train consisted of Engines Nos 86 and 89 weighing 80 tons of Cuts 3 and 2, and coupled tenders to Engines.

I have the honour to be
Yours most obedient Servant
W. R. Robinson
Agent and Manager



MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railway.

Date 24 January 1876

Ref

25.

No. 80.

According to the
showing of the
of the in the
of the and
the Madras

Pr 693/76.

Dec. 17th Feb 76 B

It is respectfully
deavored with refers
since to the note
occulent, that the
Pampanee and
Chittamully bridges
appears to have
been tested at a
lates date, viz.
25th Oct. and with
a heavier running
load than the
bridges referred
to in the Memoir
concerning which

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 12th Feb 1876.

Read the following:—

accompanied the
agent's letter n^o
77 of 24th Jan^y -
This letter is n^o 80
of same date
given with the
drawing which
accompanies it.

8.2.76

Per 12th Feb 1876

From

The Consulting Engineer
for Railways

(H.E. No 51 of 27 Jan 1876)

Ordered that these
papers be printed and
copies furnished to the
Government of India.
The Consulting Engineer
will be supplied with
25 Copies.

To The Consulting Engineer for Rys (H. E. No 382 of 12th Feb 1876)
25 spare copies - 26
Nos 12 - 3 - 3 - 76

Copy of the above,
together with L. O. No 2919,
13th October 1874, forwarded
to the Government of
India with reference

to their letter No 2895 A.
dated 17th November 1874.

30 copies & 2
Plans —
Brid - 3-3.

599
★
Govt. of Madras.
PUBLIC WORKS.

to
Govt. of India
Comdg. Engrs for
Rys
Govt. of India

12 Feb 1876, No. 381
382

Nos. 95-197

198

Enclosed herewith
Statements showing the
of the testing of certain
girder bridges of the
Madras Railway
showing the result
of the testing of
the same
the same
the same
the same
the same