225205

MILITARY REPORT

ON THE

SOUTHERN MAHRATTA RAILWAY

SHEWING THE LINE AND PERMANENT-WAY, WATERWAYS AND BRIDGES, STATIONS, COUNTRY, ROADS AND COMMUNICATIONS, MILITARY POSTS, AND ALL OTHER DETAILS CONNECTED WITH THE WHOLE SYSTEM.

COMPILED BY

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IN ACCORDANCE WITH INSTRUCTIONS ISSUED BY THE QUARTERMASTER-GENERAL, MADRAS ARMY.

Quartermaster-General's Office, Intelligence Branch, Ootacamund, 1st October 1890.

MADRAS:
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1890.

NOTE.

The Southern Mahratta Railway being a young line, it is to be expected that many changes will occur along its length, which will alter the data given in this report—such as increased accommodation in stations, additional sidings, increased water-supply, &c., &c.; but it may fairly be accepted that the changes will be for the better, and the data now given, therefore, have a margin to the good.

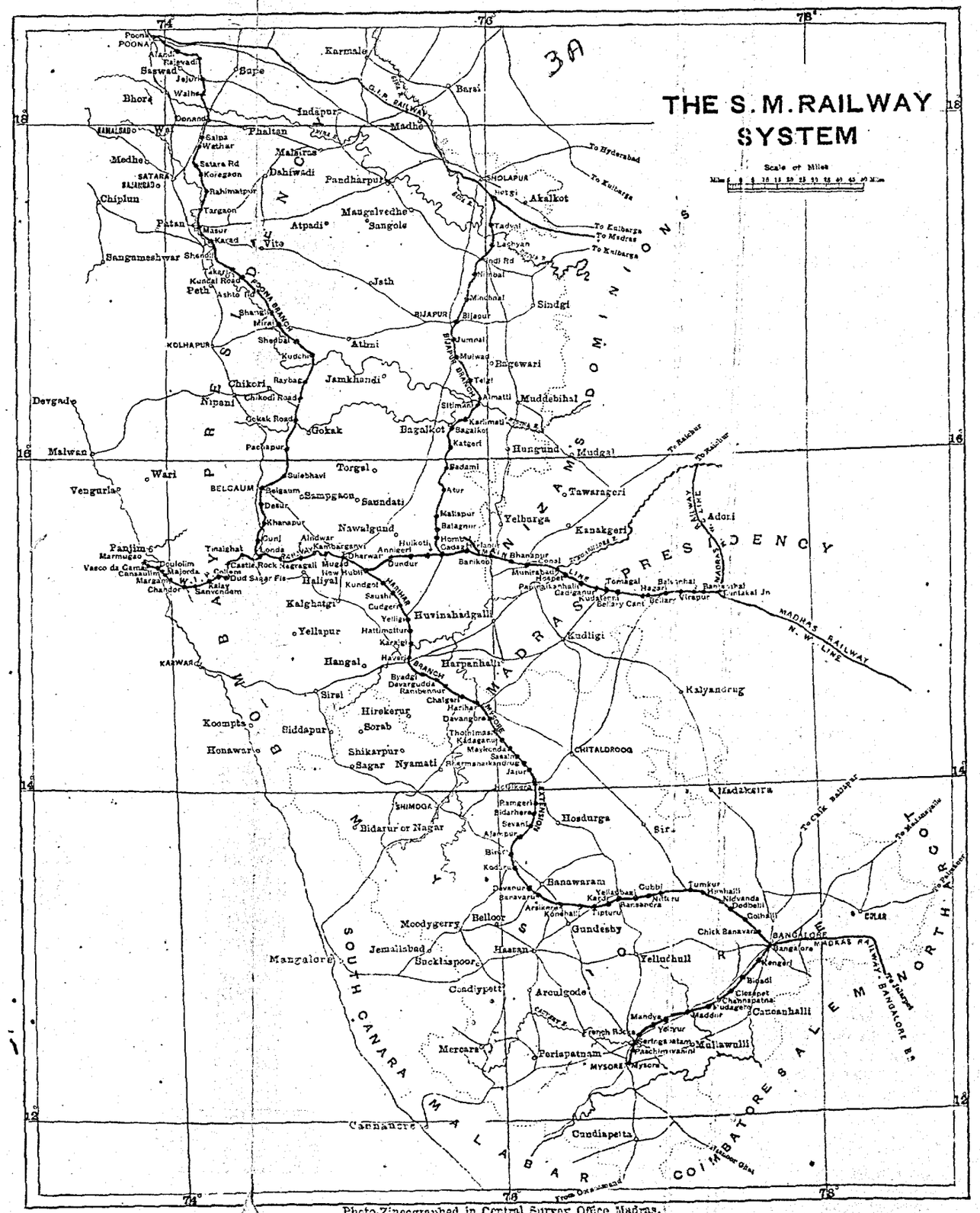

Photo-Zincographed in Central Survey Office Madras.

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MILITARY REPORT

ON THE

SOUTHERN MAHRATTA RAILWAY.

THE Southern Mahratta Railway is an amalgamation of the following lines, viz.:—

(1) "South Deccan," Guntakal to the Portuguese frontier, 234½ miles.	Transferred 1st October 1882.
(2) "East Deccan," Gadag to Hotgi, 173½ miles.	Transferred 1st October 1882.
(3) "Bellary Branch, Madras Railway," Guntakal to Bellary, 30½ miles.	Transferred 1st February 1887.
(4) "Bellary-Kistna State Railway," Guntakal to Bezwada, 278¾ miles.	Transferred 1st January 1888.
(5) "Mysore State Railway," Bangalore to Mysore, 85¾ miles; Bangalore to Gubbi, 54 miles.	Transferred 1st July 1886.
(6) "West Deccan," Londa to Poona, 277½ miles.	Through communication completed 22nd December 1887.
(7) "Southern Extension," Hubli to Harihar, 79 miles.	Opened to traffic 18th November 1886.
(8) "Mysore Extension," Harihar to Gubbi, 157 miles.	Harihar to Gubbi, now under construction.*

The general direction of the S. M. R. may be described by the form of a cross, of which one arm runs from Poona, in the north, to Mysore, in the south; and the other arm right across India from the Portuguese frontier, or, it may be said, from Murmagao (or Goa) itself, as the West of India Portuguese Railway of 51 miles is practically a portion of the S. M. system, to Guntoor and Bezwada on the East Coast.

In addition there is another short arm of 173½ miles running due south and north from Gadag to Hotgi on the G. I. P. Railway.

The whole is open to traffic with the exception of the portions between Harihar and Gubbi, 157 miles, and from Nandyal to Bezwada, 188¾ miles, but both these lines are now under construction and should be opened this year.

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* Opened 5th August 1889.

It is also proposed to connect Bangalore and Guntakal Junction *viâ* Hindupur, and the line from Guntakal to the latter place, 111 miles, has been finally located and surveyed. An extension from Mysore to the foot of the ghât below Ootacamund, *viâ* Gundlupet, is also under survey.

The Southern Mahratta is connected with the following railways :—

The Great Indian Peninsula at Poona and Hotgi.
The Madras Railway at Guntakal and Bangalore.
The West of India Portuguese Railway at Castle Rock.
The Nizam's State Railway at Bezwada.

By its own system alone it connects the following important garrisons, arsenals, magazines and seaports, viz. :—

Poona.—Arsenal, magazine and large garrison, head-quarters of division.

Belgaum.—Garrison, head-quarters of district.

Bangalore.—Ordnance ammunition depôt and garrison, head-quarters of brigade.

Bellary.—Arsenal, magazine and garrison.

Murmagao and Bezwada.—Seaports.

By its connection with the Great Indian Peninsula and the Madras Railway it places the abovementioned military posts and the whole of the country lying between Poona and Mysore in direct communication with all parts of India.

The line throughout is laid on the metre gauge (3′ 3⅜″) system, and it is as forming a connecting link between the metre-gauge lines in the north with those in the south, and as assisting to establish a complete duplicate system of railway communication from one end of the peninsula to the other, that it is of great importance from a military point.

By its junction with the West of India Portuguese line of 51 miles (constructed under the Commercial Treaty of December 1878, and guaranteed by the Portuguese Government), it opens up the port of Murmagao, and will, should a new treaty be entered into on the termination of the existing one in 1890, or should Goa be annexed to the British Crown, enable troops, stores and goods to be disembarked, in case of war, at Murmagao, and conveyed by metre-gauge lines to almost all parts of India, thus relieving the broad-gauge system of the great stress which would otherwise be laid upon it. In addition to the military advantages afforded by the construction of the line, the whole country, from the West to the East Coast, lying between Poona, in the north, and Mysore, in the south, has been opened up, an outlet given to the large cotton trade and other industries of this district, a general increase of prosperity promoted, and all chance of the repetition of famine, to which much of this country was subject, reduced to a minimum.

Though in some portions of the country through which the Southern Mahratta passes the roads might be improved with advantage and certain large rivers bridged, the general means of communication may be said to be good, particularly in Mysore, and there is, in fact, nothing to prevent the march of troops and baggage from any one town to another, or from any one point to another. In the few cases where

rivers are not bridged, they are either fordable or provided with ferries during the rains. In some cases the railway bridges would be used many being arches and several of the large girder ones being provided with cart tracks on rail level; and it would be advisable that all girder bridges should be thus constructed in future.

The two points in connection with this railway system which particularly present themselves as of importance are—

(*a*) Murmagao (Goa) or Karwar as a port for the disembarkation or embarkation of troops, warlike stores, and goods.

(*b*) The connection of the Southern Mahratta and metre-gauge system of the south with that of the north—the former of which terminates at Poona and Hotgi, and the latter at Khandwa, leaving an interval or unconnected distance of from 280 to 300 miles, taken in a straight line.

(*a*) "*Murmagao or Karwar.*"—In December 1878 a Treaty of Commerce was concluded between England and Portugal providing for reciprocal freedom of commerce, navigation and transit. Under this treaty the Stafford House Committee obtained a concession and guarantee from the Portuguese Government to construct a line of railway from the port of Murmagao inland. This line is now open to traffic under the name of "The West of India Portuguese Railway."

The treaty under which this line was constructed is for commercial purposes only, and the British Government has, at present, no actual power to use either the port of Murmagao or the line of railway for military purposes,—though it is believed that no great difficulties would be offered by the Portuguese Government.

It is a great question whether the port of Karwar, about 45 miles south of Murmagao, and situated in British territory, does not present many advantages over that of Murmagao, both as being the only safe harbour between Bombay and Cochin during all seasons of the year and as being a British possession.

Previous to the construction of the West of India Portuguese line full estimates and surveys of a line from Hubli to Karwar were made, and Lord Hartington, weighing the merits of the two schemes—Murmagao-Hubli and Karwar-Hubli—decided in favor of the former, chiefly on the grounds of expense.

The distance from Karwar to Hubli is about 75 miles, the line has been already located and surveyed, and no great engineering difficulties present themselves.

Keeping in view the complications that are almost certain to arise from the outlet for our commerce, and the port for the disembarkation of our troops (should this be necessary), being in the hands of a foreign power; that much money which should pass into the hands of British subjects will go into those of the Portuguese; that the importance of Karwar as a seaport and large market town will rapidly disappear, and the trade in cotton, grain and spices, now very large, pass to Murmagao; that the prosperity which would ensue to the Kanara district by the construction of a railway will overtake the settlement of Goa; and the necessity of having constantly to consult the Portuguese authorities—all appear to point to the advantage of the proposed line between Hubli and Karwar being sanctioned. Should, however, this scheme not be practicable, owing to certain guarantees

given by the British Government, it is for the Government of India to consider the advisability, on the termination of the present treaty in 1890, of obtaining from the Portuguese Government a fresh treaty containing such concessions as will guarantee complete liberty of action with reference to the embarkation, disembarkation and movement of troops, stores and all warlike goods, both at Murmagao and within all parts of Portuguese territory on the Western Coast, in addition to the freedom of commerce, navigation and transit already provided for.

A shorter route from Londa Junction to the north bank of the Kalinadi river, by the fortified town of Sadashivgad opposite to Karwar, suggests itself. This route would follow the line of the Belgaum-Kadra road, passing through Supa and over the Anshi Pass, thus skirting the Portuguese territory. The Kalinadi is navigable up to Kadra, 20 miles from its mouth.

(*b*) *"The connection of the metre-gauge system of the south with that of the north," so as to form a "complete duplicate means of railway communication from one end of India to the other."*—As stated, there at present exists an interval of from 280 to 300 miles between the two—the metre-gauge of the north coming down as far as Khandwa (junction of Rajputana-Malwa and G. I. P. railways), and that of the south terminating at Poona and at Hotgi, both junctions of the S. M. R. with the G. I. P. Railway. To connect the two systems and so enable troops and stores to be conveyed from the extreme south as far north as Ferozepore without break of gauge, the following propositions suggest themselves:—

(1) To run a *third rail* along the present formation of the G. I. P. Railway from Poona to Dhond, 48 miles, thence up the "Dhond and Munmar State Railway" for 146 miles, cutting the G. I. P. again at Munmar, from which it is 191 miles to Khandwa—in all 385 miles or 677,600 yards of rail.

(2) To extend the Gadag-Hotgi section of the Southern Mahratta from Hotgi to Akola on the Nagpur Branch of the G. I. P. Railway, thence due north to Khandwa, a total distance of about 330 miles. This extension would run through the Hyderabad State and the Berars, passing by the towns of Nandair—population 14,091, head-quarters of the Nandair district, situated on the high road from Hyderabad to Hingoli and 145 miles north of former—and Hingoli, from which latter to Akola (65 miles) the line has already been located and surveyed. This extension would open up a large tract of country at present entirely devoid of railways, and the expense of construction could be, partially at least, borne by the Nizam's Government.

In the extreme south a short break in the metre-gauge system occurs between Mysore town and Erode—the distance being about 100 miles. But it is not probable that the necessity of moving large bodies of troops so far south as this will present itself, or that any such amount of traffic will occur which cannot easily be executed by the broad-gauge line of the Madras and metre-gauge of the South Indian railways at present in existence.

Should, however, it be considered advisable to connect the Southern Mahratta with the metre-gauge lines running from Madras and Erode to Tinnevelly and Tuticorin, it would appear a matter for consideration if a line from Mysore due south to Gundlupet, 32 miles,

and thence south-east to Erode would not be better than the proposed line, already surveyed, between Mysore and Calicut, also passing through Gundlupet. As the idea of this proposed line is to connect Mysore with the port of Calicut, the object would be equally effected by constructing the railway to Erode Junction, where it would cut the Madras Railway running direct, through Coimbatore, to Calicut, and the connection between the metre-gauge systems also established.

THE LINE GENERALLY.

The Southern Mahratta is a metre-gauge (3′ 3⅜″) railway and is laid with a single line of rails throughout. It is constructed in accordance with the "Standard Dimensions" for metre-gauge railways issued by the Government of India, a copy of which will be found below.

Standard dimensions to be observed for railways in India on the Metre Gauge.

Maxima and Minima dimensions to be strictly observed.

Formation and permanent-way

	FT.	IN.
Minimum distance, centre to centre, of tracks outside stations..	12	0
Minimum distance, from centre to centre, of tracks in passenger platform sidings	15	0
Minimum distance,* from centre to centre, of tracks in other sidings	13	0
Minimum radius of curve for railways in ordinary country ...	1,000	0
Minimum radius of curve for railways in difficult country ...	400	0
Minimum depth of ballast below sleepers	0	6
Minimum width of ballast at top	7	0
Minimum number of sleepers per mile	2,000	0
Minimum clearance of guard rail	0	1⅝
Minimum radius of curve from crossing	600	0
Minimum depth of space for wheel flange	0	1⅜

In stations and station yards

Stations, &c.

Minimum height * above rail level, at centre of track, of tie-rods or under-side of any continuous roof or covering in stations or adjoining any passenger platform	18	0
Minimum height * above rail level, at centre of track, for over-bridges at stations	12	0
Minimum height * out of stations	12	0
Minimum horizontal distance from centre of track to nosing of platform	4	5
Minimum horizontal distance of wall of any building from edge of platform in passenger stations	20	0
Minimum horizontal distance from edge of platform of pillars, columns, lamps or other fixed structures within a height of 8 feet from platform level	6	0

NOTE.—At important stations, or where there is a possibility of a junction with a line on the 5-feet 6-inch gauge, the minimum dimensions laid down for the 5-feet 6-inch gauge should be adopted wherever the entry is marked with an asterisk.

	FT.	IN.
Minimum horizontal * distance from centre of track to any structure in the vicinity of any *passenger* platform (but not on a platform) within a height of 9 feet 6 inches from rail level (this is not applicable to the case of water columns in which the horizontal distance may be 7 feet 6 inches) ...	8	6
Minimum † horizontal * distance from centre of track to any structure out of stations, or not in the vicinity of a passenger platform, from platform level, if any, or from 1 foot above rail level if there be no platform, to the height of 9 feet 6 inches above rail level for broad gauge and 8 feet for metre gauge	6	6
Minimum height above rail level for passenger platforms for stations	...	
Minimum length for passenger platform	500	0
Minimum ‡ clear available length of siding at crossing stations or at any roadside station which may be used as a crossing station	1,300	0
Do. do. including blind sidings	1,600	0

Bridges.

For calculations connected with girder bridges, the equivalent of the live load uniformly distributed over the entire span for a single line of rails may be assumed to be—

	TONS.
6 feet span	14
12 do.	22
20 do.	35
40 do.	60
60 do.	78
100 do.	110
150 do.	135
and the maximum load on a single pair of wheels at	7

Water Tanks.

	FT.	IN.
Minimum distance from centre of track to face of tank-house.	30	0
Minimum capacity of tank at any station	500	0
Minimum height of top of hose of water crane above rail level.	12	0

Station Machinery.

Minimum diameter of carriage turn-tables	12	0
Minimum diameter of engine turn-tables	36	0

NOTE.—At important stations, or where there is a possibility of a junction with a line on the 5-feet 6-inch gauge, the minimum dimensions laid down for the 5-feet 6-inch gauge should be adopted wherever the entry is marked with an asterisk.

† NOTE FOR BOTH GAUGES.—Coal stacks or any material stacked temporarily by the side of any track are to be considered structures in the sense in which the word is used.

Also, a projecting overhanging roof is permissible in the case of a goods-shed on a siding if it extends over the centre of the track at a height of 14 feet 6 inches for broad, and 12 feet for metre gauge, above rail level; or if it does not project more than 18 inches beyond the edge of the platform at a height of 13 feet for broad, and 11 feet for metre gauge, above rail level.

‡ NOTE FOR BOTH GAUGES.—The minimum length of platform and of siding given above only applies to lines, the ruling gradient of which is not heavier than 1 in 100. On lines with a ruling gradient heavier than 1 in 100, the lengths of platform and siding may be reduced in proportion.

	FT.	IN.
Minimum length of carriage traversers	12	0
Minimum length of weigh-bridges	12	0
Minimum length of weigh-bridges for bogies	25	0
Minimum † length of ashpit where there is a water crane, and where the ashpit is liable to be used by engines coming from either direction	60	0
Minimum length of ashpit where there is no water crane, or where the ashpit is only intended for engines coming from one direction	36	0

Engine Sheds.

Minimum width of engine-shed inside, in the clear, where intended for two lines of rail	35	0
Minimum width of engine-shed inside, in the clear, where intended for one line of rail	25	0
Engine-shed door-ways { Minimum width	12	0
Engine-shed door-ways { Minimum height if flat at top ...	12	0
Engine-shed door-ways { Do. height if arched	14	0

Loading Gauge for Goods.

Maximum width	8	6
Maximum height at centre	11	0
Maximum height at sides	9	6

Rolling Stock.

Maximum rigid wheel base for passengers vehicles	10	0
Maximum rigid wheel base for goods vehicles	10	0
Maximum gross load on a pair of engine wheels (on rails weighing not less than 60 lb. per yard, including the weight of the wheels, axles, axle-boxes, &c , for broad gauge)	7	0
Maximum gross load on a pair of carriage or wagon wheels ...	4½	0
Maximum projection of flange of (unworn) tyre below rail level	0	1
Maximum width across roof or overhanging part of any vehicle	8	6
Maximum width across foot-boards	8	2
Actual distance apart of centres of buffers	...	
Maximum height from rail level of any part of any vehicle (loaded or unloaded) at centre	11	0
Maximum height at sides	10	2
Maximum height above rail level for centre of buffers in unloaded vehicles	1	10¾
Maximum height for loaded vehicles	1	8⅞
Maximum ‡ thickness on tread of iron tyres of passenger stock when worn	0	0⅞

† NOTE FOR BOTH GAUGES.—The dimensions for ashpits do not apply to engine-pits in running sheds and repairing shops.

‡ NOTE FOR BOTH GAUGES.—Steel tyres may be worn ⅛ inch thinner than the dimension for iron.

NOTE FOR BOTH GAUGES.—The minimum horizontal distance from edge of a passenger platform of lamps, pillars and similar isolated structures is 6 feet as shown on the diagram. The standard horizontal distance from edge of a passenger platform for walls of buildings or other continuous structure is 20 feet.

NOTE FOR METRE GAUGE.—At important places, or where there is a possibility of a junction with a 5-feet 6-inch gauge line, all structures in or about a metre-gauge station should be built to conform to the standard dimensions for the 5-feet 6-inch gauge as far as practicable.

	FT.	IN.
Maximum thickness on tread of iron tyres of good stock when worn	0	$0\frac{3}{4}$
Maximum distance apart of all wheel-flanges	3	$0\frac{5}{8}$

Allowance on curves.—On sharpe curves the horizontal distance of fixed structures from the centre line of railway must be increased by the following amounts :—

Metre Gauge.

600 feet radius	$2\frac{1}{2}$ inches.
700 do.	$2\frac{1}{4}$,,
800 do.	2 ,,
1,000 do.	$1\frac{1}{2}$,,
1,200 do.	$1\frac{1}{4}$,,

Standard dimensions, &c., to be observed as far as possible.

Formation, &c.

	FT.	IN
Standard width in embankment	16	0
Standard width in cutting (excluding side drains)	14	0
Standard distance, centre to centre, of tracks outside stations.	12	0
Ruling gradient for ordinary railways	1 in 150	
Ruling gradient for difficult country	1 in 50	

Sleepers.†

Standard length	6	0
Standard breadth	0	8
Standard depth	0	$4\frac{1}{2}$

Rails.

	Flat-footed. LB.	Bull-headed or flat-footed. LB.
Dimension of standard rails—		
Weight per yard (in steel)	$41\frac{1}{4}$	50
	IN.	IN.
Width of head	$1\frac{7}{8}$	2
Depth	$3\frac{1}{2}$	4
Width of foot	$3\frac{1}{4}$	$3\frac{3}{8}$
Radius of top head	$5\frac{1}{2}$	15
Standard clearance of guard rail	$1\frac{5}{8}$	$1\frac{5}{8}$

Points and Crossings.

	FT.	IN.
Standard lengths of tongue rails	9	0
	12	0
Standard angles of crossings	1 in $6\frac{3}{4}$	
	1 in $9\frac{1}{2}$	
	1 in 12	

† NOTE.—On bridges where the cross sleepers rest directly on longitudinal girders, the sleepers are to be spaced not more than 2 feet 6 inches apart for broad guage, and 1 foot 6 inches for metre gauge, centre to centre, and are to be 7 inches deep for broad and 6 inches deep for metre gauge, being notched out on the underside to allow for the camber of the girders, cover plates, &c.

Stations, &c.

	FT.	IN.
Actual horizontal distance to be allowed from centre of track to face of platform wall	4	5
Standard horizontal distance of any building from the edge of a passenger platform	20	0
Standard horizontal distance of any building from the edge of a passenger platform at important stations	30	0
Standard height above rail level for passenger platforms at stations	1	3
Standard † height above rail level for passenger platforms at unimportant stations	...	
Standard height above rail level for carriage and horse landing platform	2	3
Standard height above rail level for goods platforms	...	

Water Tanks.

Standard capacity of tank at ordinary stations	1,000	0
Standard height of bottom of tank above rail level	18	0
Standard height of bottom for engine stations	30	0
Standard distance from centre of track to centre of water column	7	6

Station Machinery.

Standard weighing power of weigh-bridges	12 tons.
Standard weighing power of weigh-bridges for bogie wagons.	25 ,,

	FT.	IN.
Standard depth of ashpit	3	0
Standard depth of examining pit	3	0

Engine Sheds.

Standard distance from centre to centre of lines in engine sheds	15	0

Rolling Stock.

Standard diameter of wheels for all passenger and goods vehicles	2	4
Standard width outside for bodies of passenger stock	7	0
Standard at 3 feet above floor level	7	9
Standard *mean*‡ height above rail level for centre of buffers ...	1	10

† NOTE FOR METRE GAUGE.—At very unimportant stations the platform may be omitted altogether; its position being marked by slabs of stone or other suitable material bedded on the ground and brought to an even surface 2 inches above rail level.

‡ The *mean* height of buffers is to be understood to be the height at which the centres of buffers stand with the vehicle half-loaded, as follows :—

Engine.—Fire-box with half supply of fuel, and water in boiler half-way up the gauge glass.

Tender.—Tank half full of water, and with half of the full load of fuel.

Passenger vehicle.—With an equivalent of half the full complement of passengers with baggage.

Goods vehicle.—With half of the load it is capable of carrying.

NOTE FOR METRE GAUGE.—Switch handles of points which work parallel to the line of railway should not be at a less distance than 5 feet 2 inches from outside edge of rail to centre of switch handle (Circ. XXIX R, dated 15th September 1883).

NOTE.—In the vicinity of a junction with a 5-feet 6-inch gauge line, or where there is a possibility of such junctions being made all fixed structures should be built to conform with the standard dimensions for the 5-feet 6-inch gauge as far as practicable.

	FT.	IN.
Standard height above rail level for floors of passenger and goods vehicles with buffers at mean height	2	7
Standard diameter inside in the clear of rings for carriage roof lamps	0	8¼
Standard diameter for carriage roof lamps at level of ring ...	0	8
Standard dimensions for passenger vehicles—		
Length over buffers	21	6
Length outside body	18	0
Wheel base	10	0
Standard dimensions for passenger vehicles inside in the clear—		
Length	17	6
Width	6	6
Height at centre	6	9
Height at sides	6	3
Standard dimensions for goods vehicles—		
Length over buffers	18	0
Length outside body	14	6
Wheel base	8	0
Standard dimensions for goods vehicles inside in the clear—		
Length...	14	0
Width	6	6
Height at centre for covered wagons	6	6
Height at sides for covered wagons	6	0
Distant apart of buffers centre to centre	...	

List of drawings attached, giving maxima, minima and standard dimensions to be observed.

Metre Gauge:

(1) Standard dimensions out of stations.
(2) Do. do. in stations.

PERMANENT-WAY.

Rails (see diagram).

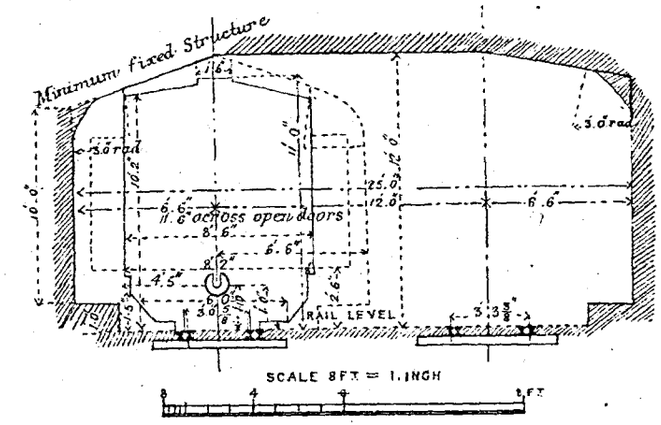
The permanent-way is composed of flat-footed steel rails all weighing 41¼ lb. per yard, except on the ghâts, main line, from Portuguese frontier to Castle Rock, where they weigh 60 lb.; and between Guntakal and Bellary, where they are 75 lb. per yard. They are in lengths varying from 18′ to 23′ 9½″; the latter are generally used and are called 24-feets.

Sleepers.

The sleepers are either wood or steel (see diagram), 580·22 miles, including sidings, being laid with wood and 470·27 miles, including sidings, with steel sleepers, Nandyal to Kistna terminus and Harihar to Gubbi, now under construction, excluded.

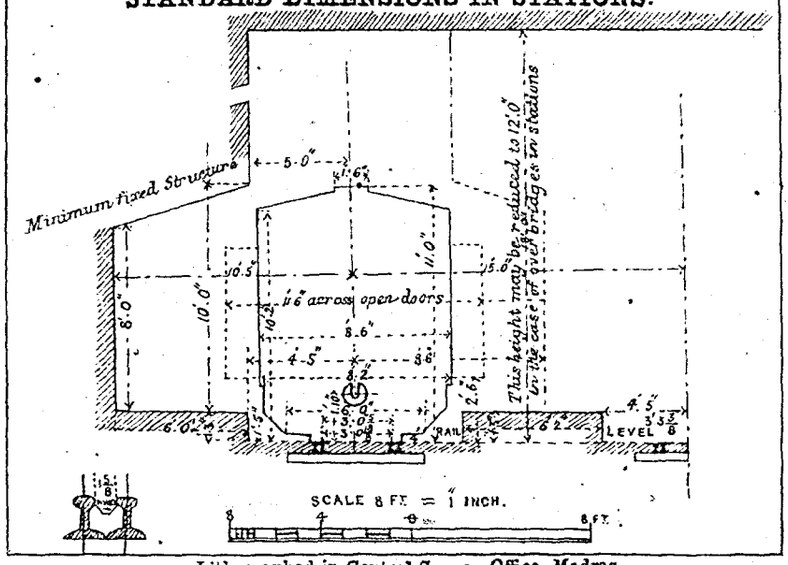
METRE GAUGE

STANDARD DIMENSIONS OUT OF STATIONS.



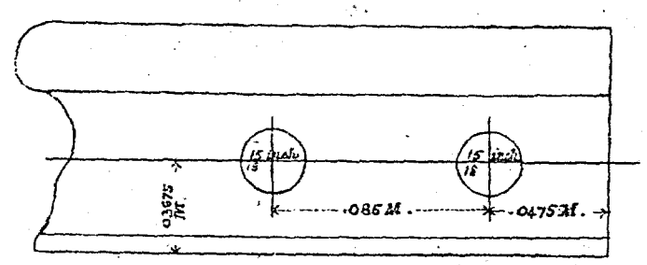
METRE GAUGE

STANDARD DIMENSIONS IN STATIONS.

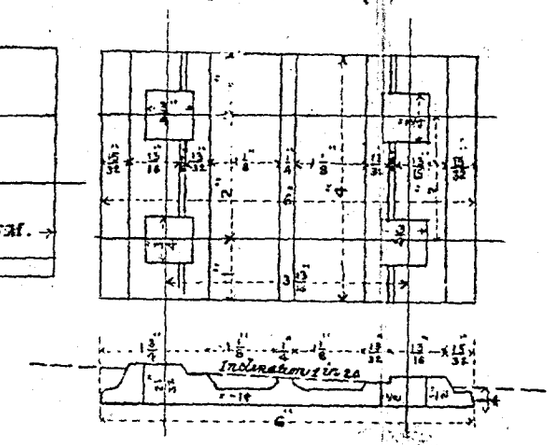


Lithographed in Central Survey Office, Madras.
1889

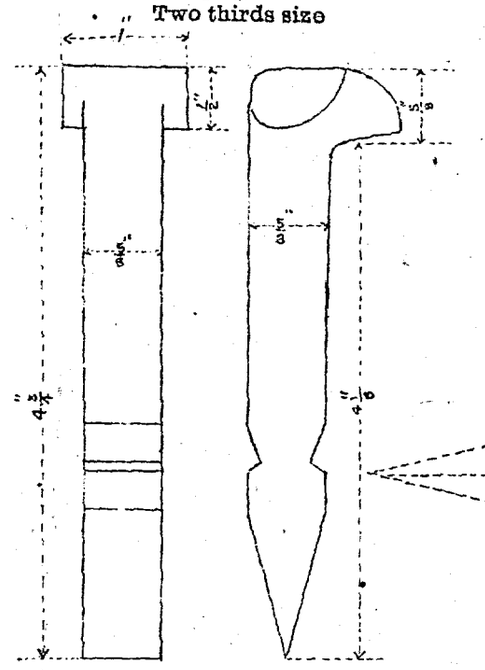
END OF RAIL SHOWING FISH BOLT HOLES.
One third size



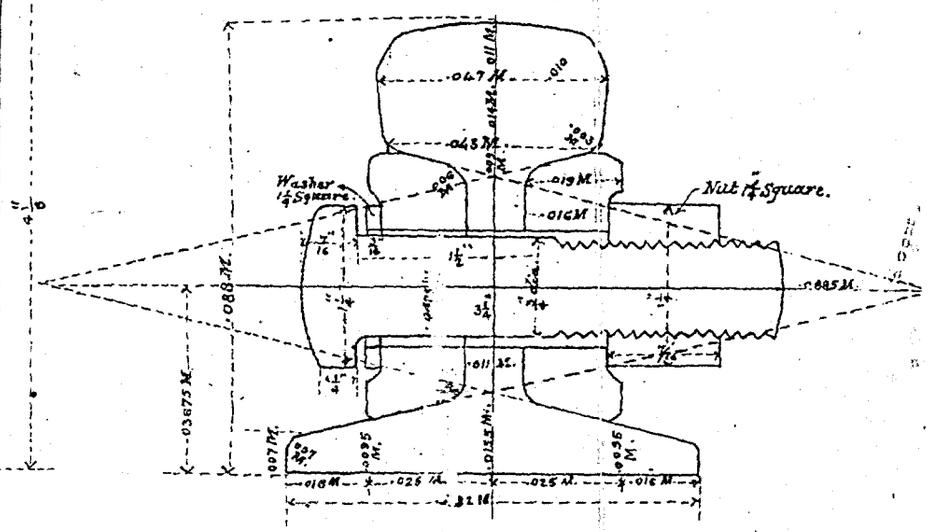
BEARING PLATE.
One third size

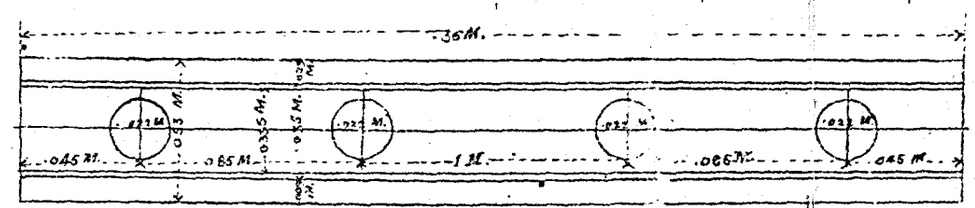


SPIKES.
Two thirds size



SECTION OF RAIL.
Two thirds size

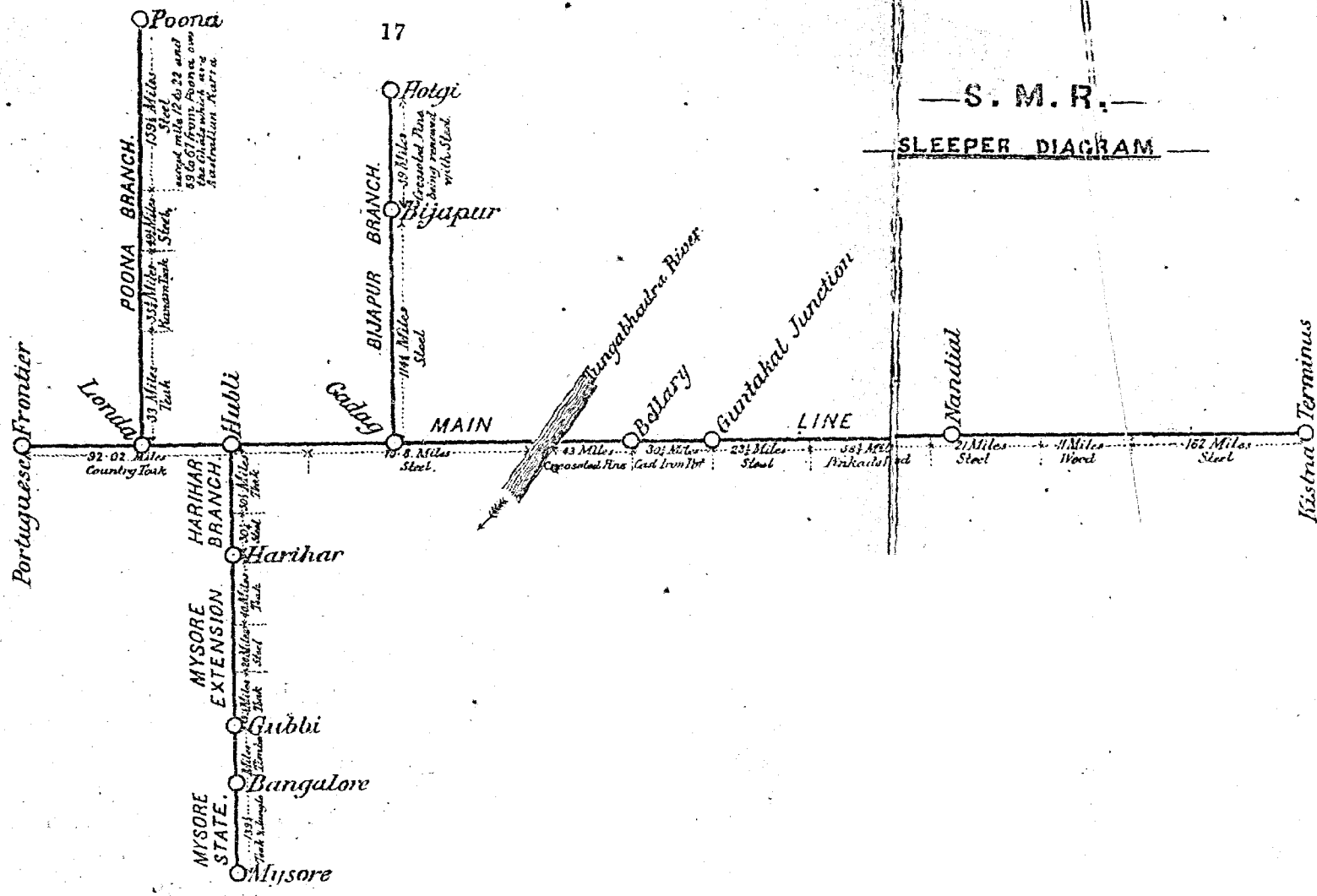




FISH PLATE.
One third size

Note. The Dimensions of rail and fish plate are in millimetres.
The rest are in inches.

Photo-Zincographed in Central Survey Office, Madras.
1890


—S. M. R.—
SLEEPER DIAGRAM
Poona
POONA BRANCH.
Londa
Frontier
Portuguese
Hubli
HARIHAR BRANCH.
Harihar
MYSORE EXTENSION
Gubbi
Bangalore
MYSORE STATE.
Mysore
Hotgi
BIJAPUR BRANCH.
Bijapur
Gadag
MAIN
LINE
Tungabhadra River
Bellary
Guntakal Junction
Nandial
Kistna Terminus
Photo-Zincographed in Central Survey Office, Madras.
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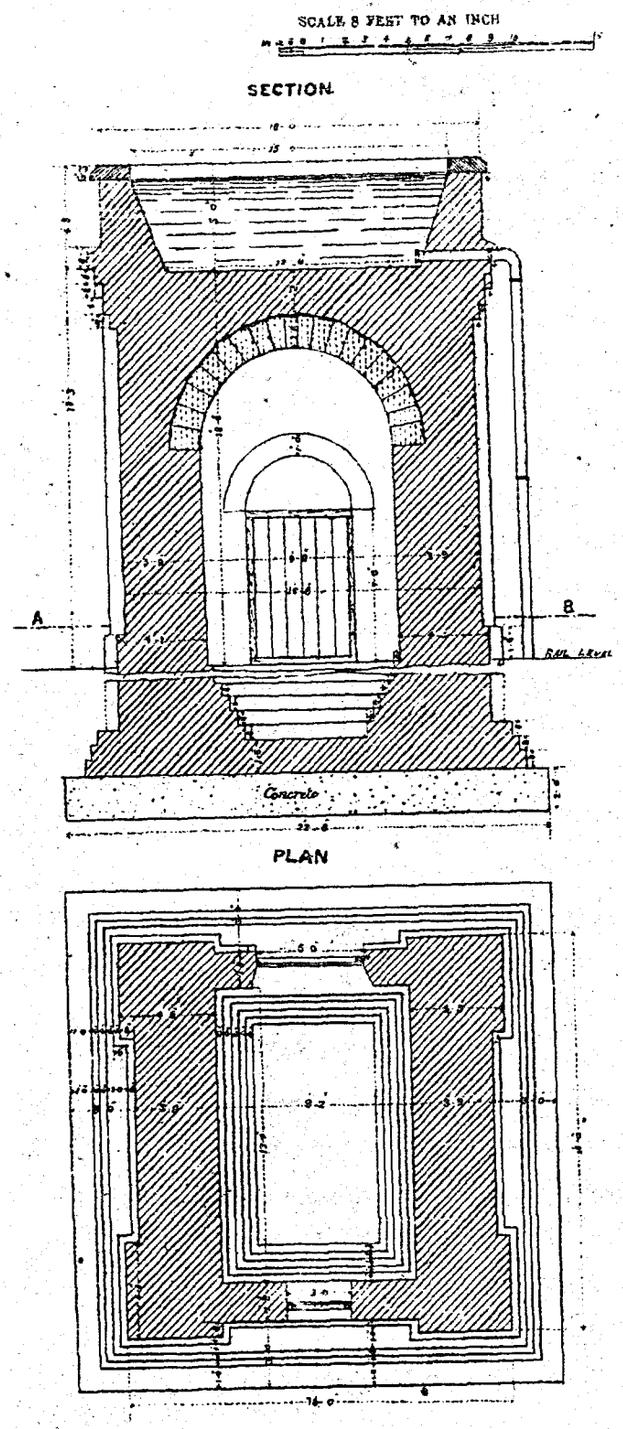


Photo-Zincographed in Central Survey Office, Madras.
1890

Their size is as follows :—

Wood.

For ghât line, rectangular	... ...	7′ × 9′ × 5″
For ordinary line, rectangular	... ...	6′ × 8′ × 4½″
For ordinary line, semicircular	... ...	6′ × 10′ × 4½″

Steel.

5′3″ to 5′ 6″ long, 8½″ wide in the centre, 1′ 1″ wide at the ends, and from 4¼″ to 4⅜″ in depth. The steel is $\frac{7}{32}$″ thick at the sides and ⅜″ thick in the centre where there is a rib.

The sleepers vary in number from 1,760 to 2,000 a mile, the latter number as a rule.

The rails are fixed on the straight by two dog-spikes to each wood sleeper; and on a curve the outer rail, resting on a bearing plate, is fixed by three dog-spikes. The fourth hole is left vacant and if the line gets loose the fourth dog-spike is inserted.

On the old pattern steel sleepers the rails are fixed by keys and wedges, and on the new pattern steel sleepers by flanges in the sleeper itself, with a key.

Banks and cuttings.

The formation banks are 16 feet wide, and the cuttings 14 feet in width exclusive of side drains (22 feet with side drains).

Gradients and curves. See "working sections."

The steepest gradient is 1 in 100, except on the Western Ghâts from Castle Rock, where it is 1 in 40, and between Bangalore and Mysore, where it is 1 in 70.

The minimum radius of curves is 600 feet, but this is only approached in the ghât sections, the limiting radius in other parts being 1 in 1,000.

The majority of water tanks are constructed in accordance with the type opposite, a few being of iron.

The platforms are all 1′ 3″ high for passengers and 2′ 3″ for goods and horses.

The line is divided into six branches or sections with a total mileage of 1,338·50, viz. :—

(1) Main Line.	... ...	Portuguese frontier to Kistna terminus, 511·25 miles.
(2) Poona Branch	...	Londa to Poona, 277·50 miles.
(3) Bijapur Branch	...	Gadag to Hotgi, 173·50 ,,
(4) Harihar Branch	...	Hubli to Harihar, 80·75 ,,
(5) Mysore Extension	...	Harihar to Gubbi, 156·25 ,,
(6) Mysore State	...	Gubbi to Mysore, 139·25 ,,

The particulars regarding each branch will be found under their respective headings.

Rolling Stock and Telegraphs.

Full details with reference to "rolling stock" and "telegraphs" will also be found under these headings.

Volunteer Corps.

The line has a volunteer corps with an enrolled strength as follows, viz., 16 officers, 1 officer and 4 non-commissioned officers permanent staff, 408 rank and file. The head-quarters are at Hubli, with detachments at Poona, Miraj, Belgaum, Castle Rock, Londa, Dharwar, Gadag, Hotgi, Bellary and Guntakal. The corps has 450 stand of arms—Martini-Henry.

The Southern Mahratta is a guaranteed State Railway in the hands of a company. It was commenced as a famine relief work in 1876-77, and has gradually extended its system till it now promises to be one of the largest in India. It has, however, one serious defect, which, it is hoped, may be remedied by degrees, viz., the lightness of its rails. These, as previously stated, are 41¼ lb. steel, whereas they should be at least 60 lb. The result of the laying of the present permanent-way is a frequent derailment of trains, a necessity for a very low rate of speed and a constant straightening and setting-up of the line. Gang-houses are established at every five miles, each accommodating 10 men and a matey, who are employed keeping the line in order at two men per mile.

The ordinary speed of mixed trains is 18 miles per hour, and of those composed entirely of passenger vehicles an ordinary speed of 22 miles, but if a train is heavy and is run at anything over 25 miles an hour, it is no exaggeration to say that very considerable labor is entailed afterwards in putting the line in order again. It is to be feared that much delay, and even possible stoppage of traffic, might result should it be necessary to send a continuous number of heavy troop trains over this line, owing to this defect. The large bridges, such as those over the Kistna, Don, Tungabhudra, &c., are all decked and will carry cart traffic at rail level; but some smaller ones (as the Hagari) are "open" bridges showing daylight between each transverse sleeper, so that it would be both difficult and dangerous to use them as a means of crossing waterways with troops. This could be easily and inexpensively corrected by a light decking of corrugated iron. In all bridges with girders over 100-foot span the rails are carried on the bottom boom, and this would greatly facilitate their defence for by boarding up the sides of the triangulated girders with sleepers, &c., a species of block house might be formed out of the bridge itself. In nearly every part infantry could march alongside of the line the formation being sufficiently wide to admit of this. Nearly all the goods wagons are of iron, and with these an excellent iron-clad train could be formed for the defence of the line. The new third-class bogies are well adapted for troops and have rifle-rack under all seats.

The central offices of the line are at Dharwar, where the Chief Engineer and head-quarters staff reside, but Hubli Junction is practically the head centre. Here there are very extensive workshops and stores, the whole of the rolling stock being manufactured or put together at this place. The passenger building and platform are,

however, totally inadequate to the requirements of so large a trade centre and railway junction.

It would seem advisable that troughs for watering houses should be established at the larger stations, particularly along the greater portion of the main line and Bijapur Branch, where the heat is very great. At present no means exist for this purpose, though troughs could be improvised out of spare steel sleepers inverted.

Telegraph.

Telegraphic Arrangements on S. M. Railway—Main Line.

Stations.	No. of wires.	Number of instruments.		Number of batteries.		Number of signallers.		Kind of posts.
		Block.	Morse.	Le-Clanche.	Me-nottas.	Eura-sians.	Na-tives.	
Guntakal *	Three wires on South Deccan line Guntakal to Castle Rock.	1	2	24	...	1	7	Description of telegraph posts—Hamilton's standard galvanised iron tubular.
Bantanahal		2	1	35	...	...	1	
Baivanhal		...	1	15	...	...	1	
Virapur		2	1	38	...	...	1	
Hageri		2	1	33	...	...	1	
Bellary		2	4	36	40	2	4	
Kudatani		2	1	22	...	...	1	
Gadiganur		2	1	22	...	...	1	
Papinaikanhalli ...		2	1	22	...	...	1	
Hospet		2	1	22	22	...	1	
Munirabad		2	1	22	...	...	1	
Kopbal		2	1	22	22	...	1	
Bhanapur		2	1	22	...	...	1	
Bunnikoppa		2	1	22	...	...	1	
Hariapur		2	1	22	...	...	1	
Gadag †		2	4	40	36	...	9	
Halkoti		2	1	36	...	...	2	
Annigeri		2	1	36	...	...	2	
Dundur		2	1	36	...	...	2	
Hubli ‡		2	3	36	30	2	9	
Dharwar		2	1	22	...	...	3	
Dharwar Chief Office ...		...	2	...	20	1	6	
Mugad		2	1	22	...	...	2	
Kambarganvi		2	1	22	...	...	2	
Alnavar		2	1	22	...	...	2	
Nagargalli		2	1	22	...	...	2	
Londa §		2	1	22	10	1	7	
Tinai Ghât		2	1	38	...	...	2	
Castle Rock		2	4	50	20	...	4	
Total ...	...	53	42	783	200	...	...	

* See also Nandyal section list.
† See also East Deccan list.
‡ See also Southern Extension list.
§ See also West Deccan list.

Telegraphic Arrangements on S. M. Railway—Main Line—Guntakal-Nandyal Section.

Stations.	No. of wires.	Number of instruments.		Number of batteries.		Number of signallers.		Kind of posts.
		Block.	Morse.	Le-Clanche.	Me-nottas.	Eura-sians.	Na-tives.	
Nandyal	Three wires.	...	2	From ten to twenty-two.		Nil.	2	Old broad-gauge rails 17 and 18 to the mile.
Panyam		...	2				1	
Kondacapillai		...	2				1	
Betamcherla		...	3				1	
Rungapuram		...	2				1	
Malkapuram		...	2				1	
Kurnool Road		...	3				2	
Malliyala		...	2				1	
Pendekallu		...	2				1	
Tuggali		...	3				1	
Maddikera		...	2				1	
Stores Siding		...	2				1	
Guntakal Junction * ...		...	2				...	

Telegraphic Arrangements on S. M. Railway—Poona Branch.

Stations.	No. of wires.	Number of instruments.		Number of batteries.		Number of signallers.		Kind of posts.
		Block.	Morse.	Le-Clanche.	Me-nottas.	Eura-sians	Na-tives.	
Poona	Three wires on W. D. line Poona to Londa.	1	3	17	37	...	6	Hamilton's standards and double-headed rails first 12 miles from Poona.
Phursangi		2	1	22	...	...	2	
Alandi		2	1	22	...	...	2	
Rajewadi		2	1	22	...	...	2	
Jejuri		2	1	22	20	...	20	
Walhe		2	1	22	...	...	2	
Lonand		2	1	22	15	...	2	
Wathar		2	1	22	...	...	2	
Satara Road		2	1	22	...	...	33	
Koregaon		2	3	22	34	...	5	
Targaon		2	1	22	...	...	2	
Masur		2	1	22	...	...	2	
Karad		2	1	22	18	...	2	
Shenoli		2	1	22	...	...	2	
Takari		2	1	22	...	...	2	
Kundal Road		2	1	22	...	...	2	
Ashta Road		2	1	22	18	...	2	
Sangli		2	1	22	...	...	2	
Miraj		2	3	22	35	...	6	
Shedbal		2	1	22	...	...	2	
Kudchi		2	1	22	16	...	2	
Raibag		2	1	22	...	...	2	
Chickodi Road		2	1	22	10	...	2	
Gokak Road		2	1	22	...	...	2	
Pachhapur		2	1	22	16	...	2	
Sulebhavi		2	1	22	...	...	2	
Belgaum		2	3	38	41	2	5	
Desur		2	1	38	...	...	2	
Khanapur		2	1	38	...	...	2	
Gurgi		2	1	38	...	...	2	
Londa *		1	2	27	16	...	...	
Total ...	...	64	42	790	294	...	...	...

* See also South Deccan line list.

Telegraphic Arrangements on S. M. Railway—Bijapur Branch.

Stations.	No. of wires.	Number of instruments.		Number of batteries.		Number of signallers.		Kind of posts.
		Block.	Morse.	Le-Clanche.	Me-nottas.	Eura-sians.	Na-tives.	
Hotgi	Three wires on E. D. line Gadag to Hotgi.	1	2	11	40	1	2	Hamilton's standards.
Tadval		2	1	22	...	...	2	
Lachyan		2	1	22	...	...	2	
Indi Road		2	1	22	...	...	2	
Nimbal		2	1	22	15	...	1	
Minchnal		2	1	22	...	...	1	
Bijapur		2	2	24	...	...	2	
Jumnal		2	1	24	...	...	2	
Mulvad		2	1	22	...	...	2	
Telgi		2	3	22	23	...	7	
Alimatti		2	1	22	...	...	2	
Karlimatti		2	1	22	...	...	2	
Bagalkot		2	2	22	16	...	3	
Katgeri		2	1	22	...	...	2	
Badami		2	1	22	...	...	2	
Alur		2	1	22	10	...	1	
Mallapur		2	1	22	...	...	2	
Hombal		2	1	22	...	...	1	
Gadag *		1	2	11	45	...	...	
Total ...	...	36	25	400	169	...	...	

Telegraphic Arrangements on S. M. Railway—Harihar Branch and Mysore Extension.

Stations.	No. of wires.	Number of instruments.		Number of battries.		Number of signallers.		Kind of posts.
		Block.	Morse.	Le-Clanche.	Me-nottas.	Eura-sians.	Na-tives.	
Hubli *	Two wires on S. Extension and Harihar-Beeruru Section.	1	1	30	...	...	...	Hamilton's standards.
Kundgol		2	1	38	...	...	2	
Saunshi		2	1	38	...	...	1	
Gudgeri		2	1	38	...	...	1	
Yalvigi		2	1	38	...	...	1	
Hattimattur ...		2	1	38	...	...	1	
Karajgi		2	1	38	...	...	1	
Haveri		2	2	38	...	...	4	
Byadgi		2	1	38	...	...	1	
Devargudda		2	1	38	...	...	1	
Ranibennur		2	1	38	...	...	1	
Chalgeri		2	1	38	...	...	1	
Harihar		1	3	38	10	...	6	

* See also South Deccan line list.

Telegraphic Arrangements on S. M. Railway—Harihar Branch and Mysore Extension—cont.

Stations.	No. of wires.	Number of instruments.		Number of batteries.		Number of signallers.		Kind of posts.
		Block.	Morse.	Le-Clanche.	Mo-mottas.	Eura-sians.	Na-tives.	
Davangeri	Two wires on S. Extension and Harihar-Beeruru Section.	...	2	7	...	...	1	Hamilton's standards.
Tolahanse		...	2	7	...	...	1	
Kodaganur		...	3	7	10	...	2	
Mayakonde		...	2	7	...	...	1	
Sasalu		...	2	7	...	...	1	
Jajuru		...	3	7	10	...	2	
Holakere		...	2	7	...	...	1	
Ramageri		...	2	7	...	...	1	
Bidarkeri		...	3	7	10	...	2	
Sivane		...	2	7	...	...	2	
Ajampura		...	2	7	...	...	2	
Beeruru		...	3	8	10	...	3	
Gubbi		...	1	10	...	...	2	
Total ...	...	24	45	581	50	...	...	

Rolling Stock.

Engine Load Table.

Direction of train.	Stations. From	Stations. To	Number of loaded vehicles. Passenger trains. Class "O" engine.	Passenger trains. Class "F" engine.	Mixed trains. Class "O" engine.	Mixed trains. Class "F" engine.	Goods trains. Class "O" engine.	Goods trains. Class "F" engine.
	Main Line.							
	South Deccan.							
Up.	Guntakal	Gadiganur.	14	18	20	26	22	30
,,	Gadiganur	Alnavar ...	14	18	18	24	21	28
,,	Alnavar	Londa ...	14	18	18	24	20	26
,,	Londa	Castle Rock.	14	18	20	26	22	30
Down.	Castle Rock ...	Londa ...	14	18	18	24	21	28
,,	Londa	Dharwar ...	14	18	18	24	20	26
,,	Dharwar	Hubli ...	14	18	20	26	22	30
,,	Hubli	Gadag ...	14	18	18	24	21	28
,,	Gadag	Haspet ...	14	18	20	26	22	30
,,	Haspet	Papinaikana-halli.	14	18	18	24	21	28
,,	Papinaikanahalli ...	Guntakal ...	14	18	20	26	22	30

Engine Load Table—cont.

Direction of train.	Stations. From.	Stations. To.	Number of loaded vehicles. Passenger trains. Class "O" engine.	Passenger trains. Class "F" engine.	Mixed trains. Class "O" engine.	Mixed trains. Class "F" engine.	Goods trains. Class "O" engine.	Goods trains. Class "F" engine.
	Bijapur Branch.							
	East Deccan.							
Up.	Hotgi	Gadag ...	14	18	18	24	21	28
Down.	Gadag	Alur ...	14	18	20	26	22	30
,,	Alur	Nimbal ...	14	18	18	24	21	28
,,	Nimbal	Hotgi ...	14	18	20	26	22	30
	Harihar Branch.							
	Southern Extension.							
Up.	Harihar	Hubli ...	14	18	18	24	21	28
Down.	Hubli	Harihar ...	14	18	18	24	21	28
	Poona Branch.							
	West Deccan.							
Up.	Poona	Wathar ...	14	18	15	20	18	24
,,	Wathar	Rahimatpur.	14	18	20	26	22	30
,,	Rahimatpur ...	Londa ...	14	18	18	24	21	28
Down.	Londa	Belgaum ...	14	18	18	24	20	26
,,	Belgaum	Koregaon.	14	18	18	24	21	28
,,	Koregaon	Rajewadi ...	14	18	15	20	18	24
,,	Rajewadi	Poona ...	14	18	18	24	21	28
	Main Line.							
	Guntakal-Nandyal.							
Up.	Nandyal	Guntakal ...	14	18	18	24	21	28
Down.	Guntakal	Nandyal ...	14	18	18	24	21	28

NOTES.—1. Three empty vehicles to count as two loaded. Empty carriages on mixed trains to be counted as loaded.

2. One dead engine and tender to count as six loaded vehicles.

3. One tank engine is equivalent to three loaded vehicles.

4. The numbers entered in the above table include brake-vans.

5. Trans worked by two engines to take double loads, subject to the following limits :—Maximum number of loaded vehicles to be run on one train = 40. Empties 50.

6. One brake-van should be used when the train consists of 15 loaded vehicles or less. Two brake-vans for trains of 16 to 30 loaded vehicles. Three brake-vans when the number exceeds 30 loaded vehicles.

7. One inspection carriage may be attached to any train, when necessary, in addition to the load shewn above. An inspection carriage with 8 wheels will always be counted as one vehicle in computing the load of a train, and when two 8-wheeled carriages are on a train, they must be counted as three ordinary vehicles. The Weighing Machine Inspector's wagon in computing load must be regarded as an inspection carriage.

In cases of pressure of passenger traffic, Drivers of passenger and mixed trains shall, if required by the Traffic Department, take a goods train load and keep the best time they can under the circumstances.

In calculating the loads of trains a bogie wagon should be counted as equal to two ordinary wagons.

Particulars Regarding Rolling Sotck.

Description.	Total stock authorised.	Total stock on the list at end of the half-year ending 31st Dec. 1888.
Locomotives, class "A"	8	8
Do. S.I.R. type	1	1
Do. class "O"	20	20
Do. class "F"	130	115
Total ...	159	144
First-class carriages	23	18
Composite 1st and 2nd	28	23
Second-class carriages	37	23
Third-class carriages	315	259
Do. bogie 38 feet long	32	...
Postal vans	16	14
Brake vans	140	95
Road vans	10	...
Inspection carriages	3	3
Horse-boxes	24	16
Carriage trucks	12	6
Total ...	640	457
Covered goods wagons, iron, 14 ft. ...	2,130	1,669
Do. do. 15′ 6″, iron ...	100	100
Do. do. 18′ 0″, iron ...	100	...
Low-sided wagons, iron	785	785
Covered goods bogies, 25 ft., iron	75	75
High-sided bogies, iron, 25 ft.	75	62
Cattle wagons, iron	25	...
Timber wagons, iron	34	34
Accident vans (wood)	10	2
Powder vans (wood and iron) ...	9	9
Travelling cranes	11	11
Platform wagons (wood and iron)	36	31
Total ...	3,390	2,783

Rolling Stock.

List of engines working at each locomotive station.

Guntakal	8 engines
Gadag	15 ,,
Hubli	29 ,,

Castle Rock	4 engines
Belgaum	10 ,,
Miraj	7 ,,
Poona	12 ,,
Hotgi	5 ,,
Bangalore	23 ,,

Engines can be repaired at all engine stations if the damage is not very serious. All large repairs are carried out in the main workshops at Hubli.

Fuel.

Southern Mahratta Railway—Locomotive and Carriage Department.

Fuelling Arrangements on Southern Mahratta Railway.

(*a*) Fuel depôts. Poona, Koregaon, Miraj, Pachhappur, Belgaum, Londa, Nandyal, Kurnool Road, Guntakal, Bellary, Hospet, Gadag, Hubli, Nagargalli, Castle Rock, Haveri, Harihar, Hotgi, Telgi and Sivani.

(*b*) Description of fuel. Steam coal, English, Singareni coal, country, and firewood.

(*c*) Stock at each station. Nominally 3 months' stock is kept at each station. Approximate quantities representing 3 months' stock are as follows:—

Stations.	Quantity of fuel at each station.							
	Steam coal.				Firewood.			
	TONS.	CWT.	QR.	LB.	TONS.	CWT.	QR.	LB.
Poona	230	...	...	...	20	...	...	...
Koregaon	230	...	...	...	10	...	...	...
Miraj	610	...	...	...	660	...	...	...
Pachhapur	...	...	...	...	110	...	...	...
Belgaum	...	...	...	...	1,050	...	...	...
Londa	...	...	...	...	1,970	...	...	...
Nandyal	...	...	...	...	60	...	...	...
Kurnool Road	...	...	...	...	210	...	...	...
Guntakal	...	...	...	...	280	...	...	...
Bellary	...	...	...	...	710	...	...	...
Haspet	...	...	...	...	740	...	...	...
Gadag	290	...	...	...	1,370	...	...	...
Hubli	...	...	...	...	2,610	...	...	...
Nagargalli	...	...	...	...	30	...	...	...
Castle Rock	10	...	...	...	40	...	...	...
Haveri	...	...	...	...	760	...	...	...
Harihar	...	...	...	...	...	...	...	...
Hotgi	30	...	...	...	20	...	...	...
Telgi	250	...	...	...	10	...	...	...
Sivani	...	...	...	...	...	...	...	...

(d) Sources of receipt of fuel.

Steam coal is obtained from England. Singareni coal is obtained from Singareni mines, in the Nizam's dominions. Firewood is obtained from Kanara forests; the main depôts of supply being Londa and Nagargalli.

On the B. K. Railway firewood is obtained at Nandyal, Kurnool Road and Guntakal.

Mysore State Railway—Locomotive and Carriage Department.

Fuelling Arrangements on M. S. R.

(a) Fuelling depôts. Bangalore, Bidadi, Closepet, Chinnapatna, Maddur, Mysore, Dodbeli and Tumkur.

(b) Description of fuel. Steam coal, English, and firewood.

(c) Stock at each station. Nominally 3 months' stock is kept at each station. Approximate quantities are as follows :—

Stations.	Quantity kept at each station.							
	Steam coal.				Firewood.			
	TONS.	CWT.	QR.	LB.	TONS.	CWT.	QR.	LB.
Bangalore	40	...	...	...	440	...	...	...
Bidadi	...	...	...	...	220	...	...	...
Closepet	...	...	...	...	230	...	...	...
Chinnapatna	...	...	...	...	...	...	...	...
Maddur	...	...	...	...	260	...	...	...
Mysore	...	...	...	...	200	...	...	...
Dodbeli	...	...	...	...	10	...	...	...
Tumkur	...	...	...	...	230	...	...	...

(d) Sources of fuel. Steam coal is obtained from Madras. Firewood is supplied by the Mysore Government Forest Department.

TYPE OF GIRDER PIERS & ABUTMENTS

Scale of 12 Feet to an Inch

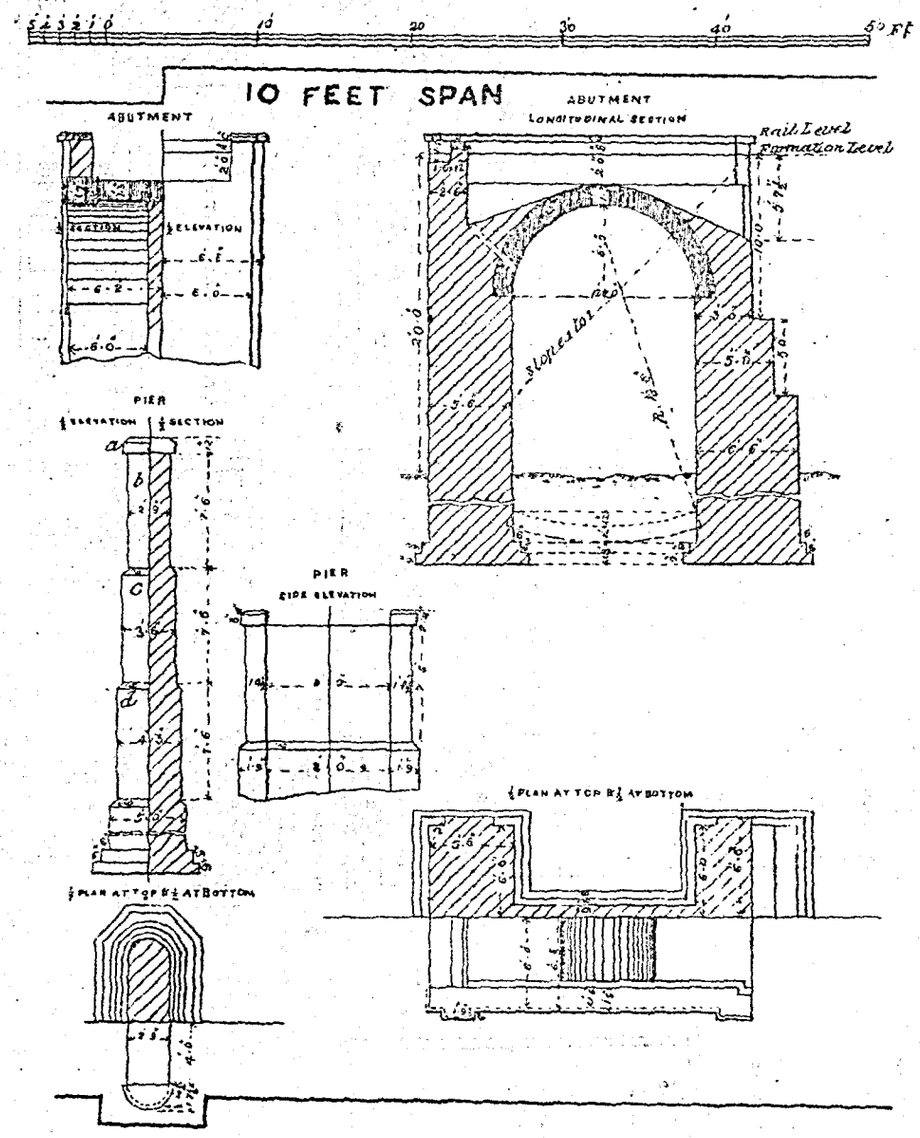
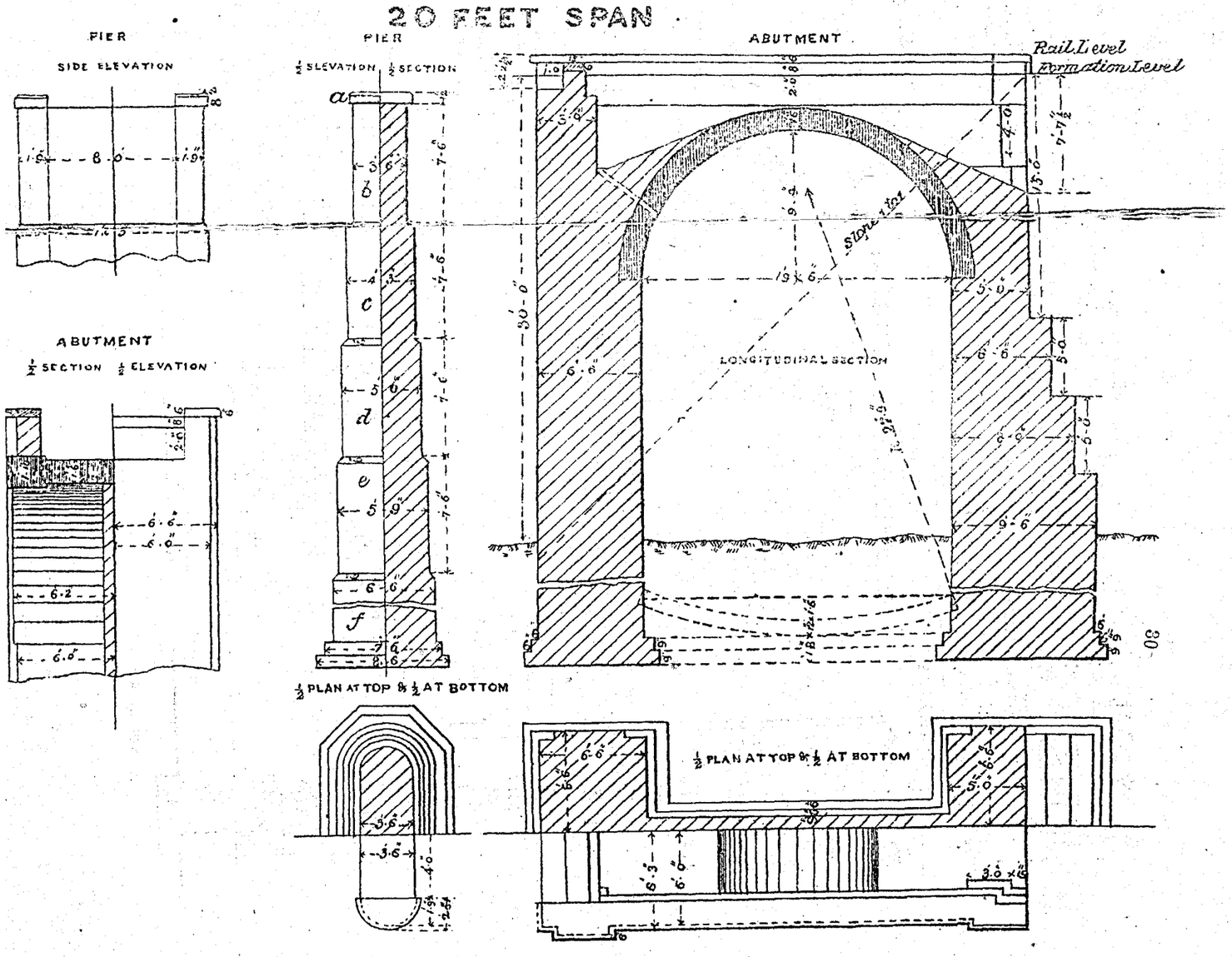


Photo-Zincographed in Central Survey Office, Madras.
1890

20 FEET SPAN



30

Photo-Zincographed in Central Survey Office, Madras.
1890

40 FEET SPAN

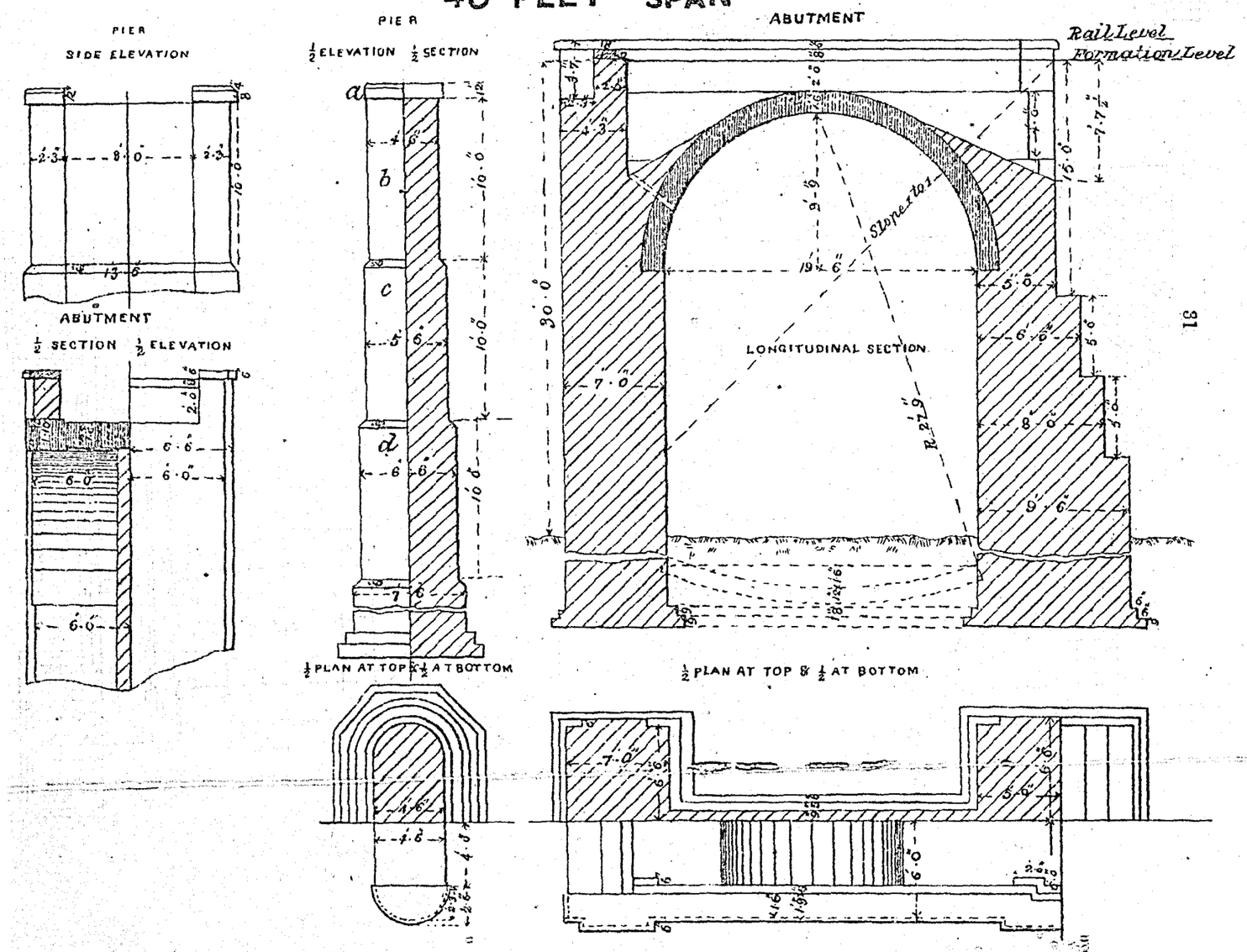


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Photo-Zincographed in Central Survey Office, Madras.
1890

60 FEET SPAN

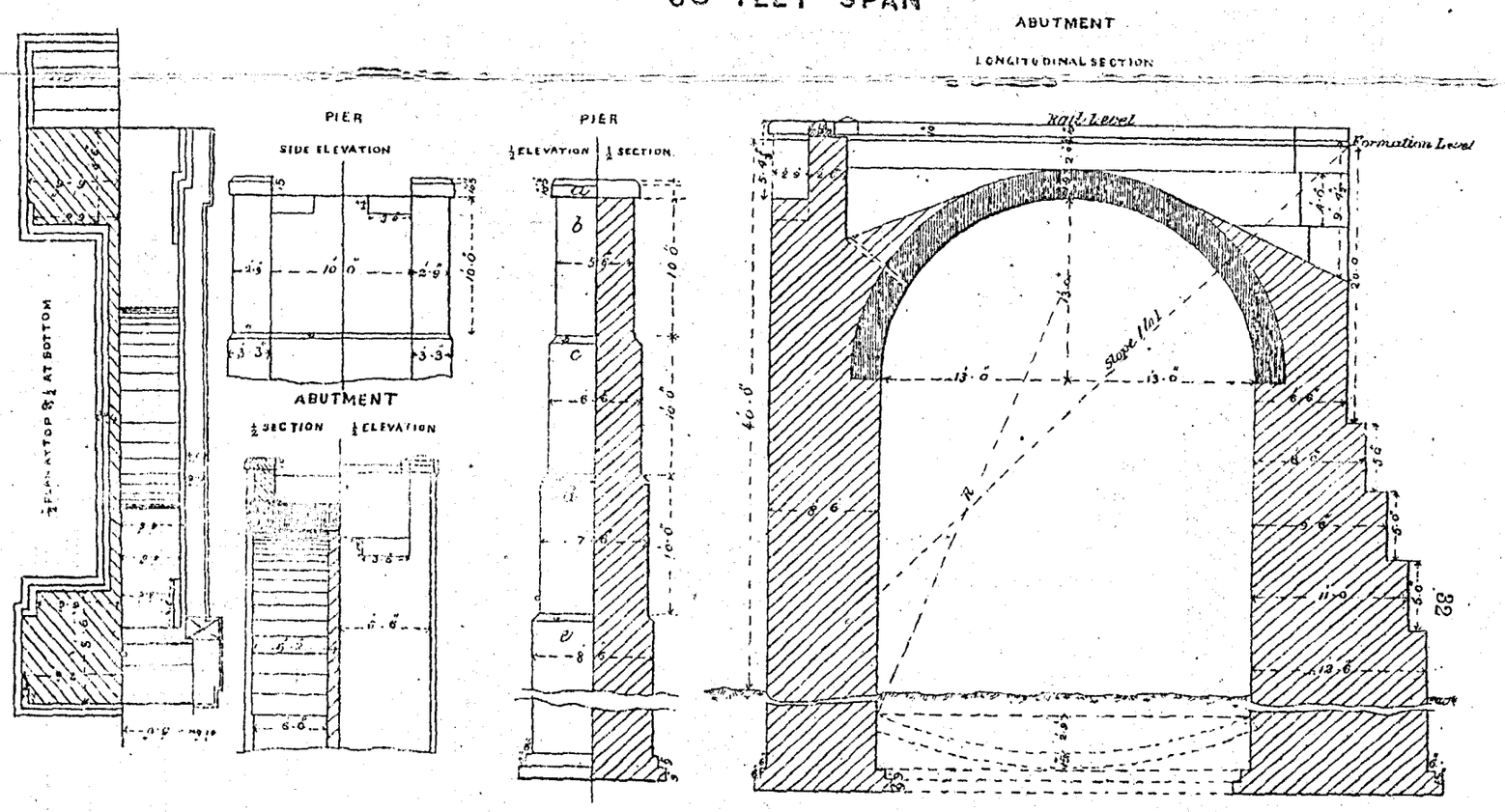


Photo-Zincographed in Central Survey Office, Madras.
1890

82

100 FEET SPAN

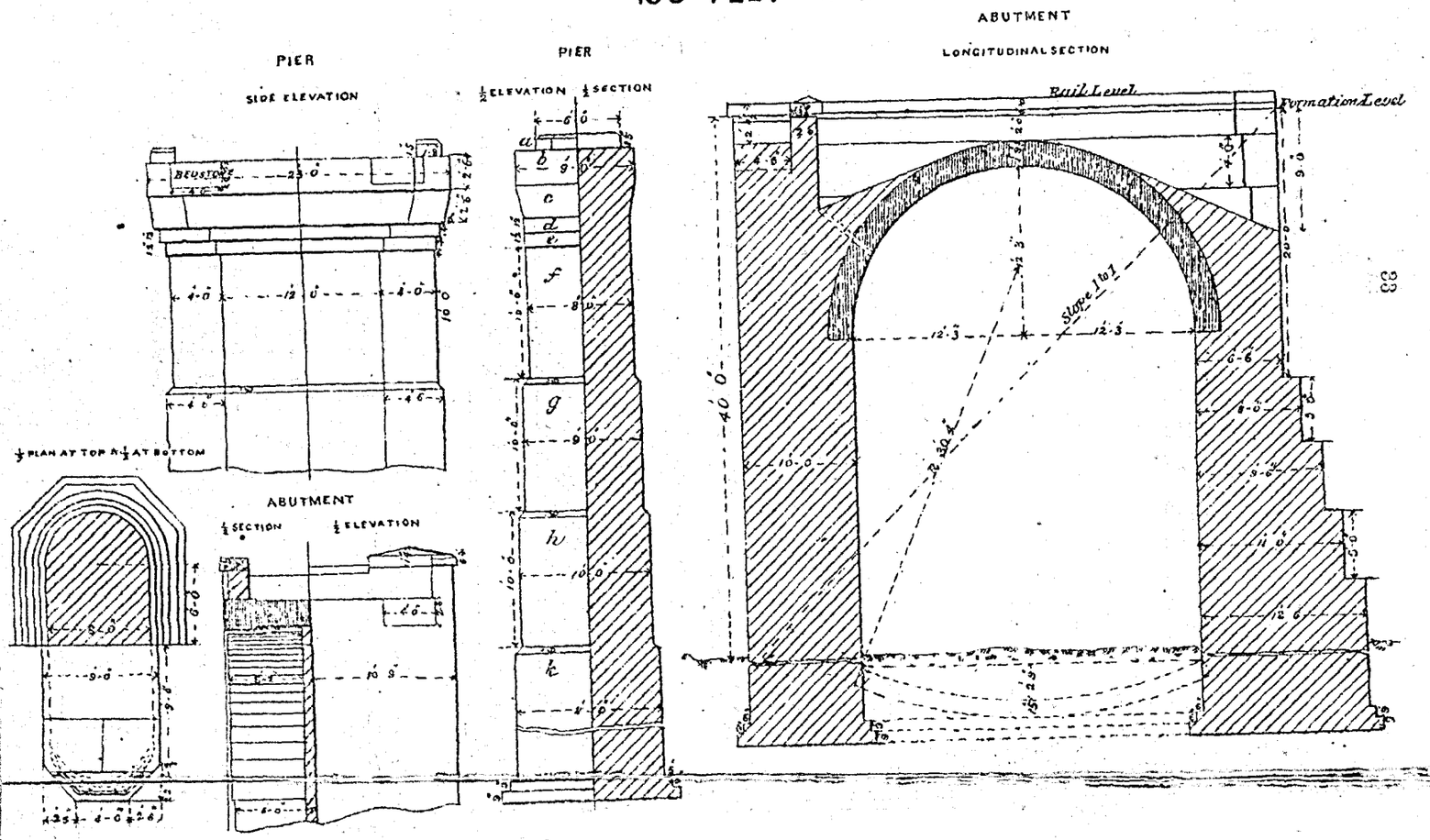


Photo-Zincographed in Central Survey Office, Madras.
1890

83

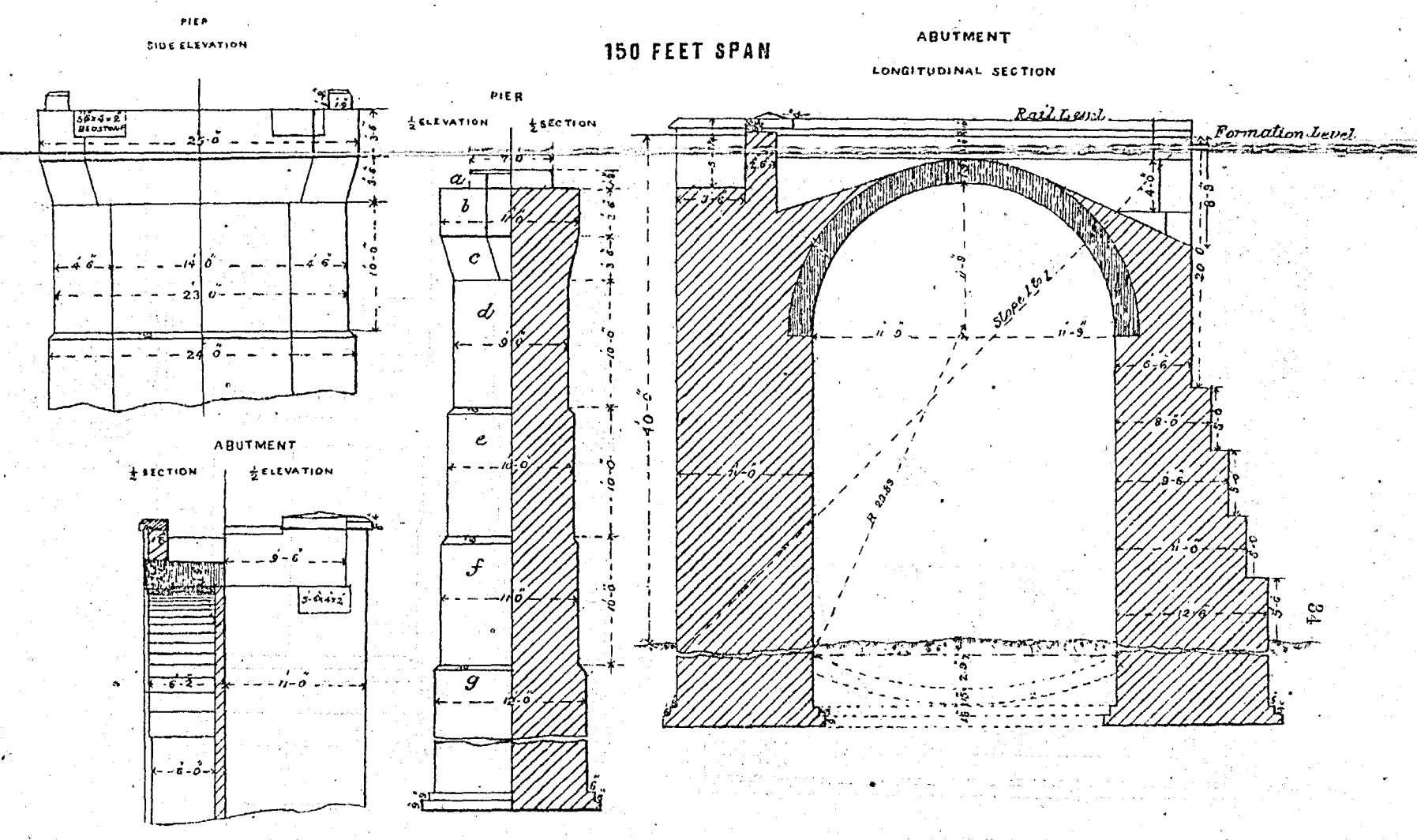


Photo-Zincographed in Central Survey Office, Madras.
1890

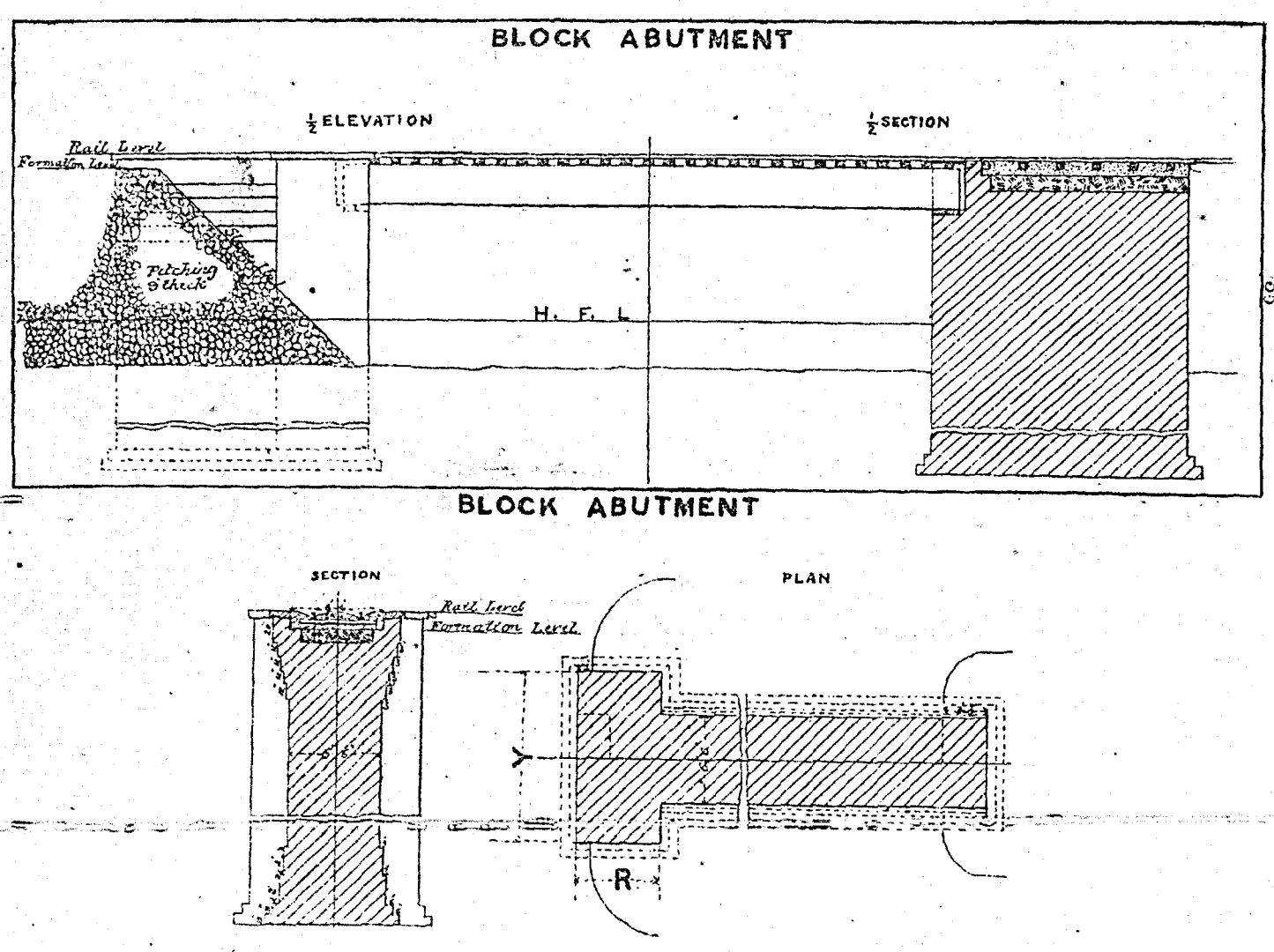


Photo-Zincographed in Central Survey Office, Madras.
1890

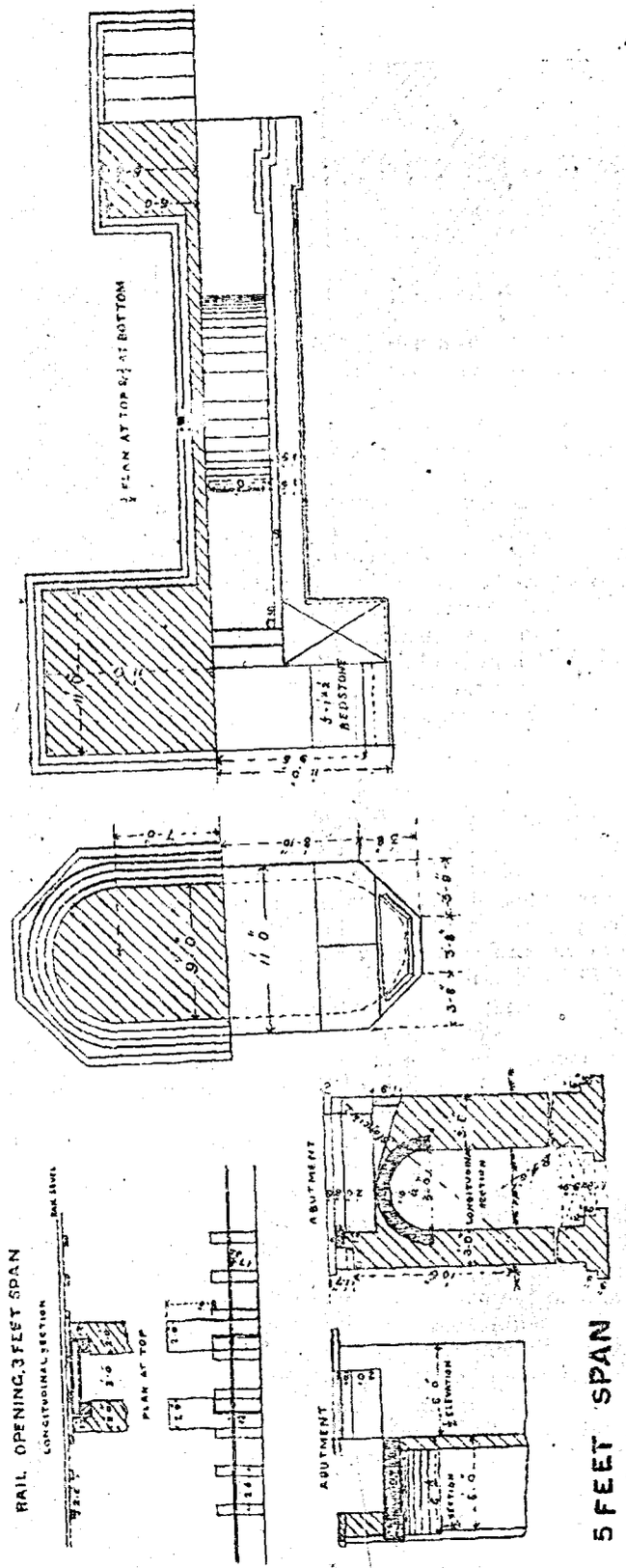


Photo-Zincographed in Central Survey Office, Madras.
1890.

MAIN LINE—WESTERN DIVISION.

GUNTAKAL TO PORTUGUESE FRONTIER.

THIS length of 233¼ miles forms the western half of the "main line" of the S. M. Railway. It runs almost due west from Guntakal, the junction with the Great Indian Peninsula, to the Portuguese frontier 3½ miles beyond Castle Rock station, where it meets the West of India Portuguese Railway of 51 miles connecting it with the port of Murmagao.

It may be divided into two distinct portions—the first from Guntakal to Dundur, 147¾ miles, passing in almost a straight line over an open black cotton soil country with slight undulations; and the last rising gradually towards the Western Ghâts and passing through a hilly district with many gradients and numerous sharp curves.

The first 30¼ miles, or that portion between Guntakal and Bellary, was formerly a part of the Madras Railway and differs therefore somewhat from the rest of the line. It was taken over by the Southern Mahratta on the 1st February 1887 on payment of 30 lakhs, and converted to metre-gauge on the 17th May 1887. After many representations from the military authorities, who were anxious to obviate the necessity for the transhipment of ordnance and other heavy stores *en route* between Madras and Bellary arsenals, it was decided to retain the broad gauge in addition to the metre by narrowing the old road and adding a new double-headed steel rail on new pot-sleepers at a cost of Rs. 4,11,442. This arrangement was, however, not carried out and the metre line only exists at present. The banks in this section having been thrown up over 20 years are thoroughly consolidated and the permanent-way consists of 75 lb. double-headed rails on cast-iron circular pot sleepers. The Bellary station, having been a terminus, is large and commodious and practically a first-class one, and those at Bantanahal, Baivanhal and Virapur are also different from the S.M.R type. From Guntakal to Bellary it is almost a dead level, but after this the line, though undulating, gradually ascends the whole way to Gadag, there being a rise of 263 feet from the Tungabhadra river to mile 85, or 3 miles east of the Burra nálá. From Gadag it is a descent of 24 miles to Dundur, where the line, after having run almost quite straight to this point, takes a wide sweep south-west and ascends to Hubli Junction, from which it turns north-west and continues to ascend for 13 miles to Dharwar, where it resumes its westerly direction again. This is the highest point in the whole line, being 2,580 feet above sea level. From Dharwar to Castle Rock it is a descent, but the country being hilly, and in parts difficult, involves numerous sharp curves in addition to the long and steep gradients, with high banks and deep cuttings. The principal turns in this portion are between Mugad and Kambargauvi, Londa and Tinai ghât, and in the ghât section from mile 228 to the frontier. The minimum curve is 1,000

feet radius except in the latter portion where the radius of curvature is 800 feet.

As far as Castle Rock the limiting gradient is 1 in 100 but beyond this in the 3½ miles to the Portuguese frontier it is a difficult piece of mountain line and is on a nearly continuous gradient of 1 in 40 which commences just outside the points of Castle Rock station and continues to the Dadh Sagar station 6 miles beyond the frontier.

Ghat Section.

The banks and cuttings on the ghât section are high and deep and, owing to the heavy rainfall, require much looking after, particularly two banks, one below the Bear Rock tunnel and the other just inside the frontier. There are three tunnels in this 3½ miles from Castle Rock, viz., the Castle Rock, 1,242 feet; the Bear Rock, 471 feet; and a covered way 500 feet long, lined throughout with brick. Safety sidings are provided at two places for runaways. The following briefly shows the curves and gradients:—

Radius of Curves.

16 above 600 to 1,000 feet inclusive.

Length	2·16 miles
Straight line	1·47 ,,
Total ...	3·63

Gradients.

Above 1 in 30 to 1 in 50 inclusive.

Length	2·96 miles
Level	0·67 ,,
Total ...	3·63

The ghât is 16 miles long between the stations of Castle Rock and Collem (on the W. I. P. Railway), and the gradient throughout is 1 in 40, except at the lower end by Collem where gradients of 1 in 50 and short lengths of level have been interpolated.

The speed of trains on the ghât is limited to 12 miles an hour and to daylight running, the loads being fixed at 13 loaded vehicles for one engine, and 24 for two engines.

Permanent-way.

The permanent-way is in accordance with the standard dimensions and the rest of the S. M. R. system except between Guntakal and Bellary where the rails, as already stated, are 75 lb., and the 3½ miles from Castle Rock to the Portuguese frontier, where they are of 60 lb. to the yard, this being the weight of the rails in use on the West of India Portuguese Railway.

Sleepers.

The sleepers are laid as follows:—

Guntakal to Bellary ...	Cast-iron circular pot.
Bellary to the Tungabhadra river, 43 miles.	Creosoted pine.
Tungabhadra for next 70·8 miles.	Steel.
Remaining 90·02 miles to Portuguese frontier.	Country teak.

They are laid 2,000 to the mile, or 9 to each rail of 24 feet.

Ballast.

The ballast is composed of—

Guntakal to Bellary ...	Broken stone.
Bellary to Hospet ...	First 4½ miles, broken stone and gravel. Next 14 miles, shingle and sand. Do. 2 do. broken stone. Do. 11 do. shingle and sand. Do. 9 do. gravel and shingle.
Hospet to Gadag ...	Screened gravel, broken stone, hard moorum and sand.
Gadag to Dharwar ...	35¾ miles, sand. 13¼ do. broken stone and hard moorum.
Dharwar to Frontier ...	10 miles, gravel. 40 do. river shingle and sand. Remaining, laterite broken.

The cuttings at mileage 206, 209 and 223 and the ghât section from mile 228 to the frontier and on to Collem have been taken out for a double line. The line is fenced with aloe along the low-lying country; from Dharwar westward wire fencing is used to prevent the cattle, of which there are hundreds of droves grazing all along, from straying on to the line.

The principal stations along this line, exclusive of Guntakal, are Bellary, Gadag, Hubli, Dharwar, Londa and Castle Rock, with Hospet as a break between Bellary and Gadag. The others are merely road-side stations and would not be used by troops unless necessary.

The first four of these would form good halting places for troops, the accommodation at all being extensive. Londa, though the station itself is commodious, is much confined by forest, the water is much mixed with decaying vegetation and is consequently impure, and the climate is feverish.

The same, to a slight extent, may at present be said about Castle Rock; but if the proposed improvements are carried out here and some more clearings are made in the surrounding forest, this place would make a good sanitarium as it is situated at the summit of the ghât, is open to the prevalent breeze from the sea and the nights are always fresh and cool. Being just inside our frontier, it would also be useful as a depôt for stores, &c., landed at the adjacent port of Murmagao.

At GUNTAKAL a rest camp is now being built. The station buildings, plant and accommodation are very extensive as they comprise the requirements of both the Madras and S. M. railways, and as lines branch off in every direction from this junction it would be a convenient centre for troops and stores to be collected and forwarded to their different destinations. There is little water at Guntakal itself, but the station tank of 96,000 gallons is kept filled by a storage reservoir 4 miles off into which water is pumped from a well at the 5th mile. The village of Guntakal, in the Gooty taluk, of Bellary district, has a population of about 3,000, and is two miles distant from the station. The soil is very deep black. This is the largest and most important junction in Southern India.

BELLARY being a large garrison, arsenal and depôt is of course well adapted for troops, but the water-supply is bad and the climate very hot. It is built round a granite rock about 450 feet above the level of the plain, which slopes gradually down from the small range of Mincherri hills, 4 miles south, to the Tungabhadra and Hagari rivers, and nearly 2 miles in circumference. On the top of this rock is a strong fort and three or four pools of fresh water which never dry up. The native suburb is on the south, the regimental lines for two native infantry, one native cavalry, one European infantry and artillery are west of the rock, whilst the jail, sessions court, cutcherry and many private bungalows lie east.

HOSPET, bounded on the north-east by the Kampli and on the south-east by the Sandur range of hills, the cusba of the taluk of that name, is situated on high ground about 3 miles from the Tungabhadra river, down to which the ground slopes gradually. It is a town of some size, containing a population of about 10,000. The main street of the town is wide and has some good houses and shops. The chief industry is weaving but brass and copper work is also manufactured in large quantities. There is a taluk cutcherry, a dispensary, a travellers' bungalow, two fine temples and some curious old Muhammadan tombs. There is a hill behind the town called Joladarashi. The supply of water is plentiful, being derived chiefly from the Tungabhadra.

GADAG, north latitude 15° 96′ and east longitude 75° 43′, is a municipal town with a population of 17,000. It is the junction of the main line with the Bijapúr branch or Hotgi-Gadag section, and is a noted cotton mart and trade centre. It is situated on high ground at one end of the Kappatgudd range of hills which rise a little south-west of the town and stretch for 35 miles in a south-easterly direction. In the town are five richly carved temples, the remains of an old fort, police and court houses and post and telegraph offices. There is a good water-supply and encamping ground within a mile.

HUBLI, in north latitude 15° 20′ and east longitude 75° 13′, on the Poona-Harihar road, is the most important town in the Bombay Karnatak and has a population of 37,961. It stands about 2,500 feet above the sea, on a gently waving plain rising towards the west. Except a few small hills on the west, south-west and north-west, the country round is a black soil plain. The town is divided into Old Hubli and New Hubli, about 400 yards apart, covering an area of 1,778 acres or $2\frac{3}{4}$ square miles, and has post and telegraph offices,

Government buildings, a large spinning and weaving mill, several cotton presses, two forts and many old Jain temples. It is a large trade centre, the staple being cotton. The leading exports are cotton, grain, cloth, hides, horns and fat. There are 486 sweet-water wells and 400 brackish-water wells in the town. The bazaar is good and supplies are plentiful.

DHARWAR, north latitude 15° 27′, east longitude 75° 6′, 48 miles south-east of Belgaum, 110 miles south-west of Bijapur, 70 miles north-east of the coast town of Karwar, 12 miles north-west of Hubli, and about 300 miles south-east of Bombay, stands 2,580 feet above the sea and is the head-quarters of the Dharwar sub-division and district. It has a population of about 27,000 and covers an area of 735 acres. The town itself occupies the ground to the east and south of the fort, which covers about 76 acres, and has an outside diameter of 800 yards, and contains about 5,331 houses, the better sort of which are built of sun-dried bricks of reddish earth and plastered with mud. The water-supply is good, there being no less than six reservoirs, three ponds, two cisterns and 614 wells. The Hirekeri or bag reservoir is the largest, being $42\frac{25}{40}$ acres in area and capable of holding 568,332 cubic feet of water, but is used only for bathing, washing and watering lands, the Halkeri reservoir, lying between the fort and the town, with an area of $6\frac{1}{20}$ acres and a capacity of 564,648 cubic feet of water, being the principal water-supply of the town. Supplies of all sorts are plentiful, even European articles being procurable, and the climate is healthy and fairly temperate. On the extreme west of the town is the civil station comprising over 80 bungalows of large size, churches and public offices, whilst a mile and-a-half north-west of Dharwar is the military cantonment, covering an area of 331 acres, with accommodation for one native regiment, well situated on open high ground with natural drainage. Here are the new central offices of the Southern Mahratta Railway in a palatial building erected at a cost of over three lakhs.

There would be little difficulty in finding encamping ground all along this line up to Alnavar, mile $194\frac{3}{4}$. Here, however, the country becomes all forest and the railway passes through a dense and malarious jungle. From Guntakal to Dundur, except immediately round Bellary and at Kudatani, Tornagullu, Gadiganur, Papinaikanhalli and Munirabad, where it is red and rocky, the soil is all black. Between Dundur and Alnavar and all along the watershed passing north and south through Hubli excellent camping ground could be found all round for large bodies of troops, the country being high with open waving grass hills (gradually becoming more rugged as they approach westward), the water abundant and good, and supplies plentiful. Hubli, in addition to being the centre of the cotton trade of the Southern Mahratta country (population 37,961) and having a large bazaar, is the main workshop and store of the S. M. Railway. Artillery would find here nearly every convenience for moving and repairing guns and even for the manufacture of carriages and limbers, and there is fine encamping ground for all arms within half a mile of the station.

It would be comparatively easy to protect the four large bridges, viz., the Hagari, Tungabhadra, Barra nala and Benihulla, as in each case the ground in the immediate neighbourhood is higher than the

bridge itself, and by the erection of earthworks the approaches, as well as the structure, could be easily swept by fire. The Tungabhadra, the largest waterway, is only 2½ miles west of Hospet station, from which it is a decline all the way.

Military Posts.

Bellary is the only military post or garrison on this section, though there is excellent accommodation for a native infantry regiment at Dharwar in the vacated lines a mile and-a-half north-west of the town.

Bellary is a second-class arsenal and has a garrison of—

1 Battery R.A.	British.
½ Battalion Infantry Regiment	British.
1 Regiment Cavalry	Native.
2 Do. Infantry	Native.
2 Depôts Infantry	Native.

It is in the Belgaum district and is under the command of a Colonel on the staff, Belgaum itself being 31 miles due north by rail from Londa and 48 miles north-west by road from Dharwar on the main line.

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
	Guntakal junction station.			...	...	...	...	...
0	1 in 353·57 ...	D	53	Bank ...	53	12·39	Left ...	5,672·70
1	Level ...	...	70	Bank ...	62	5·82	...	...
	...	...	...	Cutting ...	8	1·60	...	...
	1 in 146·66 ...	D	40	Cutting ...	20	4·19	...	...
2	...	...	...	Bank ...	20	8·82	...	...
	Level ...	...	16	Bank ...	16	14·44	...	...
	1 in 162·8 ...	U	74	Bank ...	44	13·07	...	...
3	...	...	..	Cutting ...	30	5·23	...	..
	1 in 245·19 ...	U	37·15	Cutting ...	7	3·20	Right...	7,524·00
	...	...	...	Bank ...	30·15	15·12	...	...
4	1 in 1,166·08...	D	50	Bank ...	50·00	7 23	Right...	8,563·60
	1 in 151·62 ...	D	85	Bank ...	7	1·03	...	...
	...	...	...	Cutting ...	7	0·35	...	...
	...	...	...	Bank ...	4	0·40	...	...
5	...	...	...	Cutting ...	42	3·16	...	...
	...	...	...	Bank ...	25	8·44	...	...
	Level ...	...	35	Bank ...	35	5·64	...	...
6	1 in 330 ...	U	30	Bank ...	30	8·40	...	...
	Level ...	...	35	Bank ...	8	2·90	...	...
6½	Bantanhal station...		...	Cutting ...	16	0·99	...	...
	...	...	...	Bank ...	11	2·01	...	...
7	1 in 171·6 ...	D	65	Bank ...	65	3·89	...	...
8	1 in 350·62 ...	D	85	Bank ...	85	7·58	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
	1 in 132 ...	...	61	Bank ...	3	1·08	...	...
	...	...	...	Cutting ...	32	6·42	...	...
9	...	...	...	Bank ...	26	9·81	...	...
	Level ...	...	51	Bank ...	51	27·58	Left ...	8,563·60
10	1 in 224·75 ...	U	63	Bank ...	52	17·13	...	...
	...	...	...	Cutting ...	11	2·49	...	...
10¾	Baivanhal station...		...	...	...	...	...	...
11	1 in 132 ...	D	44	Cutting ...	27	6·06	...	...
	...	...	...	Bank ...	17	8·03	...	...
	Level ...	...	56½	Bank ...	56½	24·56	...	...
12	1 in 149 ...	U	49½	Bank ...	37½	13·29	...	...
	...	...	...	Cutting ...	12	7·99	...	...
	1 in 235·71 ...	U	50	Cutting ...	13	8·17	...	...
13	...	...	...	Bank ...	37	14·45	...	...
	Level ...	...	20	Bank ...	2	0·93	...	...
	...	...	...	Cutting ...	18	6·14	...	...
	1 in 235·71 ...	D	50	Cutting ...	8	2·70	...	...
14	...	...	...	Bank ...	42	17·49	...	...
15	1 in 942·85 ...	U	100	Bank ...	100	15·95	...	...
	1 in 165·0 ...	U	50	Bank ...	31	3·19	...	...
	...	...	...	Cutting ...	4	0·67	...	...
	...	...	...	Bank ...	4	0·98	...	...
	...	...	...	Cutting	5	0·44	...	...
	...	...	...	Bank ...	6	1·77	...	...
	Level ...	...	60	Bank ...	3	1·75	...	...
	Virapur station	...	...	...	...	...	...	...
16	...	...	...	Cutting ...	13	0·81	...	...
	...	...	...	Bank ...	44	9·32	...	...
	1 in 846·49 ...	D	64	Bank ...	17	5·94	...	...
	...	...	...	Cutting ...	7	0·30	...	...
17	...	...	...	Bank ...	40	15·73	...	...
	Level ...	...	56	Bank ...	47	12·13	...	...
18	...	...	...	Cutting ...	9	0·83	...	...
	1 in 150·82 ...	D	96	Cutting ...	9	0·77	...	...
19	...	...	...	Bank ...	87	11·70	...	...
	1 in 209·00 ...	U	19	Bank ...	19	9·65	...	...
	1 in 135·66 ...	D	84¾	Bank ...	13	9·65	...	...
	...	...	...	Cutting ...	19	3·04	...	...
20	...	...	...	Bank ...	52¼	6·17	...	...
21	Level ...	...	61¼	Bank ...	61¼	8·52	Right...	8,563·60
21½	Hagari station.	...	...	...	...	...	...	...
	1 in 79·20 ...	D	25	Bank ...	7	2·00	...	...
	...	...	...	Cutting ...	5	6·96	...	...
	...	...	...	Bank ...	13	4·25	...	...
	Level ...	...	20	Cutting ...	15	3·00	Hagari bridge, 34—64 feet spans.	
	...	...	...	Bank ...	5	2·75	...	...
22	1 in 71·74 ...	U	25	Bank ...	3	2·25	...	...
	...	...	...	Cutting ...	8	6·30	...	...
	...	...	...	Bank ...	14	6·75	...	...
	1 in 150 ...	U	43	Bank ...	24	6·99	Left ...	8,563·60
	...	...	...	Cutting ...	19	3·43	...	...
	1 in 220 ...	U	125	Bank ...	102	17·32	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
24	...	...	...	Cutting ...	9	1·82	...	...
	...	...	...	Bank ...	14	3·63	...	...
	1 in 354·72 ...	U	33	Bank ...	33	12·61	...	...
	Level ...	...	9	Bank ...	7	5·23	...	...
25	1 in 300 ...	D	52	Bank ...	52	8·42	...	...
26 & 27	1 in 256·71 ...	U	124	Bank ...	124	11·24	...	...
	Level ...	...	48	...	48	11·07	...	...
28	1 in 319·08 ...	U	76	Bank ...	73	10·18	...	...
	...	...	...	Cutting ...	3	1·29	...	...
29	1 in 163·97 ...	U	80	Cutting ...	5	0·66	...	...
	...	...	...	Bank ...	75	11·27	Left ...	5,672·70
	Level ...	...	47·96	Bank ...	...	6·33	...	...
30¼	Bellary station	...	...	...	...	...	...	...
	0·45 in 100 ...	U	14·16	Bank ...	4	3·67	...	...
	...	...	...	Cutting ...	10·16	3·79	Right...	2,500
	Level ...	...	31·68	Cutting ...	18	2·60	Right...	2,713
31	...	...	...	Bank ...	13·68	2·76	Right...	2,640
32	0·60 in 100 ...	U	55·00	Bank ...	55·00	3·54	...	...
	Level ...	...	8·40	Cutting ...	8·40	1·28	...	...
	0·45 in 100 ...	D	28·00	Bank ...	28·00	3·61	...	...
32½	Bellary cantonment station			...	...	...	...	...
33	Level ...	...	14·00	Cutting ...	8·00	0·38	...	...
	...	...	...	Bank ...	6·00	4·21	...	...
	1 in 100 ...	U	16·00	Cutting ...	16·00	3·40	...	...
	Level ...	...	49·00	Cutting ...	19·00	2·85	...	...
34	...	...	...	Bank ...	30·00	1·32	...	...
	0·32 in 100 ...	U	22·00	Bank ...	22·00	1·22	Right ...	5,280
35	Level ...	...	14·00	Bank ...	14·00	1·05	...	...
	0·47 in 100 ...	D	24·00	Bank ...	24·00	1·03	} Left...	5,808
36	Level ..	...	42·15	Bank ..	42·15	3·31		
	0·40 in 100 ...	U	72·60	Cutting ...	10·00	1·96	...	...
	...	...	...	Bank ...	19·00	13·87	...	...
37	...	...	...	Cutting ...	43·60	2·48	...	...
38	Level ...	...	61·80	Bank ...	18·00	1·31	...	...
	...	...	...	Cutting ...	12·00	1·36	...	...
	...	...	...	Bank ...	6·00	13·66	...	...
	...	...	...	Cutting ...	25·80	1·40	...	...
39	0·28 in 100 ...	U	22·00	Cutting ...	22·00	0·70	...	...
	Level ...	...	36·80	Bank ...	27·00	1·10	...	...
	...	...	...	Cutting ...	9·80	0·44	...	...
40	0·18 in 100 ...	U	14·00	Bank ...	14·00	0·74	...	...
	Level ...	...	20·80	Cutting ...	20·80	0·88	...	...
41	0·03 in 100 ...	U	44·00	Bank ...	34·00	1·17	...	...
	...	...	...	Cutting ...	10·00	0·59	...	...
42	0·10 in 100 ...	U	28·80	Bank ...	28·80	2·38	...	...
	Level ...	...	30·00	Bank ...	30·00	0·81	...	...
42¾	Kudatani station ...		...	...	...	...	...	...
43 44	} 0·52 in 100	D	86·00	Bank ...	86·00	1·58	Left ...	2,640
	Level ...	...	33·60	Cutting ...	18·60	0·72	...	...
	...	...	...	Bank ...	15·00	0·69	Right...	2,640
45	0·555 in 100 ...	D	32·00	Bank ...	7·00	0·69	...	...
	...	...	...	Cutting ...	25·00	0·75	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
	Level ..	..	10·00	Bank ...	10·00	1·86	...	...
46 & 47	0·23 in 100 ...	U	71·60	Bank ...	71·60	3·35	...	...
	Level	...	121·60	Cutting	12·00	2·75	...	...
	...	...	...	Bank ...	32·00	7·95	Left ...	3,960
48	...	...	...	Cutting ...	33·00	6·75	Do. ...	3,355
	...	...	...	Bank ...	7·00	0·20	...	...
49	...	...	...	Cutting ...	27·00	1·58	...	...
	...	...	...	Bank ...	10·60	0·92	Right...	3,960
	0·30 in 100 ...	U	70·80	Bank ...	53·00	3·78	...	...
50¾	Tornagalli station.		...	Cutting ...	17·80	3·11	Right...	3,960
51	0·09 in 100 ...	U	44·16	Bank ...	23·00	4·50	...	...
	...	...	...	Cutting ...	16·00	6·22	...	...
	...	...	...	Bank ...	5·16	1·45	Left ...	5,280
	0·45 in 100 ...	U	30·36	Cutting ...	2·00	0·32	...	...
52	...	...	...	Bank ...	28·36	0·53	...	...
	0·07 in 100 ...	U	41·00	Bank ...	11·00	1·19	...	...
	...	...	...	Cutting ...	12·00	1·41	...	...
	...	...	...	Bank ...	18·00	1·38	...	...
53	0·44 in 100 ...	U	59·00	Bank ...	7·00	0·94	...	...
	...	...	...	Cutting ...	12·00	1·74	...	...
	...	...	...	Bank ...	18·00	4·22	...	...
	...	...	...	Cutting ...	22·00	3·67	...	...
54	0·26 in 100 ...	U	28·00	Bank ...	28·00	14·38	...	...
	0·05 in 100	U	28·07	Bank ...	5·00	1·11	...	...
54¾	Gadiganur station.		...	...	...	...	...	...
55	...	...	...	Cutting ...	23·07	3·84	...	...
	0·63 in 100	U	...	Cutting ...	20·00	2·75	...	...
	...	...	...	Bank ...	26·00	2·02	...	...
56	1 in 100 ...	U	46·00	Bank ...	32·00	1·15	Right...	5,370
	...	...	...	Cutting ...	14·00	0·69	Left ...	4,728
57	0·20 in 100 ...	U	22·00	Bank ...	22·00	1·43	...	...
	0·94 in 100 ...	U	28·00	Bank ...	10·00	0·87	...	...
	...	...	...	Cutting ...	16·00	0·68	...	...
	...	...	...	Bank ...	2·00	0·42	...	...
	Level	...	8·00	Bank ...	8·00	0·87	...	...
58	0·96 in 100 ...	U	28·00	Cutting ...	12·00	0·84	...	...
	...	...	...	Bank ...	4·00	0·25	...	...
	...	...	...	Cutting ...	8·00	0·79	...	...
	...	...	...	Bank ...	4·00	1·65	...	...
	0·20 in 100 ...	U	50·00	Bank ...	12·00	2·09	...	...
	...	...	...	Cutting ...	10·00	1·02	...	...
59	...	...	...	Bank ...	28·00	1·51	...	...
	0·90 in 100 ...	U	40·00	Cutting ...	20·00	1·47	...	...
	...	...	...	Bank ...	12·00	0·68	...	...
60	...	...	...	Cutting ...	8·00	0·24	Right...	5,280
	Level	...	40·00	Cutting ...	23·00	4·94	...	...
	...	...	...	Bank ...	17·00	13·76	...	...
61	1 in 100 ...	U	60·00	Bank ...	40·00	2·37	Left ...	5,280
	...	...	...	Cutting ...	12·00	1·77	Do. ...	2,640
62	Level	...	13·00	Cutting ...	6·00	2·03	Right...	2,640
	...	...	...	Bank ...	7·00	5·70	...	...
62¼	Papinaikanhalli station.			...	...	...	...	...
	0·80 in 100 ...	D	25·00	Bank ...	4·00	1·53	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
	...	...	...	Cutting ...	10·00	1·16	...	...
	...	...	...	Bank ...	11·00	1·09	...	...
63	Level	...	21·00	Cutting ...	15·00	0·42	...	...
	...	...	...	Bank ...	6·00	17·13	...	...
	0·80 in 100 ...	D	34·00	Cutting ...	4·00	0·10	...	...
	...	...	...	Bank ...	6·00	0·23	...	
	...	...	...	Cutting ...	13·00	0·62	Left ...	2,640
	...	...	...	Bank ...	11·00	13·50	Right...	1,980
	Level	...	7·00	Cutting ...	7·00	0·51	...	...
64	1 in 100 ...	D	57·00	Cutting ...	20·00	1·78	...	...
	...	...	...	Bank ...	20·00	2·08	Right...	2,640
65	...	...	...	Cutting ...	17·00	1·66	...	...
	Level	...	7·00	Cutting ...	3·50	0·79	...	...
	...	...	...	Bank ...	3·50	0·13	Left ...	5,280
	0·68 in 100 ...	D	42·00	Bank ...	28·00	1·54	...	...
	...	...	...	Cutting ...	14·00	2·37	Right...	5,280
66	1 in 100 ...	D	40·00	Bank ...	10·00	0·67	...	...
	...	...	...	Cutting ...	10·00	0·78	...	...
	...	...	...	Bank ...	20·00	1·74	...	...
	Level	...	6·00	Cutting ...	6·00	0·80	...	...
67	0·96 in 100 ...	D	51·00	Bank ...	12·00	1·02	...	...
	...	...	...	Cutting ...	6·00	1·14	...	...
	...	...	...	Bank ...	6·00	0·24	Right...	5,280
	...	...	...	Cutting ...	8·00	1·00	...	...
	...	...	...	Bank ...	19·00	1·71	...	...
68	0·14 in 100 ...	D	47·00	Bank ...	30·00	1·89	...	...
	...	...	...	Cutting ...	17·00	1·87	...	...
	1 in 100 ...	D	44·00	Bank ...	11·00	0·49	Left ...	5,280
69	...	...	...	Cutting ...	8·00	0·27	...	...
	...	...	...	Bank ...	4·00	0·69	...	...
	...	...	...	Cutting ...	5·00	0·34	...	...
	...	...	...	Bank ...	6·00	0·67	...	...
	Level	...	10·00	Cutting ...	8·00	1·07	...	...
	...	...	...	Bank ...	2·00	1·08	...	...
	1·09 in 100 ...	D	14·00	Cutting ...	14·00	0·62	...	...
70	1 in 100 ...	D	16·00	Bank ...	16·00	12·60	...	...
	Level	...	22·00	Bank ...	6·00	7·68	...	...
	...	...	...	Cutting ...	8·00	2·15	...	...
	...	...	...	Bank ...	8·00	10·67	...	...
70¾	Hospet station.	...	...	...	...	...	...	...
	0·50 in 100 ...	D	12·00	Bank ...	12·00	10·16	...	...
71	Level	...	12·00	Cutting ...	7·00	2·37	...	...
	...	...	...	Bank ...	5·00	2·71	...	...
	0·22 in 100 ...	D	17·00	Bank ...	17·00	9·83	...	...
	0·64 in 100 ...	D	19·00	Bank ...	19·00	2·50	Left ...	2,640
	1·39 in 100 ...	D	18·00	Bank ...	18·00	4·13	Right...	5,280
72	0·05 in 100 ...	U	32·73	Bank ...	32·73	7·12	Left ...	2,640
	1 in 50 ...	U	9·69	Bank ...	9·69	11·05	...	...
73	Level	...	41·19	Bank ...	41·19	17·25	...	...
	Tungabhudra bridge, 38—60 feet spans.				...	...	...	...
	1 in 100 ...	U	24·31	Bank ...	10·27	5·21	...	...
	...	...	...	Cutting ...	14·04	5·55	Right...	3,960
74	Level	...	13·00	...	13·00	3·62	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
	Munirabad station.	...	...	...	...	...	...	...
	1 in 100 ...	D	10·00	Bank ...	10·00	7·41	...	...
	Level	...	19·00	Bank ...	15·00	7·38	...	...
	1 in 100 ...	U	38·00	Cutting ...	4·00	1·24	...	...
75	1 in 100 ...	U	38·00	Bank ...	32·00	8·90	...	...
	...	...	...	Cutting ...	6·00	3·02	...	...
	Level	...	7·00	Cutting ...	7·00	2·47	...	...
	1 in 100 ...	D	15·00	Cutting ...	5·00	1·75	...	...
	...	...	...	Bank ...	10·00	8·84	Left ...	3,280
76	Level	...	6·00	Bank ...	6·00	10·27	...	...
	1 in 100 ...	U	17·00	Bank ...	8·00	10·99	...	...
	...	...	...	Cutting ...	9·00	2·59	...	...
	Level	...	21·00	Cutting ...	11·00	1·62	...	...
	...	...	...	Bank ...	10·00	9·79	...	...
	1 in 185 ...	U	49·00	Cutting ...	9·00	1·73	...	...
	...	...	...	Bank ...	2·00	2·76	...	...
77	...	...	...	Cutting ...	12·00	6·59	...	...
	...	...	...	Bank ...	16·00	10·47	...	...
	...	...	...	Cutting ...	2·50	6·37	...	...
	...	...	...	Bank ...	8·00	3·34	...	...
	Level	...	51·00	Cutting ...	13·00	9·31	...	...
78	...	...	...	Bank ...	21·00	9·69	...	...
	...	...	...	Cutting ...	10·00	4·24	...	...
	...	...	...	Bank ...	7·00	4·13	...	...
	1 in 100 ...	U	20·00	Bank ...	18·00	8·43	...	...
79	...	...	...	Cutting ...	2·00	2·30	...	...
	Level	...	8·00	Cutting ...	8·00	3·42	...	...
	1 in 100 ...	D	11·00	Cutting ...	4·00	0·67	...	...
	...	...	...	Bank ...	7·00	5·11	...	...
	Level	...	11·00	Cutting ...	11·00	9·53	...	...
	1 in 100 ...	U	36·00	Bank ...	19·00	3·36	Left ...	5,280
80	...	...	...	Cutting ...	11·00	1·57	...	...
	...	...	...	Bank ...	6·00	0·77	...	...
	1 in 125 ...	U	20·00	Bank ...	20·00	2·95	...	...
	Level	...	15·00	Bank ...	15·00	2·05	...	...
81	1 in 167 ...	U	17·00	Bank ...	17·00	11·07	...	...
	Level	...	8·00	Cutting ...	8·00	3·30	...	...
	1 in 100 ...	D	9·00	Cutting ...	4·00	1·41	...	...
	...	...	...	Bank ...	5·00	1·87	...	...
	Level	...	13·00	Cutting ...	1·00	1·53	...	...
	...	...	...	Bank ...	12·00	11·19	...	...
	1 in 125 ...	U	21·00	Bank ...	4·00	3·18	...	...
82	...	...	...	Cutting ...	6·00	1·49	...	...
	...	...	...	Bank ...	11·00	5·73	...	...
	Level	...	11·00	Cutting ...	4·00	1·11	...	...
	...	...	...	Bank ...	1·00	0·75	...	...
	...	...	...	Cutting ...	6·00	7·16	...	...
	1 in 100 ...	D	6·00	Cutting ...	1·00	3·66	...	...
	...	...	...	...	5·00	6·95	...	...
	Level	...	7·00	Bank ...	7·00	14·52	...	...
	1 in 100 ...	U	14·00	Bank ...	7·00	12·32	...	...
	...	...	...	Cutting ...	7·00	3·00	...	...
83	Level	...	28·00	Cutting ...	11·00	6·14	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
	...	...	...	Bank ...	6·00	6·11	...	...
	...	...	...	Cutting ...	4·00	0·73	...	...
	...	...	...	Bank ...	7·00	12·53	...	...
	1 in 100 ...	U	32·00	Bank ...	19·00	16·26	...	...
84	...	...	...	Cutting ...	13·00	1·62	...	...
	1 in 133 ...	U	32·00	Bank ...	32·00	4·55	Right...	10,560
85	1 in 100 ...	U	39·00	Bank ...	28·00	18·02	...	...
	...	...	...	Cutting ...	8·00	2·79	...	...
	...	...	...	Bank ...	3·00	1·45	...	...
	Level ...	...	23·00	Bank ...	1·00	1·27	...	...
	...	...	...	Cutting ...	20·00	3·93	...	...
	...	...	...	Bank ...	2·00	2·04	...	...
86	1 in 125 ...	D	80·00	Bank ...	48·00	10·17	Left ...	6,600
	...	...	...	Cutting ...	3·00	0·34	...	...
	...	...	...	Bank ...	1·00	0·23	...	...
	...	...	...	Cutting ...	1·00	0·01	...	...
87	...	...	...	Bank ...	27·00	5·26	...	...
88	Level ...	...	35·00	Bank ...	35·00	9·42	...	...
87¾	Kobal station.	...	...	...	...	...	...	...
	1 in 120 ...	D	17·40	Bank ...	17·40	15·84	Right...	2,000
	Level ...	...	16·45	Bank ...	16·45	25·54	...	...
	Barra nala girder 10 in 60 span.				...	...	...	...
89	1 in 151 ...	U	24·15	Bank ...	24·15	13·33	Left ...	5,280
	Level ...	...	38·00	Cutting ...	14·00	5·77	...	...
	...	...	...	Bank ...	24·00	11·89	...	...
90	1 in 125 ...	U	22·00	Bank ...	15·00	18·61	...	...
	...	...	...	Cutting ...	7·00	4·04	...	...
	Level ...	...	19·00	Cutting ...	16·00	4·94	...	...
	...	...	...	Bank ...	3·00	0·44	...	...
	1 in 125 ...	D	12·00	Bank ...	12·00	7·81	...	...
91	Level ...	U	24·00	Bank ...	24·00	22·73	...	...
	1 in 125 ...	U	44·00	Bank ...	16·00	8·81	...	...
	...	...	...	Cutting ...	18·00	2·59	Right...	5,280
92	...	...	...	Bank ...	10·00	3·15	...	...
	1 in 303 ...	U	84·00	Bank ...	14·00	2·05	...	...
	...	...	...	Cutting ...	2·00	0·20	...	...
93	...	...	...	Bank ...	68·00	5·69	...	...
94	1 in 143 ...	U	43·00	Bank ..	43·00	4·38	Left ...	5,280
	1 in 165 ...	U	35·00	Cutting ...	14·00	1·80	...	...
95	...	...	...	Bank ...	18·00	10·42	...	...
	...	...	...	Cutting ...	3·00	2·62	...	...
	1 in 227 ...	U	42·00	Cutting ...	6·00	3·70	...	...
	...	...	...	Bank ...	21·00	14·84	...	...
	...	...	...	Cutting ...	10·00	5·18	...	...
	...	...	...	Bank ...	5·00	5·32	...	...
95¼	Bhanapur station.		...	...	...	...	...	...
96	1 in 100 ...	U	63·00	Bank ...	24·00	16·44	...	...
	...	...	...	Cutting ...	17·00	6·47	...	...
	...	...	...	Bank ...	7·00	6·79	...	...
97	...	...	...	Bank ...	7·00	6·79	...	...
	...	...	...	Cutting ...	6·00	2·62	...	...
	...	...	...	Bank ...	9·00	12·93	...	...
	1 in 175 ...	U	41·00	Bank ...	20·00	16·65	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66' chain.	Formation.	Length in chains, 66' chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
								FEET.
	...	...	...	Cutting ...	18·00	2·38	...	...
	...	...	...	Bank ...	3·00	1·01	...	...
98	1 in 833 ...	U	105·00	Bank ...	50·00	7·73	Left ...	5,280
99	...	...	...	Cutting ...	26·00	1·04	...	...
	...	...	...	Bank ...	29·00	1·68	Right...	5,280
100	1 in 270 ...	U	38·00	Bank ...	32·00	0·71	...	...
	...	...	...	Cutting ...	6·00	1·23	...	...
101	1 in 500 ...	U	34·00	Cutting ...	18·00	2·36	Left ...	5,280
	...	...	...	Bank ...	16·00	6·72	...	...
102	Level ...	...	42·40	Bank ...	37·00	4·75	...	...
	...	...	...	Cutting ...	2·00	0·38	...	...
	...	...	...	Bank ...	3·40	1·63	...	...
102	Bannikoppa station.		...	...	...	...	...	...
103	1 in 370 ...	U	150·60	Bank ...	99·60	6·11	...	...
	...	...	...	Cutting ...	11·00	1·77	...	...
	...	...	...	Bank ...	40·00	8·68	...	...
105, 106	1 in 500 ...	U	290·00	Bank ...	65·00	14·81	Left ...	5,280
	...	...	...	Cutting ...	27·00	2·56	...	...
107	...	...	...	Bank ...	61·00	10·05	Left ...	5,280
	...	...	...	Cutting ...	2·00	0·09	...	...
	...	...	...	Bank ...	3·00	0·77	...	...
108	...	...	...	Cutting ...	5·00	0·68	...	...
	...	...	...	Bank ...	20·00	8·90	...	...
	...	...	...	Cutting ...	16·00	5·79	Right...	5,280
	...	...	...	Bank ...	8·00	1·97	...	...
	...	...	...	Cutting ...	5·00	1·46	...	...
109	...	...	...	Bank ...	12·00	3·95	...	...
	...	...	...	Cutting ...	5·00	2·46	...	...
	...	...	...	Bank ...	23·00	11·45	...	...
	...	...	...	Cutting ...	11·00	4·31	...	...
	...	...	...	Bank ...	29·00	18·16	...	...
111	1 in 270 ...	U	71·00	Bank ...	42·00	6·76	Right...	2,640
	...	...	...	Cutting ...	20·00	0·62	...	...
	...	...	...	Bank ...	9·00	4·06	...	...
112, 113	Level ...	...	74·00	Bank ...	74·00	9·80	Left ...	2,640
	...	...	...	...	...	...	Left ...	2,640
	...	...	...	...	...	...	Left ...	2,640
112¼	Harlapur station.		...	...	...	...	...	...
	1 in 250 ...	U	85·00	Bank ...	29·00	10·06	...	...
	...	...	...	Cutting ...	2·00	0·49	...	...
114	...	...	...	Bank ...	15·00	4·98	...	...
	...	...	...	Cutting ...	11·50	2·20	...	...
	...	...	...	Bank ...	28·00	5·68	Left ...	2,640
	Level ...	...	80·00	Cutting ...	10·00	2·24	...	...
115, 116	...	...	...	Bank ...	70·00	14·53	Left ...	2,640
117	1 in 149 ...	D	35·00	Cutting ...	20·00	8·29	Left ...	10,560
	...	...	...	Bank ...	15·00	10·84	...	...
	Level ...	...	20·00	Bank ...	20·00	16·37	...	...
	1 in 143 ...	U	30·00	Bank ...	2·00	1·83	...	...
	...	...	...	Cutting ...	2·00	0·47	...	...

Working Section—Main Line—Guntakal Junction to Castle Rock and Portuguese Frontier—cont.

Mile.	Gradient.	Up or down.	Length in chains, 66′ chain.	Formation.	Length in chains, 66′ chain.	Maximum height or depth.	Curves.	
							Direction.	Radius.
								FEET.
	...	...	...	Bank ...	2·00	1·93	...	...
	...	...	...	Cutting ...	10·00	2·92	...	...
	...	...	...	Bank ...	2·00	1·03	...	...
	...	...	...	Cutting ...	2·00	1·39	...	...
	...	...	...	Bank ...	8·00	4·73	...	...
	...	...	...	Cutting ...	2·00	0·47	...	...
118	Level ...	...	25·00	Cutting ...	25·00	7·57	Right...	5,280
	1 in 133 ...	D	23·00	Bank ...	23·00	6·84	Left ...	5,280
119	Level ...	...	28·00	Bank ...	28·00	21·02	Left ...	2,640
	1 in 100 ...	U	24·00	Bank ...	17·00	3·45	...	...
	...	...	...	Cutting ...	7·00	1·69	...	...
120	Level ...	...	14·00	Cutting ...	14·00	6·76	Right...	2,640
	1 in 154 ...	D	14·62	Cutting ...	7·62	1·86	...	...
	...	...	...	Bank ...	7·00	7·09	...	...
	Level	...	19·38	Bank ...	19·38	20·11	...	...
	1 in 125 ...	U	34·00	Bank ...	11·00	3·48	...	...
121	...	...	...	Cutting ...	17·00	2·82	Left ...	2,640
	...	...	...	Bank ...	6·00	1·48	...	...
	Level ...	...	21·00	Cutting ...	21·00	5·33	Right...	2,640
	1 in 100 ...	D	25·00	Bank ...	12·00	4·22	...	...
122	...	...	...	Bank ...	13·00	19·14	...	...
	Level ...	...	30·95	Bank ...	30·95	23·57	...	...
123	1 in 200 ...	U	16·58	Bank ...	16·58	20·38	...	...
	Level ...	...	30	Bank ...	8	5·18	...	...
	...	...	...	Cutting ...	14	2·08	...	...
123¾	...	...	...	Bank ...	8	2·63	...	...
	Gadag station.	...	...	...	...	...	...	...

NOTE.—From Gadag on to Portuguese Frontier the mileage is taken from Bellary to facilitate reference to railway records. It is only necessary to add on 30¼ miles to obtain the correct distance from Guntakal Junction.

Working Section—Main Line—Gadag to Portuguese Frontier.

From Bellary.	Gradient.	Up or down.	Length in chains, 66′ chain.	Formation.	Length in chains, 66′ chain.	Maximum height or depth.	Curves.	
							Direction.	Radius.
MILE.								
	Gadag station.	...	...	...	...	...	...	...
93	Level	...	30	Bank ...	8	5·18	...	...
	...	...	...	Cutting ...	14	2·08	...	...
	...	...	...	Bank ...	8	2·63	...	...
	1 in 200 ...	D	20	Bank ...	20	7·40	...	...
94	Level	...	50	Bank ...	50	15·56	Right...	80 chains.
	1 in 100 ...	U	55	Bank ...	46	6·39	...	...
	...	...	...	Cutting ...	7	1·53	Left ...	80 chains.
	...	...	...	Bank ...	2	2·21	...	...
95	Level	...	18	Bank ...	2½	2·18	...	...
	...	...	...	Cutting ...	15½	4·03	...	...
	1 in 100 ...	D	36	Cutting ...	2	0·88	...	...
	...	...	...	Bank ...	4	1·03	...	...
	...	...	...	Cutting ...	1	0·69	...	...
	...	...	...	Bank ...	2	0·58	...	...
	...	...	...	Cutting ...	1	0·08	...	...
	...	...	...	Bank ...	1	...	...	...
	...	...	...	Cutting ...	2	0·24	...	...
	...	...	...	Bank ...	23	3·69	...	...
96	1 in 1,320 ...	U	98	Bank and bridge, 4—40′ girders.	65	14·92	Mani nala.	
	...	...	...	Cutting ...	4	0·66	...	...
	...	...	...	Bank and bridge, 2—30′ arches.	29	14·76	Bingad katti nala.	
97	1 in 100 ...	U	50	Bank ...	37	12·07	...	...
	...	...	...	Cutting ...	1	0·77	...	...
	...	...	...	Bank ...	6	4·62	...	...
	...	...	...	Cutting ...	2	0·88	...	...
	...	...	...	Bank ...	4	2·82	...	...
	Level	...	10	Bank ...	1	0·44	...	...
	...	...	...	Cutting ...	4	0·63	...	...
	...	...	...	Bank ...	5	2·47	...	...
	1 in 100 ...	D	22	Bank ...	22	6·97	...	...
98	Level	...	20	Bank ...	20	11·33	...	...
	1 in 100 ...	U	18	Bank ...	13	5·98	...	...
	...	...	...	Cutting ...	5	1·69	...	...
	Level	...	13	Cutting ...	13	5·50	Right...	80 chains.
99	1 in 100 ...	D	100	Cutting ...	60	6·08	Right...	40 do.
	...	...	...	Bank ...	40	20·25	Left ...	40 do.
100	Level	...	30	Bank and bridge, 5—30′ arches.	30	27·87	Hundigalkatti	
	1 in 100 ...	U	25	Bank ...	25	5·75	...	...
	1 in 150 ...	U	28	Bank ...	28	4·22	...	...
101	Level	...	35	Bank ...	35	8·13	...	...
	Halkoti station.	...	...	...	...	...	...	...
	1 in 100 ...	D	63	Bank ...	9	6·48	Right...	40 chains.
	...	...	...	Cutting ...	34	2·90	Left ...	80 do.
	...	...	...	Bank ...	20	11·01	...	...
102	Level	...	4	Bank and bridge, 2—30′ arches.	4	17·48	Masim nala.	

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains 66′ chain.	Formation.	Length in chains 66′ chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	1 in 250 ...	D	59	Bank ...	59	8·91	Right...	80 chains.
103	Level	...	30	Bank ...	30	9·39	...	...
	1 in 100 ...	D	71	Bank ...	7	3·86	...	...
	...	...	...	Cutting ...	2	0·69	...	...
	...	...	...	Bank ...	1	0·80	...	...
	...	...	...	Cutting ...	25	4·24	...	...
104	...	...	...	Bank ...	36	11·20	Right...	40 chains.
	Level	...	10	Bank and bridge, 3—60′ girders.	10	22·36	Sawal nala.	
	1 in 264 ...	D	22	Bank ...	22	15·91	Left ...	40 chains.
	Level	...	6	Bank ...	6	6·97	...	...
	1 in 100 ...	U	33	Bank ...	33	7·73	...	...
105	1 in 150 ...	U	52	Bank ...	52	10·48	...	...
	1 in 330 ...	U	31	Bank ...	31	4·11	...	...
106	Level	...	18	Bank ...	18	3·20	...	...
	1 in 264 ...	D	30	Bank ...	30	3·33	...	...
	1 in 330 ...	U	23	Bank ...	23	7·61	...	...
107	Level	...	61	Bank ...	61	7·58	...	...
	Annigeri station.		...	...	...	...	...	...
	1 in 330 ...	D	20	Bank ...	20	5·44	...	...
108	1 in 250 ...	D	30	Bank ...	30	4·24	...	...
	1 in 220 ...	D	30	Bank ...	30	3·22	...	...
109 / 110	1 in 300 ...	D	160	Bank ...	160	5·32	...	...
	1 in 500 ...	D	29	Bank ...	29	5·02	...	...
111	1 in 150 ...	D	23	Bank ...	23	4·78	...	...
	Level ...	...	29	Bank ...	29	5·81	...	...
112	1 in 250 ...	D	60	Bank ...	60	6·03	...	...
	Level ...	...	24	Bank ...	24	3·25	...	...
113	1 in 220 ...	D	38	Bank ...	38	2·90	Left ...	80 chains.
	Level ...	...	38	Bank ...	38	5·95	Left ...	40 do.
114	1 in 250 ...	D	54	Bank ...	54	3·78	Right...	40 do.
	1 in 231 ...	D	49	Bank ...	49	9·39	...	...
115	1 in 132 ...	D	48·29	Bank ...	48·29	4·50	Right...	80 chains.
	Level ...	...	11	Bank ...	11	6·62	...	...
116	1 in 200 ...	U	34	Bank ...	34	18·6	...	...
	Level ...	...	9	Benni hulla. bridge, 9—60′ girders.	9	33·72	Benni hulla	...
	1 in 300 ...	D	30	Bank ...	30	18·73	Left ...	40 chains.
	Level ...	...	7	Bank ...	7	4·84	...	...
117	1 in 300 ...	U	46	Bank ...	46	5·29	Right...	80 chains.
	Level ...	...	30	Bank ...	30	5·38	...	...
	Dundur station.		...	...	...	...	...	...
118 / 119	1 in 200 ...	U	120	Bank ...	120	9·83	Right...	80 chains.
120	1 in 150 ...	U	90	Bank ...	90	5·69	Left ...	80 chains.
	1 in 200 ...	U	50	Bank ...	50	4·90	...	...
121	1 in 132 ...	U	46	Bank ...	46	7·27	Left ...	40 chains.
	Level ...	...	15	Bank ...	15	3·29	...	...
122	1 in 120 ...	U	47	Bank ...	47	5·45	Left ...	80 chains.
123 / 124	1 in 800 ...	U	145	Bank ...	145	5·24	Right. / Left. / Right.	40 do. / 40 do. / 40 do.

Working Section— Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains, 66′ chain.	Formation.	Length in chains, 66′ chain.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	1 in 1,000 ...	U	38	Bank ...	38	3·63	...	...
125	1 in 300 ...	U	44	Bank ..	44	5·64	...	...
	Level ...	...	49	Bank ...	49	12·66	...	...
	1 in 115 ...	U	15	Bank ...	15	4·68	...	...
126	Level ...	...	11	Bank ...	11	2·34	...	...
	1 in 140 ...	D	28	Bank ...	28	8·95	...	...
	1 in 100 ...	D	36	Bank ...	36	13·09	Left ...	40 chains.
	Level ...	...	2·30	Bank ...	2·30	5·80	...	...

NOTE.—The measurements up to this point, 14 chains short of mile 127, are taken in chains of 66 feet, the remainder are in the ordinary chain of 100 feet.

127	1 in 150 ...	U	25·65	Bank ...	13	4·77	Right...	1,400 feet.
	...	...	...	Cutting ...	6	1·06	...	...
	...	...	...	Bank ...	3	5·36	...	...
	...	...	...	Cutting ...	3	0·47	...	...
	...	...	...	Bank ...	0·65	1·07	...	...
	Level ...	...	14·35	Bank ...	11	2·08	...	...
	...	...	...	Cutting ...	3·35	2·47	...	...
	1 in 100 ...	D	7	Cutting ...	2	2·36	Right...	1,200 feet.
	...	...	...	Bank ...	5	4·15	...	...
128	Level ...	...	24	Bank ...	7	6·16	...	...
	...	...	...	Cutting ...	5½	2·93	...	...
	...	...	...	Bank ...	4	3·45	...	...
	...	...	...	Cutting ...	4	2·77	...	...
	...	...	...	Bank ...	½	0·38	...	...
	...	...	...	Cutting ...	3	2·52	...	...
	1 in 100 ...	D	9	Cutting ...	4½	3·92	...	...
	...	...	...	Bank ...	4½	5·51	...	...
	Level ...	...	11·88	Bank ...	11·88	18·18	...	...
	1 in 100 ...	U	14	Bank ...	14	25·44	Right...	1,400 feet.
129	Level ...	...	20	Bank ...	20	5·78	...	...
	Hubli station.	...	...	...	...	...	...	...
	1 in 100 ...	D	12	Bank ...	12	11·95	...	...
	Level ...	...	7	Bank ...	3	11·85	...	...
	...	...	...	Cutting ...	4	9·39	...	...
	1 in 100 ...	D	22	Cutting ...	6	12·19	Right...	20 chains.
	...	...	...	Bank ...	16	17·64	...	...
130	Level ...	...	4	Bank ...	4	22·44	Left ...	20 chains.
	1 in 100 ...	U	56	Bank ...	10	22·40	...	...
	...	...	...	Cutting ...	6	10·01	...	...
	...	...	...	Bank ...	3	1·72	...	...
	...	...	...	Cutting ...	1	0·78	...	...
	...	...	...	Bank ...	4	4·76	...	...
	...	...	...	Cutting ...	9	3·27	Right...	40 chains.
	...	...	...	Bank ...	9	16·23	...	...
	...	...	...	Cutting ...	4½	1·64	...	...
131	...	...	...	Bank ...	7	5·14	Right...	20 chains.
	...	...	..	Cutting ...	2½	12·83	...	...
	Level ...	...	14	Cutting ...	3½	16·14	...	...
	...	...	...	Bank ...	10½	13·09	...	...
	1 in 100 ...	U	41	Bank ...	4½	9·35	...	..
	...	...	...	Cutting ...	4	3·64	Left ...	50 chains.
	...	...	...	Bank ...	5	9·01	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	9	6·40	...	...
	...	...	...	Bank ...	3	2·39	...	...
	...	...	...	Cutting ...	1	1·64	...	...
132	...	...	...	Bank ...	11½	11·98	Left ...	50 chains.
	...	...	...	Cutting ...	3	3·97	...	...
	1 in 133 ...	U	40	Cutting ...	3½	3·39	...	...
	...	...	...	Bank ...	36½	5·48	...	...
133 / 134	1 in 500 ...	U.	60	Bank ...	60	4·13	...	...
	1 in 150 ...	U	18	Bank ...	18	3·35	Left ...	30 chains.
	Level ...	...	26	Bank ...	26	5·95	...	...
135	1 in 100 ...	U	31	Bank ...	31	6·91	Left ...	40 chains.
	1 in 500 ...	U	25	Bank ...	25	5·34	...	...
136	1 in 100 ...	U	28	Bank ...	13½	5·38	...	...
	...	...	...	Cutting ...	12	2·12	...	...
	...	...	...	Bank ...	2½	1·64	...	...
	Level ...	...	23	Bank ...	23	13·15	...	...
137	1 in 150 ...	U	9	Bank ..	5½	6·95	Right...	20 chains.
	...	...	...	Cutting ...	3½	1·57	...	...
	Level ...	...	24	Cutting ..	8	3·19	...	...
	...	...	...	Bank ...	16	7·49	...	...
	1 in 100 ...	U	19	Bank ...	19	8·26	...	...
138	1 in 133 ...	U	40	Bank ...	40	8·35	Left ...	30 chains.
139	1 in 150 ...	U	21	Bank ...	21	11·03	Left ...	30 do.
	Level ...	...	14	Bank ...	9	11·46	...	...
	...	...	...	Cutting ...	5	6·10	...	...
	1 in 200 ...	D	10	Cutting ...	6	6·71	Right...	16 chains.
	...	...	...	Bank ...	4	7·24	...	...
	Level ...	..	5	Bank ...	5	18·76	...	...
	1 in 100 ...	U	17	Bank ...	8	21·21	...	...
	...	...	...	Cutting ...	9	6·98	Left ...	20 chains.
140	Level ...	...	10	Cutting ...	2	4·62	...	...
	...	...	...	Bank ...	8	7·14	...	...
	1 in 100 ...	U	48	Bank ...	32	16·28	Right...	20 chains.
	...	...	...	Cutting ..	1	2·96	...	...
	...	...	...	Bank ...	2	5·74	...	...
141	...	...	...	Cutting ...	13	40·77	Left ...	50 chains.
	Level ...	...	42	Cutting ...	8	30·36	...	...
	...	...	...	Bank ...	8½	41·42	...	...
	...	...	...	Cutting ...	7	20·11	...	...
	...	...	...	Bank ...	5	44·07	...	...
	Dharwar station.	...	...	...	...	...	...	...
	...	...	...	Cutting ...	5½	11·61	...	...
	...	...	...	Bank ...	4	3·63	...	...
	...	...	...	Cutting ...	4	2·20	...	...
	1 in 100 ...	D	40	Bank ...	4	3·90	...	...
	...	...	...	Cutting ...	4½	4·82	Left ...	16 chains.
142	...	...	...	Bank ...	8½	13·08	...	...
	...	...	...	Cutting ...	3	1·22	...	...
	...	...	...	Bank ...	17	27·71	Right...	16 chains.
	...	...	...	Cutting ...	3	6·75	...	...
	1 in 200 ...	D	30	Cutting ...	5	7·04	...	...
	...	...	...	Bank ...	7	7·88	...	...
	...	...	...	Cutting ...	3	1·59	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
143	...	...	...	Bank ...	7	3·66	...	...
	...	...	...	Cutting ...	8	3·29	Left ...	16 chains.
	1 in 133 ...	D	24	Bank ...	5	7·38	...	...
	...	...	...	Cutting ...	5	4·14	...	...
	...	...	...	Bank ...	14	8·19	...	...
	Level ...	..	5	Bank ...	5	13·71	...	...
144	1 in 100 ...	U	38	Bank ...	24	21·34	Right...	20 chains.
	...	...	...	Cutting ...	14	8·56	...	...
	Level ...	...	8	Cutting ...	5	7·01	...	...
	...	..	...	Bank ...	3	4·50	...	...
	1 in 200 ...	D	16	Bank ...	3	1·30	...	...
	...	...	...	Cutting ...	5	2·50	...	...
	...	...	...	Bank ...	8	10·73	...	...
	Level ...	...	38	Bank ...	5	21·56	...	...
145	...	...	...	Cutting ...	11	5·41	Left ...	20 chains.
	...	...	...	Bank ...	8	14·70	...	...
	...	...	...	Cutting ...	11	4·90	...	...
	...	...	...	Bank ...	3	11·85	...	...
	1 in 100 ...	U	13	Bank ...	7	18·27	...	...
	...	...	...	Cutting ...	6	6·63	...	...
	Level ...	...	4	Cutting ...	4	6·56	Right...	60 chains.
	1 in 100 ...	D	35	Cutting ...	3	2·80	...	...
146	...	...	...	Bank ...	17	18·89	...	...
	...	...	...	Cutting ...	15	9·19	...	...
	Level ...	...	8	Bank ...	8	20·98	...	...
	1 in 100 ...	U	20	Bank ...	6	7·71	...	...
	...	...	...	Cutting ...	3	0·70	...	...
147	...	...	...	Bank ...	11	3·96	...	...
	Level ...	...	31	Bank ...	21	4·91	...	...
	...	...	...	Cutting ...	10	6·82	Left ...	16 chains.
	1 in 100 ...	D	90	Cutting ...	5	3·97	...	...
148	...	...	...	Bank ...	19	14·34	...	...
	...	...	...	Cutting ...	7	16·62	...	...
	...	...	...	Bank ...	19	12·93	Left ...	20 chains.
	...	...	...	Cutting ...	3½	5·21	...	...
	...	...	...	Bank ...	3½	5·32	...	...
	...	...	...	Cutting ...	5½	8·08	...	...
149	...	...	...	Bank ...	9½	12·44	Right...	16 chains.
	...	...	...	Cutting ...	5	5·67	...	...
	...	...	...	Bank ...	13	19·51	Left ...	16 chains.
	1 in 133 ...	D	24	Cutting ...	9	12·47	...	...
	...	...	...	Bank ...	9	19·99	...	...
	...	...	...	Cutting ...	3½	3·26	...	...
	...	...	...	Bank ...	½	1·35	...	...
	...	...	...	Cutting ...	2	5·32	...	...
	1 in 100 ...	D	10	Cutting ...	8	10·63	Right...	10 chains.
150	...	...	...	Bank ...	2	3·11	...	...
	Level ...	...	17	Bank ...	11	10·65	...	...
	...	...	...	Cutting ...	6	8·61	...	...
	Mugad station.	...	...	...	...	...	...	...
	1 in 100 ...	D	63	Bank ...	4	3·23	Right...	20 chains.
	...	...	...	Cutting ..	7	13·32	...	...
	...	...	...	Bank ...	10	10·47	...	...
	...	...	...	Cutting ...	4	16·78	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
151	...	...	...	Bank ...	13	32·95	Left ...	15 chains.
	...	...	...	Cutting ...	2½	8·13	...	...
	...	...	...	Bank ...	17	26·05	Right...	12 chains.
	...	...	...	Cutting ...	3	8·21	...	...
	...	...	...	Bank ...	2½	4·52	...	...
	Level ...	...	5	Bank ...	3	10·81	Left ...	30 chains.
	...	...	...	Cutting ...	2	13·67	...	...
	1 in 100 ...	D	144	Cutting ...	4	10·51	...	...
152	...	...	...	Bank ...	15	18·39	Right...	10 chains.
	...	...	...	Cutting ...	6½	5·22	...	...
	...	...	...	Bank ...	2	0·75	...	...
	...	...	...	Cutting ...	3½	1·76	...	...
	...	...	...	Bank ...	16	18·08	...	...
	...	...	...	Cutting ...	6	13·65	Left ...	50 chains.
	...	...	...	Bank ...	8	22·07	...	...
	...	...	...	Cutting ...	6	10·49	...	...
153	...	...	...	Bank ...	9	21·29	...	...
	...	...	...	Cutting ...	4	6·36	...	...
	...	...	...	Bank ...	2	1·22	Left ...	12 chains.
	...	...	...	Cutting ...	4½	4·01	...	...
	...	...	...	Bank ...	9½	23·91	...	...
	...	...	...	Cutting ...	7	2·88	...	...
	...	...	...	Bank ...	4	3·07	...	...
	...	...	...	Cutting ...	1	0·72	...	...
	...	...	...	Bank ...	4	5·46	...	...
	...	...	...	Cutting ...	6	8·80	Right...	20 chains.
154	...	...	...	Bank ...	12	12·98	...	...
	...	...	...	Cutting ...	5	7·86	...	...
	...	...	...	Bank ...	9	12·73	...	...
	Level ...	...	5	Cutting ...	5	13·32	Left ...	13 chains.
	1 in 100 ...	D	20	Cutting ...	2	2·73	...	...
	...	...	...	Bank ...	12	6·39	...	...
	...	...	...	Cutting ...	2	6·36	...	...
	...	...	...	Bank ...	4	14·47	Right...	20 chains.
	1 in 125 ...	D	53·75	Bank ...	4½	15·10	...	...
	...	...	...	Cutting ...	2	3·21	...	...
155	...	...	...	Bank ...	13	5·77	Left ...	13 chains.
	...	...	...	Cutting ...	2¼	1·78	...	...
	...	...	...	Bank ...	32	5·59	Right...	50 chains.
156	Level ...	...	8·25	Bank ...	8·25	8·78	...	...
	Jutihal nala bridge, 5—30 feet arches.				...	...	...	...
	1 in 100 ...	D	12	Bank ...	12	20·79	Left ...	16 chains.
	Level ...	...	20	Cutting ...	6	1·93	...	...
	...	...	...	Bank ...	6	12·94	...	...
	...	...	...	Cutting ...	4	9·27	...	...
	...	...	...	Bank ...	1	4·47	Right...	10 chains.
	...	...	...	Cutting ...	3	14·92	...	...
	1 in 100 ...	D	22	Bank ...	12	11·19	...	...
	...	...	...	Cutting ...	2	0·05	...	...
	...	...	...	Bank ...	1	0·40	...	...
157	...	...	...	Cutting ...	7	3·18	Right...	100 chains.
	Level ...	...	20	Cutting ...	6	2·66	...	...
	Kambarganvi station.			...	...	...	...	...
	...	...	...	Bank ...	14	5·85	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	1 in 100 ...	D	10	Bank ...	10	5·25	Right...	16 chains.
	Level ...	...	16	Bank ...	16	24·78	Left ...	13 chains.
158	1 in 200 ...	U	14	Bank ...	9	23·82	...	...
	...	...	...	Cutting ...	2	4·90	...	...
	...	...	...	Bank ...	1	1·10	...	...
	...	...	...	Cutting ...	2	3·83	...	...
	Level ...	...	4	Cutting ...	4	5·34	Right...	20 chains.
	1 in 100 ...	D	15	Bank ...	4	8·93	...	...
	...	...	...	Cutting ...	2	3·54	...	...
	...	...	...	Bank ...	9	9·30	...	...
	Level ...	...	18	Bank ...	9½	11·65	...	...
	...	...	...	Cutting ...	8½	10·43	...	...
	1 in 100 ...	D	7	Cutting ...	2	3·46	...	...
	...	...	...	Bank ...	5	11·12	...	...
159	Level ...	...	2	Bank ...	2	21·82	...	...
	1 in 100 ...	D	9	Bank ...	9	20·36	Left ...	16 chains.
	1 in 400 ...	D	37	Bank ...	31	9·70	...	...
	...	...	...	Cutting ...	1	1·58	...	...
	...	...	...	Bank ...	5	6·96	...	...
160	1 in 100 ...	D	15	Bank ...	15	5·75	Right...	25 chains.
	Level ...	...	5	Bank ...	5	12·63	...	...
	1 in 100 ...	U	30	Bank ...	25½	15·73	...	...
	...	...	...	Cutting ...	4½	6·63	...	...
	Level ...	...	4	Cutting ...	4	8·06	...	...
161	1 in 100 ...	D	82	Cutting ...	10	7·87	Left ...	30 chains.
	...	...	...	Bank ...	2	1·28	...	...
	...	...	...	Cutting ...	5	4·60	...	...
	...	...	...	Bank ...	11	9·09	...	...
	...	...	...	Cutting ...	14	10·99	Left ...	30 chains.
162	...	...	...	Bank ...	15½	21·10	...	...
	...	...	...	Cutting ...	11½	13·77	Right...	19 chains.
	...	...	...	Bank ...	13	30·64	...	...
	Level ...	...	24·87	Bank ...	14	7·37	Right...	30 chains.
	...	...	...	Cutting ...	5	0·51	...	...
	...	...	...	Bank ...	5·87	24·14	...	...
163	1 in 200 ...	U	20	Bank ...	13	10·04	...	...
	...	...	...	Cutting ...	2	0·43	Left ...	20 chains.
	...	...	...	Bank ...	5	13·32	...	...
	1 in 500 ...	U	20	Bank ...	20	9·80	...	...
164	1 in 200 ...	U	24	Bank ...	24	7·94	Right...	30 chains.
	Level	...	25	Bank ...	25	7·91	...	...
	Alnavar station.		...	...	...	...	...	...
	1 in 100 ...	U	9	Bank ...	9	14·09	...	...
	Level	...	6	Bank ...	6	18·54	...	...
	Alnavar bridge, 4—40 feet arches.				...	...	...	...
165	1 in 200 ...	U	12	Bank ...	5	10·14	...	...
	...	...	...	Cutting ...	7	7·49	Left ...	20 chains.
	Level	...	14	Bank ...	14	6·89	...	...
	1 in 100 ...	U	25	Bank ...	13	10·99	...	...
	...	...	...	Cutting ...	10	4·86	...	...
	...	...	...	Bank ...	2	6·84	...	...
	Level	...	21	Bank ...	4	10·47	...	...
166	...	...	...	Cutting ...	2	0·30	...	...
	...	...	...	Bank ...	15	1·97	Left ...	16 chains.

Working Section—Main Line—Gadaj to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	1 in 100 ..	U	185	Bank ...	18	8·61	Right...	20 chains.
	...	...	...	Cutting ...	8	9·43	...	...
167	...	...	...	Bank ...	11	15·71	...	...
	...	...	...	Cutting ...	4	3·60	Right...	20 chains.
	...	...	...	Bank ...	14	23·08	...	...
	...	...	...	Cutting ...	9	7·42	Left ...	20 chains.
	...	...	...	Bank ...	8	13·69	...	...
	...	...	...	Cutting ...	6	7·81	...	...
	...	...	...	Bank ...	5	12·68	Right...	20 chains.
168	...	...	...	Cutting ..	12	4·63	...	...
169	...	...	...	Bank ...	48	25·55	{ Left { Right	50 chains. 20 do.
	...	...	...	Cutting ...	5	5·76	Left ...	30 do.
	...	...	...	Bank ...	2	4·58	...	...
	...	...	...	Cutting ...	17	41·22	...	...
	...	...	...	Bank ...	15	40·30	...	...
	...	...	...	Cutting ...	3	10·40	Left ...	10 chains.
	Level	...	9	Cutting ...	5	12·26	...	...
	...	...	...	Bank ...	4	13·99	...	...
170	1 in 120 ...	U	78	Bank ...	10	28·78	Right...	10 chains.
	...	...	...	Cutting ...	14	4·60	...	...
	...	...	...	Bank ...	9	5·76	...	...
	...	...	...	Cutting ...	9	5·96	...	...
	...	...	...	Bank ...	7	20·63	...	...
	...	...	...	Cutting ...	3	7·31	...	...
171	...	...	...	Bank ...	12	19·52	Right...	20 chains.
	...	...	...	Cutting ...	4	4·18	...	...
	...	...	...	Bank ...	8	18·82	Right...	10 chains.
	...	...	...	Cutting ...	2	4·18	...	...
	Level	...	25	Cutting ...	7	10·61	Left ...	10 chains.
	...	...	...	Bank ...	10½	26·16	...	...
	...	...	...	Cutting ...	5	3·36	Right...	10 chains.
	...	...	...	Bank ...	2½	23·19	...	...
172	1 in 100 ...	U	52	Bank ...	13	19·24	Left ...	10 chains.
	...	...	...	Cutting ...	4	15·31	...	...
	...	...	...	Bank ...	8	22·98	Right...	10 chains.
	...	...	...	Cutting ...	4	3·57	...	...
	...	...	...	Bank ...	5	13·17	...	...
	...	...	...	Cutting ...	18	17·14	Left ...	16 chains.
173	Level	...	21	Bank ...	14	23·80	...	...
	Nagargali station.		...	...	...	...	...	...
	...	...	...	Cutting ...	7	13·56	...	...
	1 in 100 ...	U	135	Cutting ...	4	10·56	Left ...	10 chains.
	...	...	...	Bank ...	10½	13·57	Right...	10 do.
	...	...	...	Cutting ...	10	4·73	Right...	20 do.
	...	...	...	Bank ...	2½	9·54	...	...
	...	...	...	Cutting ...	8	7·76	...	...
174	...	...	...	Bank ...	2½	5·10	...	...
	...	...	...	Cutting ...	1	0·70	Right...	20 chains.
	...	...	...	Bank ...	28½	18·21	...	...
	...	...	...	Cutting ...	2	2·16	...	...
	...	...	...	Bank ...	2	11·11	...	...
	...	...	...	Cutting ...	5	2·53	Left ...	20 chains.
	...	...	...	Bank ...	5½	6·86	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	5½	6·66	...	...
175	...	...	...	Bank ...	2½	9·86	Right ...	20 chains.
	...	...	...	Cutting ...	5½	2·29	...	...
	...	...	...	Bank ...	4	11·85	...	...
	...	...	...	Cutting ...	6	1·33	...	...
	...	...	...	Bank ...	11	14·48	Right...	13 chains.
	...	...	...	Cutting ...	3	2·73	...	...
	...	...	...	Bank ...	4	6·93	...	...
	...	...	...	Cutting ..	12	34·53	Left ...	10 chains.
	Level	...	4	Cutting ...	4	39·43	...	...
176	1 in 100 ...	D	95	Cutting ...	6	22·34	Left ...	13 chains.
	...	...	...	Bank ...	1½	2·63	...	...
	...	...	...	Cutting ...	2	5·06	...	...
	...	...	...	Bank ...	13	17·39	...	...
	...	...	...	Cutting ...	3	4·81	Right...	16 chains.
	...	...	...	Bank ...	9	29·40	...	...
	...	...	...	Cutting ...	3	3·80	Left ...	13 chains.
	...	...	...	Bank ...	9½	11·10	Left ...	20 do.
	...	...	...	Cutting ...	5	3·82	...	...
177	...	...	...	Bank ...	12½	25·46	...	...
	...	...	...	Cutting ...	17½	4·13	Left ..	10 chains.
	...	...	...	Bank ...	13	40·38	Right...	13 do.
	Level	...	4	Bank ...	4	43·57	...	...
	1 in 100 ...	U	9	Bank ..	7½	18·49	Left ...	13 chains.
	...	...	...	Cutting ...	1½	5·03	...	...
178	Level	...	4	Cutting ...	4	13·38	...	...
	1 in 100 ...	D	23	Cutting ...	8	13·35	...	...
	...	...	...	Bank ...	15	19·38	Right...	18 chains.
	Level	...	7	Bank ...	7	19·53	...	...
	1 in 200 ...	U	20	Bank ...	8	1·64	...	...
	...	...	...	Cutting ...	4	5·74	...	...
179	...	...	...	Bank ...	8	16·72	...	...
	Level ...	...	6	Bank ...	3	6·30	Left ...	20 chains.
	...	...	...	Cutting ...	3	19·21	...	...
	1 in 100 ...	D	103	Cutting ...	14	32·73	Right...	13 chains.
	...	...	...	Bank ...	11	9·61	...	...
	...	...	...	Cutting	4	3·03	Right...	40 chains.
	...	...	...	Bank ...	7	1·57	...	...
	...	...	...	Cutting ...	½	0·07	...	...
	...	...	...	Bank ...	14½	28·45	Right...	13 chains.
	...	...	...	Cutting ...	6	2·36	Left ...	20 do.
	...	...	...	Bank ...	7	14·24	...	...
	...	...	...	Cutting ...	3½	1·55	...	...
	...	...	...	Bank ...	11½	10·51	...	...
	...	...	...	Cutting ...	6	2·42	Right...	20 chains.
	...	...	...	Bank ...	3½	13·43	...	...
	...	...	...	Cutting ...	3	3·12	...	...
181	...	...	...	Bank ...	11½	14·29	...	...
	1 in 200 ...	D	26	Cutting ...	6	3·75	Left ...	20 chains.
	...	...	...	Bank ...	5	16·78	...	...
	...	...	...	Cutting ...	5	3·77	...	...
	...	...	...	Bank ...	5	10·18	...	...
	...	...	...	Cutting ...	4	3·34	Left ...	13 chains.
	...	...	...	Bank ...	1	3·11	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Level ...	...	13·70	Bank ...	13·70	19·17	...	...
	Panda bridge, 3—40 feet arches.				...	...	...	...
	1 in 200 ...	D	8	Bank ...	8	14·51	...	...
182	Level ...	...	32	Bank ...	4½	11·16	Right...	10 chains.
	...	...	...	Cutting ...	6½	6·46	...	...
	...	...	...	Bank ...	4½	14·00	...	...
	...	...	...	Cutting ...	1	2·97	...	...
	...	...	...	Bank ...	8½	23·73	Left ...	10 chains.
	...	...	...	Cutting ...	7	17·93	...	...
	1 in 150 ...	D	18	Cutting ...	2	6·43	...	...
	...	...	...	Bank ...	16	17·88	...	...
183	Level ...	...	15	Bank ...	7	14·36	Left ...	10 chains.
	...	...	...	Cutting ...	½	0·39	...	...
	...	...	...	Bank ...	1	0·91	...	...
	...	...	...	Cutting ...	½	0·07	...	...
	...	...	...	Bank ...	6	16·57	...	...
	1 in 400 ...	D	32	Cutting ...	9	13·54	Right...	10 chains.
	...	...	...	Bank ...	12	18·04	Left ...	20 do.
	...	...	...	Cutting ...	2½	9·38	...	...
	...	...	...	Bank ...	1½	4·62	Right...	20 chains.
	...	...	...	Cutting ...	2½	2·98	...	...
	...	...	...	Bank ...	4½	10·98	...	...
	A bridge 3—20 feet arches.				...	...	...	...
184	Level ...	...	20	Bank ...	20	17·45	Left ...	10 chains.
	Junction with Poona Branch.				...	...	...	...
	1 in 400 ...	U	20	Bank ...	6	4·93	...	...
	...	...	...	Cutting ...	4	5·35	Right...	12 chains.
	...	...	...	Bank ...	6	15·72	...	...
	...	...	...	Cutting ...	4	5·48	...	...
	Level ...	...	62	Cutting ...	2	2·64	...	...
	...	...	...	Bank ...	2½	5·61	...	...
	...	...	...	Cutting ...	6½	4·62	...	...
185	...	...	...	Bank ...	22	19·94	Left ...	20 chains.
	Londa station.	...	...	...	...	...	...	...
	...	...	...	Cutting ...	5	4·18	...	...
	...	...	...	Bank ...	9	16·30	...	...
	...	...	...	Cutting ...	5	14·78	...	...
	...	...	...	Bank ...	2	5·58	Right...	12 chains.
	...	...	...	Cutting ...	8	22·00	...	...
	1 in 100 ...	...	15	Cutting ...	8½	25·29	Left ...	20 chains.
186	...	...	...	Bank ...	5	22·07	Right...	10 do.
	...	...	...	Cutting ...	1½	2·77	...	...
	Level ...	...	33	Bank ...	4	15·63	...	...
	Turwa river bridge, 4—40 feet arches.				2	...	...	...
	...	...	...	Bank ...	16	24·80	Right...	10 chains.
	...	...	...	Cutting ...	4	1·80	...	...
	...	...	...	Bank ...	1	0·52	Left ...	12 chains.
	...	...	...	Cutting ...	6	6·92	...	...
	1 in 200 ...	D	10	Cutting ...	3	13·05	Left ...	10 chains.
	...	...	...	Bank ...	7	9·91	...	...
187	Level ...	...	13	Bank ...	13	20·69	Right...	16 chains.
	1 in 500 ...	U	25	Bank ...	6½	16·44	Left ...	12 do.
	...	...	...	Cutting ...	4½	23·45	...	...
	...	...	...	Bank ...	13	21·05	Right ...	12 chains.

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	1	8·52	...	...
	Level ...	...	47	Cutting ...	5½	14·72	...	...
	...	...	...	Bank ...	½	0·78	...	...
	...	...	...	Cutting ...	7	9·57	...	...
	...	...	...	Bank ...	1	1·13	...	...
	...	...	...	Cutting ...	1	0·84	...	...
188	...	...	...	Bank ...	8	12·22	...	...
	...	...	...	Cutting ...	6½	11·26	Right...	19 chains.
	...	...	...	Bank ...	11½	17·17	...	...
	...	...	...	Cutting ...	2	5·58	...	...
	...	...	...	Bank ...	1	0·38	...	...
	...	...	...	Cutting ...	3	13·81	Left ...	10 chains.
	1 in 100 ...	U	15	Cutting ...	2	7·42	...	...
	...	...	...	Bank ...	13	15·50	...	...
	1 in 2,000 ...	U	80	Bank ...	½	7·24	...	...
	...	...	...	Cutting ...	5	13·86	Left ...	10 chains.
	...	...	...	Bank ...	3	8·69	...	...
	...	...	...	Cutting ...	1½	4·24	...	...
189	...	...	...	Bank ...	4	17·97	...	...
	...	...	...	Cutting ...	2½	10·62	Left ...	10 chains.
	...	...	...	Bank ...	3½	11·30	...	...
	...	...	...	Cutting ...	1	1·28	...	...
	...	...	...	Bank ...	7	20·11	...	...
	...	...	...	Cutting ...	½	1·16	Right...	10 chains.
	...	...	...	Bank ...	7½	15·39	...	...
	...	...	...	Cutting ...	3	7·32	...	...
	...	...	...	Bank ...	3	15·93	...	...
	...	...	...	Cutting ...	4	6·44	Left ...	13 chains.
	...	...	...	Bank ...	5	4·12	...	...
	...	...	...	Cutting ...	3	3·52	...	...
	...	...	...	Bank ...	4	12·55	...	...
	...	...	...	Cutting ...	5	7·77	Left ...	13 chains.
190	...	...	...	Bank ...	6	28·90	Right...	13 do.
	...	...	...	Cutting ...	4½	13·57	...	...
	...	...	...	Bank ...	6½	17·40	...	...
	1 in 100 ...	U	61	Bank ...	1	2·52	...	...
	...	...	...	Cutting ...	1	1·76	...	...
	...	...	...	Bank ...	5	12·68	...	...
	...	...	...	Cutting ...	7	12·18	Left ...	10 chains.
	...	...	...	Bank ...	4	1·79	...	...
	...	...	...	Cutting ...	5	4·35	...	...
191	...	...	...	Bank ...	20	29·74	Right...	13 chains.
	...	...	...	Cutting ...	8	1·83	...	...
	...	...	...	Bank ...	1	0·13	...	...
	...	...	...	Cutting ...	9	12·75	Right...	16 chains.
	Level ...	...	35	Cutting ...	15	12·48	Left ...	13 do.
192	...	...	...	Bank ...	20	12·82	...	...
	1 in 200 ...	...	16	Bank ...	16	18·56	Right...	16 chains.
	Level ...	...	20	Bank ...	3	6·82	...	...
	...	...	...	Cutting ...	14	8·65	...	...
	Tinai ghât station.		...	...	...	...	...	...
	...	...	...	Bank ...	1	0·26	...	...
	...	...	...	Cutting ...	2	1·84	...	...
	1 in 100 ...	D	215	Cutting ...	2	1·79	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE. 193	...	...	...	Bank ...	13	23·08	Left ...	16 chains.
	...	...	...	Cutting ...	14	22·87	Right...	40 do.
	...	...	...	Bank ...	1	2·54	...	...
	...	...	...	Cutting	4	17·15	...	...
	...	...	...	Bank ...	7	35·70	...	...
	...	...	...	Cutting ...	6	12·83	Right...	13 chains.
	...	...	...	Bank ...	10	25·28	...	...
	...	...	...	Cutting ...	2	7·67	...	...
	...	...	...	Bank ...	2	16·28	...	...
	...	...	...	Cutting ...	3	19·41	Left ...	10 chains.
194	...	...	...	Bank ...	2	22·02	...	...
	...	...	...	Cutting ...	2	6·88	...	...
	...	...	...	Bank ...	11	43·67	...	...
	...	...	...	Cutting ...	2	10·74	Right...	10 chains.
	...	...	...	Bank ...	8	22·87	...	...
	...	...	...	Cutting ...	15	19·57	Left ...	13 chains.
	...	...	...	Bank ...	5	23·83	...	...
	...	...	...	Cutting ...	4	26·84	...	...
195	...	...	...	Bank ...	9	32·14	Right...	13 chains.
	...	...	...	Cutting ...	2	7·73	...	...
	...	...	...	Bank ...	11½	31·87	...	...
	...	...	...	Cutting ..	1½	3·89	Right...	10 chains.
	...	...	...	Bank ...	1	2·60	...	...
	...	...	...	Cutting ...	1	1·62	...	...
	...	...	...	Bank ...	1	8·05	...	...
	...	...	...	Cutting ...	3½	14·27	Left ...	10 chains.
	...	...	...	Bank ...	14	33·95	Right...	16 do.
	...	...	...	Cutting ...	10	6·56	Right...	16 do.
196	...	...	...	Bank ...	14½	13·14	...	...
	...	...	...	Cutting ...	9	4·12	Right...	13 chains.
	...	...	...	Bank ...	24	35·36	...	...
	Level ...	...	13	Bank ...	8	12·96	...	...
197	...	...	...	Cutting ...	3	2·58	...	...
	...	...	...	Bank ...	2	1·61	...	...
	1 in 100 ...	D	23	Bank ...	3	1·36	...	...
	...	...	...	Cutting ...	5	0·53	...	...
	...	...	...	Bank ...	8	16·42	Left ...	28 chains.
	...	...	...	Cutting ...	3	11·13	...	...
	...	...	...	Bank ...	4	15·29	...	...
*	Level ...	...	17	Bank ...	4	13·82	...	...
	Ghât section.	...	...	Cutting ...	½	0·75	...	...
	Double line ...	...	...	Bank ...	4½	3·10	...	...
	...	...	...	Cutting ...	8	5·44	Left ...	28 chains.
	1 in 100 ...	D	23	Bank ...	6	3·43	...	...
198	...	...	...	Cutting ...	5	2·99	...	...
	...	...	...	Bank ...	12	11·89	...	...
	Level ...	...	24	Bank ...	11	18·32	Right...	13 chains.
	...	...	...	Cutting ...	5	8·05	...	...
	...	...	...	Bank ...	4	6·15	...	...
	...	...	...	Cutting ...	4	12·98	Left ...	10 chains.
	1 in 100 ...	D	27	Cutting ...	½	7·32	...	...
	...	...	...	Bank ...	4½	15·99	...	...
	...	...	...	Cutting ...	4½	18·19	...	...
	...	...	...	Bank ...	2½	19·91	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Duski nalla bridge.	...		...	2	49·32	5—40 feet arches.	
199	...	...	...	Bank ...	2	27·31	...	...
	...	...	...	Cutting ...	4½	34·25	Right...	8 chains.
	...	...	...	Bank ...	3	12·09	...	...
	...	...	...	Cutting ...	1	3·80	...	...
	...	...	...	Bank ...	2½	11·48	Left ...	8 chains.
	Level ...	...	6	Cutting ...	1	0·50	...	...
	...	...	...	Bank ...	3	4·21	...	...
	...	...	...	Cutting ...	2	7·67	Right...	8 chains.
	1 in 200 ...	U	11	Bank ...	4	26·08	...	...
	...	...	...	Cutting ...	5	6·44	...	...
	...	...	...	Bank ...	2	11·08	Left ...	10 chains.
	Level ...	...	16	Bank ...	3	19·24	...	...
	...	...	...	Cutting ...	7	21·60	Left ...	15 chains.
	...	...	...	Bank ...	6	30·73	...	...
	1 in 100 ...	U	24·50	Do. ...	1	5·74	...	...
	...	...	...	Cutting ...	1	1·09	...	...
200	...	...	...	Bank ...	8	15·28	Right...	20 chains.
	...	...	...	Cutting ...	1	2·85	...	...
	...	...	...	Bank ...	3	4·66	...	...
	...	...	...	Cutting ...	10·50	42·42	Right...	8 chains.
	Level ...	...	31·50	Cutting ...	5·50	19·73	...	...
	...	...	...	Bank ...	5	10·47	Right...	8 chains.
	...	...	...	Cutting ...	1	0·01	...	...
Summit of ghât.	Castle Rock station.			Bank ...	11½	12·87	...	...
				Cutting ...	3	12·30	...	...
	...	...	...	Bank ...	1½	15·18	...	...
	...	...	...	Cutting ...	1	0·09	...	...
	...	...	...	Bank ...	3	3·71	...	...
	1 in 40 ...	D	51·79	Cutting ...	3	3·68	...	...
201	...	...	...	Cutting ...	2	3·91	...	...
	...	...	...	Bank ...	6	6·70	...	...
	...	...	...	Cutting ...	2	6·17	...	...
	...	...	...	Bank ...	1½	9·92	...	...
	...	...	...	Cutting ...	3½	50·59	Left ...	8 chains.
	...	...	...	Bank ...	9	53·31	...	...
	...	...	...	Cutting ...	4½	11·78	...	...
	...	...	...	Bank ...	2	27·14	...	...
	...	...	...	Cutting ...	4½	15·76	...	...
	...	...	...	Bank ...	9	63·58	Right...	8 chains.
	...	...	...	Cutting ...	4·79	24·49	...	...
	Level ...	...	1·21	Bank ...	0·21	4·48	...	...
	...	...	...	Cutting ...	1	15·90	...	...
	1 in 40 ...	D	58·91	Cutting ...	2	15·65	...	...
202	...	...	...	Bank ...	6½	34·18	Right...	10 chains.
	...	...	...	Cutting ...	3½	44·17	...	...
	...	...	...	Bank ...	4	15·38	...	...
	Bridge, 2—60 feet girders...			...	...	...	...	...
	...	...	...	Cutting ...	6½	78·57	Left ...	8 chains.
	...	...	...	Bank ...	3½	24·38	...	...
	...	...	...	Cutting ...	4½	19·39	...	...
	...	...	...	Bank ...	9½	35·75	Right...	8 chains.
	...	...	...	Cutting ...	6½	36·79	...	...
	...	...	...	Bank ...	2½	26·54	...	...

Working Section—Main Line—Gadag to Portuguese Frontier—cont.

From Bellary.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	4	28·10	Left ...	8 chains.
	...	...	...	Bank ...	0·16	0·88	...	...
	...	...	...	Cutting ...	1·25	36·62	...	...
203	Castle Rock, tunnel.			Tunnel ...	4·50	282·93	414 yards long.	
	1 in 50 ...	D	9·12½	Tunnel ...	8	272·53		
	...	...	...	Cutting ...	1·12½	53·33	...	...
	Level ...	...	3·87½	Bank ...	3	35·36	Right...	8 chains.
	...	...	...	Cutting ...	0·87½	15·15	...	...
	1 in 50 ...	D	8	Cutting ...	1	15·15	...	...
	...	...	...	Bank ...	2	3·27	...	...
	Bears' Rock tunnel. 157 yards long.	...	...	Tunnel ...	5	134·77	Right...	8 chains.
	1 in 40 ...	D	27·26	Cutting ...	1	53·48	...	...
	...	...	...	Bank ...	6	75·85	...	...
	...	...	...	Cutting ...	4·26	117·66	...	...
	...	...	...	Bank ...	1½	7·72	...	...
	...	...	...	Cutting ...	3	33·91	Right...	8 chains,
	4—60 feet girder bridge ...			...	2	36·17	...	...
	...	...	...	Cutting ...	6	13·73	Left ...	8 chains.
	...	...	...	Bank ...	2½	37·76	Right...	8 do..
	...	...	...	Cutting ...	1	27·41	...	...
	Portuguese frontier		...	...	...	...	...	...
	203 miles 5,034 feet from Bellary and 233¼ miles from Guntakal.							...

Addenda to "working section" for hilly country west of Gadag.

Mile from Bellary.	
93	Gadag station, opposite station large mango garden.
93½	Three roads cross line running from Gadag to Bettigeri.
94	Three nalas and one 10-feet, two 10-feet, and one 10-feet arches.
94¼	Road from Gadag on left to Balganur, with branch to Hombal, on right.
94½	Road Gadag to Hombal on right.
95¾	Mani nala four 40-feet girders; stream runs from left to right.
	Between 96 and 97 many *small* nalas cross line running into Mani and Bingadkatti nala.
96	Main road Gadag to Hombal on right, crosses line running south-east and north-west.
96¾	Bingadkatti nala and two 30-feet arches; stream runs south to north.
97	Road Bingadkatti to Hombal (R).
97½	Do. Assundi to Hombal.

Addenda to "working section" for hilly country west of Gadag—cont.

Mile from Bellary.	
	Road Assundi to Hindigol (R).
99½	Long embankment leading down to Hulkoti nala.
100	Road Hulkoti (L) to Hirahindigal.
	Hulkoti nala five 30-feet arches.
100¾	Road Kurutkutti to Gudar (R).
	Do. do. to Shagoli (R).
101	Hulkoti station.
102	Massim Hulla; two 30-feet arches; stream runs south to north. 10 chains on, road from Whusulli (L) to tank on right.
	The main road from Gadag to Hubli runs all along south side of line quite close, and at mile 104 crosses the Sawal nala by a bridge alongside the railway one.
102½	Small road crosses line running from main Gadag—Hubli road to Little Dundur.
103½	Road Kurudhutti (L) to Kondikop (R). From mile 102½ road runs along north side of line, connecting Little Dundur with main Gadag—Hubli road, into which it runs at 105.
104	Sawl nala and three 60-feet girders; here the main Gadag—Hubli road touches line and crosses nala by its own bridge.
105	Road from Gadag—Hubli road on (L) to Kondikop.
107	Three roads cross line from Annigeri (L) to Kondikop, Adnoor and Hallikeri.
107	Annigeri station; on (L) tank.
107½	Three roads cross line from Annigeri to Hallikeri and Navalgund.
111	Road from Annigeri (L) to Basapur (R).
	Do. do. to Dundur.
114¾	Do. Shiwanhalli to Bellurwad (R).
115	Do. do to Bennur (R).
	On left tank.
115½	Road Inglehalli (L) to Bennur (R).
	On right Dundur village and tank.
115¾	Yarhan Hulla (diverted).
116	Road Inglehalli to Kiresur (R).
	Benni Hulla nine 60-feet girders.
	Stream runs south to north, long embankment.
116¼	Road Inglehalli to Kiresur (R).
117½	Dundur station.
118	Two roads Inglehalli (L) to Kusugal (R).
120, 121	Do. do. do.
122½	Road Bhundiwar (I) to Kusugal (R).
124	Do. Ainapur (L) to Kusugal (R).
126	Do. do. do.
126¾	Gadag—Hubli main road crosses line; on left tank.
127	Road from Bhandiwad (L) crosses line to Hubli.
128	Same road crosses again.

Addenda to "working section" for hilly country west of Gadag—cont.

Mile from Bellary.	
128½	Large tank on (L) and road crossing line.
129	Hubli station.
	At Hubli two roads cross line running from Hubli—one to Gadag north-east, and the other to Keshwapur north.
129½	Good road north to Bihatti and to Hebli; Collector's bungalow and cotton factory on left; small road to Hirekop.
130	On right large tank.
130½	On left bank bungalow.
130¾	On right small tank.
131½	Do. large tank.
132	On left Unkal village, small road leads from it.
132½	Small road crosses line from Unkal (L) to Hebli (R).
133	Small road crosses line from Unkal (L) to Maratgi (R).
133½	Small road crosses from Bhairikop to Hebli (R).
134	Do. do. do.
135	Small road crosses from Ambargol (L) to Aminbavi.
136½	Two roads cross line, one from Ambargol (L) to Navalur (R) and the other from Rayapur village, which lies close on the left of the line, to Govankop; near Rayapur there is a tank.
	The main road from Hubli runs along left side of line between miles 137 and 138, quite close to and parallel with it. At mile 139 it crosses it.
138¼	Small road from Sattur (L) to Navalur (R).
139	Main road Hubli to Dharwar crosses.
140½	Small road from Kalghatgi and Someshwar (L) to Dharwar (R); main road from Kalghatgi to Dharwar runs parallel to line on left up to mile 141, when it crosses.
141½	Dharwar station—the approach through cuttings, ground very hilly. Road from Mansur to Dharwar crosses line at station.
143	Langoti tank on right.
	Good road from Dharwar to Government Gardens crosses line. Main road Dharwar to Halial runs parallel on right and crosses line at 144.
144½	Road Karkop (L) to Dharwar (R) crosses line.
146	Road from Goa to Dharwar crosses.
150	Mugad station.
	On right Mandihal station.
	Road Dharwar-Goa crosses line and again at 150½ on the other side of Mugad station.
156	Tutihal nálá crosses from (R) and runs along left side parallel to line as far as Kambargauvi.
157	Kambargauvi village on (R). Road leading to it from Arotgi.
157¼	Kambargauvi station.
	From mile 156 to 158½ road from Ramepur to Kumbharkop runs along side of line crossing it six times.
159	Goa-Dharwar road crosses.

Addenda to "working section" for hilly country west of Gadag—cont.

Mile from Bellary.	
160	Kogalgeri village on (R).
162	Alnavar nálá runs along left of line and crosses just beyond station at 165.
164½	Alnavar station. The main road from Halial (L) to Alnavar and Belgaum crosses line. On right Alnavar village.
165	On left village of Pur.
167	On right village of Godgiri.
169	On right village of Tawarkatta.
175	Nagargalli station. Dharwar-Goa road crosses line.
176	On right close to line Sulligalli village.
	Road from village crosses line and runs into Goa main road, paddy-fields ¼ mile on.
177	On left close to line Sambegalli village; half mile on on right Devrai village; both small.
178	Road from Devrai to Tarwad.
179	On left Kodgai village close by, and road from Nandgad (R) to Chinchwadi (L).
180½	On right Siwathan village.
181¾	Panda river crosses line. Bridge three 40-feet arches. It flows from right and winds along the left side up to mile 186 when it joins the Turwa river.
184	Junction with Poona Branch, on right Wada of Londa village.
185	Londa station and village.
	On left Mangarpe village.
186	The Supa-Belgaum road and the Turwa river cross line, (four 40-feet arches). The Turwa flows from (west) mile 191, close alongside of right of line and after crossing it at this point continues south.
188	Akrali village close on left.
188 to 191	Turwa river on right.
191	Ganegalli village on left close.
191½	Piregalli village on right close.
194	Kattigada village on right close.
194½	Dharwar-Goa road crosses line.
196	Wada of Dewali village on right.
197	Deuli village on left.
197¾	Old Deuli station.
198½	Duski village and camping ground on (R).
199	Duski nálá five 40-feet arches.
	Supa-Dharwar road crosses.
	Duski nálá flows along left of line to mile 200.
200½	Castle Rock station and summit of ghât. Top of incline at 201.
	Castle Rock tunnel 414 yards long through very high cutting, 7 chains on Bears' Rock tunnel 157 yards long.
	Portuguese frontier line 82 yards short of mile 204.

WATERWAYS.

Position.		Name.	Openings.		Description.	Rise of flood-water above low-water level.	Maximum velocity in flood, feet per second.	Flood area of openings, feet.	Height of underside of girders or soffit of arch		Remarks.
									Above flood-level.	Above river-bed.	
M.	CHS.										
	6·50	...	1	20′	Girder.	...	...	...	...	...	
	53	...	1	30′	„	...	...	...	...	...	
1	14	...	1	20′	„	...	...	...	...	...	
	42	...	1	20′	„	...	...	...	...	...	
2	32	...	5	30′	„	...	...	...	...	...	
3	56	...	1	30′	Arch.	...	...	...	...	...	
5	44	...	1	20′	Girder.	...	...	...	...	...	
6	15	...	1	20′	„	...	...	...	...	...	
9	51	...	7	30′	„	...	...	...	...	...	
10	2	...	1	20′	„	...	...	...	...	...	
	42	...	1	12′	„	...	...	...	...	...	
11	57	...	3	30′	„	...	...	...	...	...	
	65	...	2	64′	„	...	...	...	...	...	
13	5	...	1	15′	Arch.	...	...	...	...	...	
14	20	...	3	30′	„	...	...	...	...	...	
15	20	...	2	30′	Girder.	...	...	...	...	...	
16	51	...	1	12′	„	...	...	...	...	...	
17	42	...	1	30′	Arch.	...	...	...	...	...	Hagari bridge—length 2380′; 17 continuous girders 8′ apart resting 33 pairs of cast-iron cylinders 6′ in diameter filled with concrete. This bridge is open and should be decked over. The river here is very wide and has a sandy bed with low sandy banks. The east side is considerably wooded.
19	40	...	1	20′	„	...	...	...	...	...	
21	4	...	2	30′	Girder.	...	...	...	...	...	
	37	...	1	12′	„	...	...	...	...	...	
22	2	Hagari	34	64′	Girder.	See plan attached (page 76).					
	32	...	1	12′	„	...	...	...	...	...	
23	29	...	1	12′	„	...	...	...	...	...	
24	6	...	1	12′	Arch.	...	...	...	...	...	

	42	...	1	12′	Girder.	...	...	...	...	...	
	67	...	1	12′	Arch.	...	...	...	...	...	
25	79	...	1	12′	„	...	...	...	...	...	
28	37	...	1	12′	„	...	...	...	...	...	
30	4	...	1	12′	Girder.	...	...	...	...	...	
		Bellary station .	...		...	...	...	...	...	...	
31	64	...	1	10′	Girder.	...	...	...	...	...	
32	39	...	1	10′	„	...	...	...	...	...	
32	70	...	3	10′	„	...	...	...	...	...	
33	66	...	1	10′	„	...	...	...	...	...	
36	49	Chutur... ...	3	40′	„	7·7	8	900′	...	...	
38	33	Yellmori ...	2	40′	„	6·5	8	550′	...	...	
39	54	Virapur ...	3	20′	„	7·0	8	400′	...	...	
41	28	Kudatani ...	3	20′	„	9·7	8	350	...	...	
43	65	...	2	20′	Arch.	...	...	...	...	...	
44	53	...	2	20′	Girder.	...	...	...	...	...	
45	42	Tinlapur ...	4	20′	Arch.	7·0	8	900′	...	...	
46	42	...	1	10′	Girder.	...	...	...	...	...	
47	61	...	1	10′	„	...	...	...	...	...	
48	59	Daroji	4	40′	„	8·5	6	1,000	...	...	
49	26	...	1	10′	Arch.	...	...	...	...	...	
	45	...	1	40′	Girder.	...	...	...	...	...	
50	58	...	2	20′	„	...	...	...	...	...	
51	28	Korikampa ...	5	40′	„	12·0	15	1,800	...	...	
52	30	...	1	20′	„	...	...	...	...	...	
52	72	...	1	10′	Girder ...	...	...	...	...	...	
53	56	...	1	20′	„ ...	...	...	...	...	...	
54	28	...	1	10′	„ ...	...	...	...	...	...	
	33	...	1	20′	„ ...	...	...	...	...	...	
	63	...	1	24′	„ ...	...	...	...	...	...	
	71	...	1	40′	„ ...	...	...	...	...	...	
55	46	...	2	20′	„ ...	...	...	...	...	...	
	64	...	1	20′	„ ...	...	...	...	...	...	
56	64	...	1	10′	„ ...	...	...	...	...	...	
57	68	...	1	20′	„ ...	...	...	...	...	...	
59	32	...	2	20′	„ ...	...	...	...	...	...	
60	39	...	2	20′	„ ...	...	...	...	...	...	
	58	...	1	10′	Arch ...	...	...	...	...	...	

Position.		Name.	Openings.	Description.	Rise of flood-water above low-water level.	Maximum velocity in flood, feet per second.	Flood area of openings, feet.	Height of underside of girders or soffit of arch		Remarks.
								Above flood-level.	Above river-bed.	
M.	CHS.									
61	34	...	1 20′	Girder ...	...	...	...	...	...	
62	28	...	1 10′	„ ...	...	...	...	...	...	
	71	...	1 20′	„ ...	...	...	...	...	...	
63	54	...	1 40′	„ ...	...	...	...	...	...	
64	31	...	1 20′	„ ...	...	...	...	...	...	
	58	...	1 20′	„ ...	...	...	...	...	...	
64	64	...	1 10′	„ ...	...	...	...	...	...	
65	56	...	2 20′	„ ...	...	...	...	...	...	
	68	...	1 10′	„ ...	...	...	...	...	...	
66	55	...	1 24′	„ ...	...	...	...	...	...	Tungabhudra bridge—The plate girders rest on ¾ inch iron bed plates bolted down through bed-stones 5′ 6″ × 3′ 0″ × 14″, each weighing about 2 tons. The piers are masonry 15′ × 5′ 6″ at top, and 17′ 6″ × 7′ 6″ at bottom. The abutments are solid masonry, that at the east end being 31′ 4″ × 18′, and that at the west 27′ 6″ × 18′. The foundation is of rock. This bridge is adapted for both wheel and foot traffic at same levels as the rails. It has hand-rails at each side with a clear standing space of 2′ 6″. The platform is formed of buckled plates and the
67	31	...	1 10′	„ ...	...	...	...	...	...	
	46	...	1 10′	„ ...	...	...	...	...	...	
68	20	...	1 10′	„ ...	...	...	...	...	...	
69	49	...	1 10′	„ ...	...	...	...	...	...	
	66	...	1 20′	„ ...	...	...	...	...	...	
70	28	...	1 15′	Arch ...	...	...	...	...	...	
71	26	...	1 10′	Girder ...	...	...	...	...	...	
72	30	...	1 24′	„ ...	...	...	...	...	...	
	59	...	1 24′	„ ...	...	...	...	...	...	
73	22	Tungabhudra river.	38 60′	„ ...	See plan (page 77).			10′	45′	
	44	...	1 20′	Arch ...	...	...	...	...	...	
	66	...	1 10′	Girder ...	...	...	...	...	...	
74	44	...	1 10′	Arch ...	...	...	...	...	...	

75	36	...	1 24′	Girder ...	...	...	...	...	...	rails are attached to cross sleepers of teak which fit into the concavities of the corrugations. The road metalling covers the sleepers. The river is here very rocky.
	66	...	2 10′	Arch ...	...	...	...	...	...	
76	53	...	1 10′	„ ...	...	...	...	...	...	
77	29	...	2 10′	„ ...	...	...	...	...	...	
	48	...	1 10′	Girder ...	...	...	...	...	...	
78	20	...	1 10′	Arch ...	...	...	...	...	...	
	50	...	1 20′	Girder ...	...	...	...	...	...	
79	27	...	2 10′	Arch ...	...	...	...	...	...	
80	69	...	1 10′	„ ...	...	...	...	...	...	
81	57	...	1 10′	„ ...	...	...	...	...	...	
	72	...	1 10′	Girder ...	...	...	...	...	...	
82	49	...	1 10′	Arch ...	...	...	...	...	...	
83	41	...	3 20′	„ ...	...	...	...	...	...	
84	53	...	1 10′	„ ...	...	...	...	...	...	Burra nala bridge—The foundation is of rock. There is accommodation for foot traffic at rail level but it is not intended to carry a roadway. The decking is $\frac{5}{16}$″ sheet iron under the cross sleepers.
86	36	...	1 10′	„ ...	...	...	...	...	...	
87	22	...	1 10′	Girder ...	...	...	...	...	...	
88	42	Burra nala ...	10 60′	„ ...	See plan (page 77).			7′ 6″	21′	
89	62	...	2 20′	Arch ...	...	...	...	...	...	
91	20	Nala	6 30′	„ ...	Foundation rock.			...	10′	
95	42	...	1 10′	„ ...	...	...	...	...	...	
110	26	...	1 10′	Arch ...	...	...	...	...	...	
115	70	...	1 10′	„ ...	...	...	...	...	...	
117	21	...	2 30′	„ ...	...	...	...	...	...	
119	23	Ekihull ...	3 30′	„ ...	Foundation stiff clay and boulder rock.				11′	
120	38	Gadihull ...	6 30′	„ ...	Foundation rock.				10′	
122	32	Jowahull ...	2 30′	„ ...	Foundation stiff clay and moorum.				12′	
122	54	...	1 30′	„ ...	...	...	...	...	...	
123	21	...	1 10′	„ ...	...	...	...	...	...	
	78	...	1 10′	„ ...	...	...	...	...	...	
124	24	...	2 10′	„ ...	...	...	...	...	...	Mani nala bridge—The foundation is shale. The girders rest on leaden bed plates on masonry piers. This is an open bridge and should be decked with thin sheeting for foot traffic.
	44	...	1 10′	„ ...	...	...	...	...	...	
125	77	Mani	4 40′	Girder ...	5′ 3″	20′	960′	8′ 6″	13′ 9″	
126	75	Bingadkatti nala.	2 30′	Arch ...	...	...	...	...	...	
128	23	...	3 10′	„ ...	...	...	...	...	...	
130	30	Hundigalkatti...	5 30′	„ ...	14′	14 26″	3,657′	4′	18′	Foundation shale.
132	29	Masim nala ...	2 30′	„ ...	...	...	...	...	...	
133	23	...	1 10′	„ ...	...	...	...	...	...	

WATERWAYS—*cont.*

Position. M.	Position. CHS.	Name.	Openings.	Description.	Rise of flood-water above low-water level.	Maximum velocity in flood, feet per second.	Flood area of openings, feet.	Height of underside of girders or soffit of arch: Above flood-level.	Height of underside of girders or soffit of arch: Above river-bed.	Remarks.
134	40	Sowl	3 60′	Girder ...	8′ 6″	6′	1,886′	9′ 6″	18′	Sowl nala—Foundation wells in sand. Masonry piers 15′ 6″ × 5′ 6″ at top and 16′ 6″ × 6′ 6″ at bottom. Abutments 18′ 3″ × 13′ × 16′ 11″. This is an open bridge and requires decking.
136	78	...	1 10′	,,	...	...	...	...	...	
146	39	Benihulla ...	9 60′	,,	15′ 3″	6′	7,938′	12′ 9″	28′	Benihulla nálá bridge—Masonry piers 13′ 6″ × 5′ 6″ at top and 14′ 6″ × 6′ 6″ at bottom. Foundation clay. Distance between girders 7′. This bridge requires a roadway.
147	78	...	1 10′	,,	...	...	...	...	...	
155	73	...	1 10′	Arch ...	...	...	...	...	...	
156	76	...	3 10′	,,	...	...	...	...	...	
157	36	...	1 10′	Girder ...	...	...	...	...	...	
158	40	...	1 10′	,,	...	...	...	...	...	
159	47	...	1 10′	Arch ...	...	...	...	...	...	
160	26	...	1 20′	,,	...	...	...	...	...	
166	72	...	1 10′	,,	...	...	...	...	...	
170	70	...	1 40′	,,	...	...	...	...	...	
172	46	...	1 10′	,,	...	...	...	...	...	
173	60	...	1 10′	,,	...	...	...	...	...	
	70	...	1 10′	,,	...	...	...	...	...	
175	58	...	1 10′	,,	...	...	...	...	...	
176	57	...	1 10′	,,	...	...	...	...	...	
178	27	...	1 10′	,,	...	...	...	...	...	
	51	...	1 10′	,,	...	...	...	...	...	
179	44	...	1 10′		...	...	...	...	...	

181	47	..	1 10′	Arch ...	...	...	...	...	...	
	68	...	1 10′	,,	...	...	...	...	...	
182	45	...	1 10′	,,	...	...	...	...	...	
	63	...	1 10′	,,	...	...	...	...	...	
183	45	...	1 10′	,,	...	...	...	...	...	
184	23	...	1 10′	,,	...		...	...	...	
	70	...	1 10′	,,	...	...	...	...	...	
186	24	Tutihal ...	5 30′	,,	...	6′ 7″	2,450′	8′ 5″	28′	Foundation rock.
187	61	...	1 30′	,,	...	...	...	...	...	
188	22	...	1 20′	,,	...	...	...	...	...	
188	54	...	1 10′	,,	...	...	...	...	...	
189	27	...	1 30′	,,	...	...	...	...	...	
190	45	...	1 20′	,,	...	...	...	...	...	
192	46	...	1 30′	,,	...	...	...	...	...	
193	21	...	1 20′	,,	...	...	...	...	...	
	43	...	1 10′	,,	...	...	...	...	...	
194	70	Alnavar ...	4 40′	,,	...	9′ 2″	3,084′	10′ 5″	28′ 70″	Foundation rock.
195	53	...	1 10′	,,	...	...	...	...	...	
196	51	...	1 10′	,,	...	...	...	...	...	
200	28	...	1 10′	,,	...	...	...	...	...	
201	44	...	1 10′	,,	...	...	...	...	...	
202	20	...	1 10′	,,	...	...	...	...	...	
	44	...	1 10′	,,	...	...	...	...	...	
203	46	...	1 10′	,,	...	...	...	...	...	
205	44	...	1 10′	,,	...	...	...	...	...	
206	55	...	1 10′	,,	...	...	...	...	...	
207	68	...	1 10′	,,	...	...	...	...	...	
208	55	...	1 10′	,,	...	...	...	...	...	
210	24	...	1 20	,,	...	...	...	...	...	
211	66	Punda ...	3 40′	,,	...	11′	1,800	11′·50	25′	Foundation rock.
212	41	...	1 10′	,,	...	...	...	...	...	
	70	...	1 30′	,,	...	...	...	...	...	
213	67	...	3 20′	,,	...	...	...	...	...	
214	71	...	1 20′	,,	...	...	...	...	...	
216	31	Turva ...	4 40′	Girder ...	...	23′	5,280′	20′·70	42·08	Masonry piers on a rock foundation. This bridge is open and requires decking.
	20	...	1 10′	Arch ...	...	...	...	...	...	
217	41	...	1 10′	,,	...	...	...	...	...	
218	20	...	1 10′	,, ...	...	...	...	...	...	

WATERWAYS—*cont.*

Position.		Name.	Openings.	Description.	Rise of flood-water above low-water level.	Maximum velocity in flood, feet per second.	Flood area of openings, feet.	Height of underside of girders or soffit of arch		Remarks.
								Above flood-level.	Above river-bed.	
M.	CHS.									
	36	...	1 10′	Arch ...	...	...	...	...	...	
219	23	...	1 10′	„	...	...	...	...	...	
	34	...	1 10′	„	...	...	...	...	...	
	43	...	1 10′	„	...	...	...	...	...	
220	24	...	1 10′	„	...	...	...	...	...	
	32	...	1 10′	„	...	...	...	...	...	
221	21	...	1 20′	„	...	...	...	...	...	
222	26	...	1 10′	„	...	...	...	...	...	
	43	...	1 10′	„	...	...	...	...	...	
223	51	...	1 10′	„	...	...	...	...	...	
	67	...	1 10′	„	...	...	...	...	...	
224	37	...	1 10′	„	...	...	...	...	...	
	67	...	1 10′	„	...	...	...	...	...	
225	27	...	1 10′	„	...	...	...	...	...	
	39	...	1 10′	„	...	...	...	...	...	
226	61	...	1 30′	„	...	...	...	...	...	
227	49	...	1 10′	„	...	...	...	...	...	
228	45	...	1 20′	„	...	...	...	...	...	
229	23	Duski	5 40′	„	...	13′ 6″	4,560′	11′	43′	Foundation rock.
	53	...	1 10′	„	...	...	...	...	...	
	67	...	1 30′	„	...	...	...	...	...	
230	55	...	1 10′	„	...	...	...	...	...	
	67	...	1 10′	„	...	...	...	...	...	
231	33	...	2 10′	„	...	...	...	...	...	
	52	...	1 10′	„	...	...	...	...	...	
	67	...	1 10′	„	...	...	...	...	...	
232	20	...	1 10′	Girder ...	...	...	...	...	...	
	25	...	1 10′	Arch ...	...	...	...	...	...	
	27	...	1 10′	„	...	...	...	...	...	
	31	...	1 10′	Girder ...	...	...	...	...	...	
	35	...	2 60′	Girder ...	2′	...	...	6′	8′	Foundation rock.
	58	...	2 10′	Arch ...	...	...	...	...	...	
	67	...	1 10′	„	...	...	...	...	...	
233	38	...	1 10′	„	...	...	...	...	...	
	43	...	2 10′	Girder ...	...	...	...	...	...	
	53	...	1 10′	Arch ...	...	...	...	...	...	
	60	...	1 10′	Girder ...	...	...	...	...	...	
	63	...	1 10′	„	...	...	...	...	...	
233	66	...	4 60′	Girder ...	2′	...	...	30′	31′	Foundation rock.
234	20	...	1 10′	Arch ...	...	...	...	...	...	

Frontier Section.

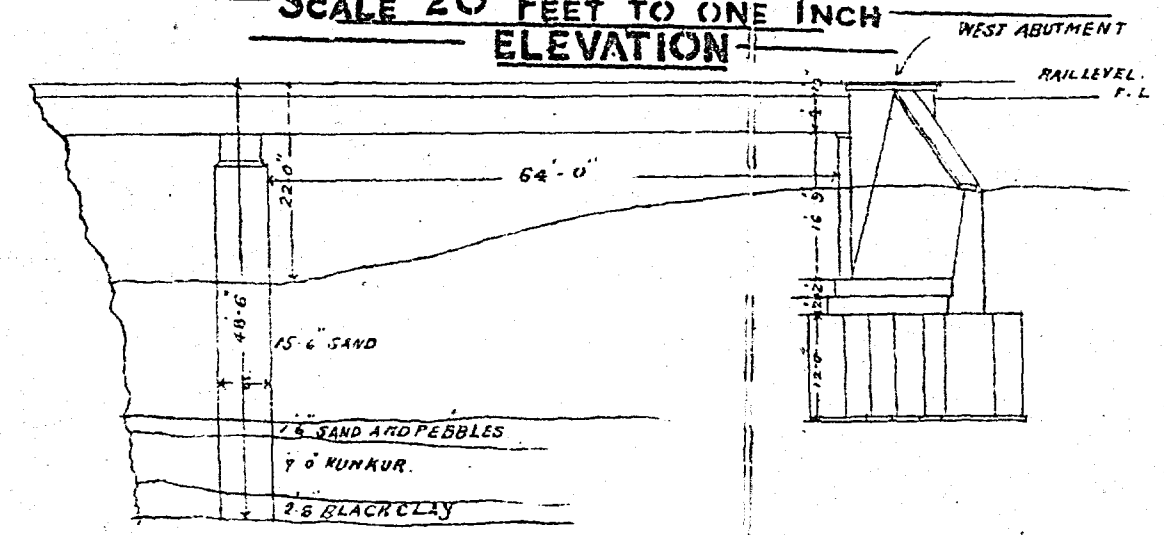
NOTE.—In girder bridges the width of roadway is 9′ in arch bridges 9′ 6″. On all bridges under 100′ span the girders are carried on the top boom, over 100′ span on the bottom boom.

HUGAREE BRIDGE GIRDER

34 Openings of 64 feet
17 Continuous Girders 8′ apart

SCALE 20 FEET TO ONE INCH

ELEVATION



SCALE 16 FEET TO ONE INCH

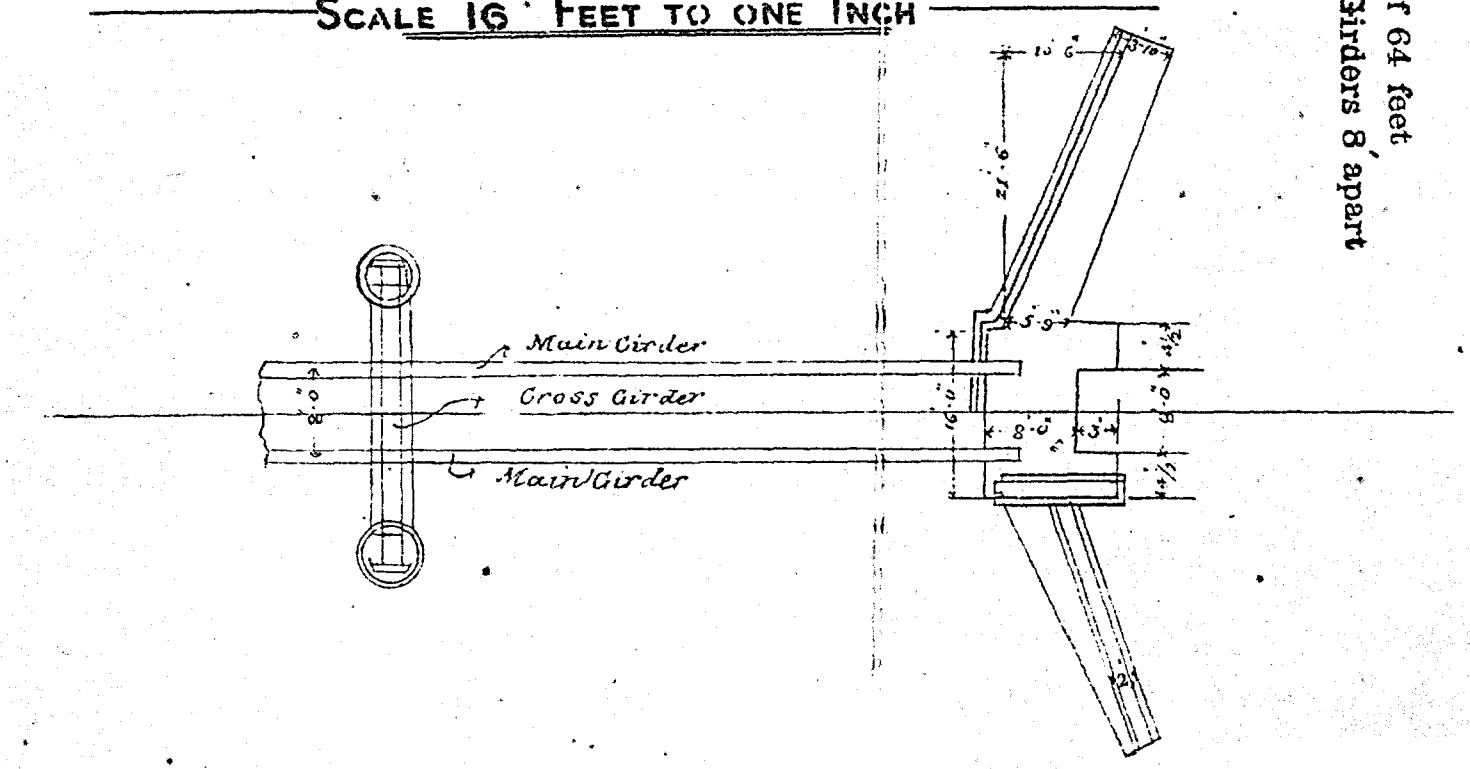


Photo Zincographed in Central Survey Office Madras
1890

TUNGABUDARA & BARA NULLAH

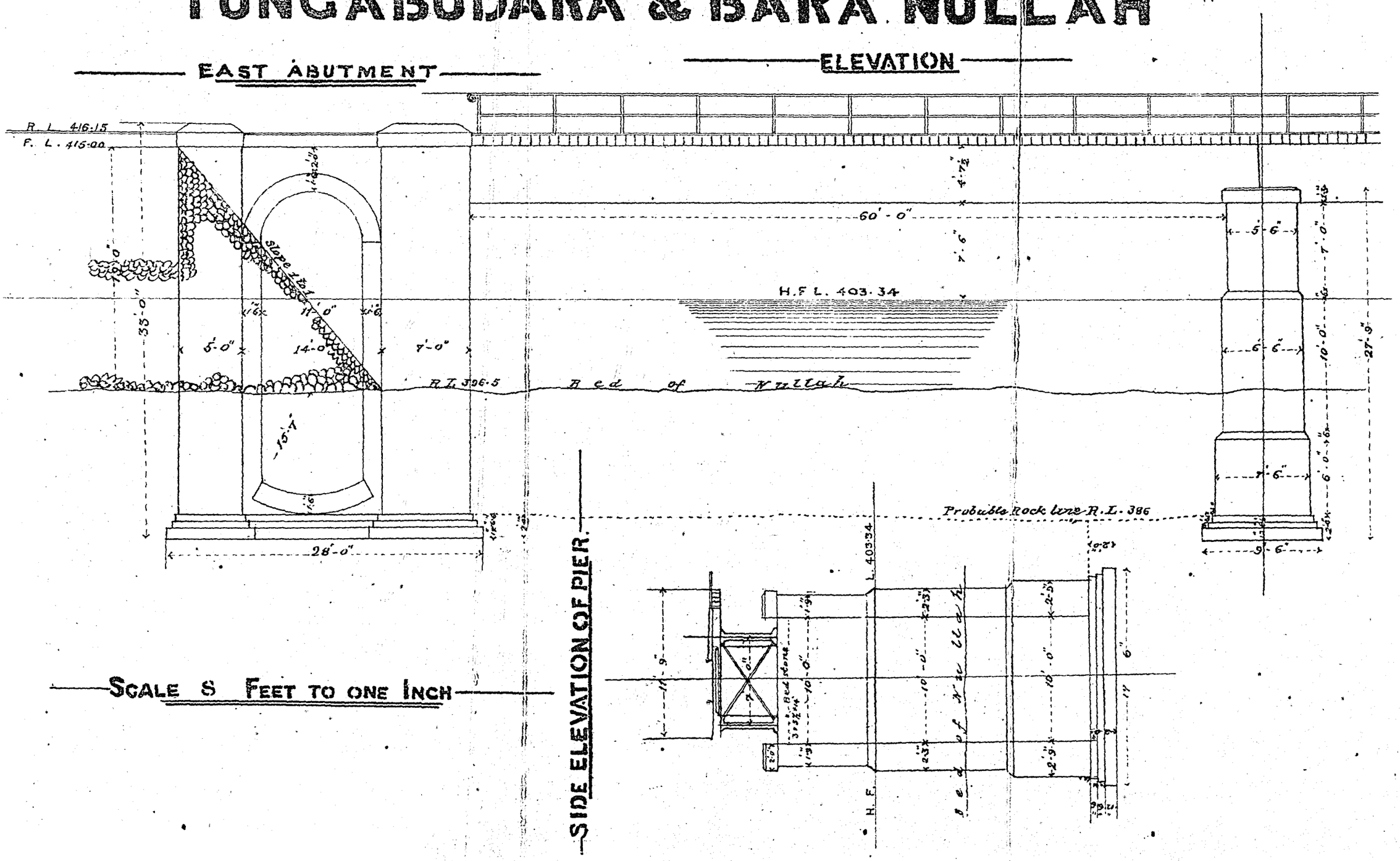


Photo-Zincographed in Central Survey Office, Madras.
1890

STATIONS.

Station.	Class and description. W. = watering. A. W. = auxiliary. E. = engine. F. = fuel.	Situation. Mileage. From Guntakal.	Situation. Mileage. Between stations.	Situation. If on curve or gradient.	Nature of soil.
Guntakal Junction.	1st W.E.F. ...	0	0	L. and S.	Black.
Bantanahal ...	4th ...	6¼	6½	Do.	Do.
Baivanhal ...	4th ...	10¾	4¼	Do.	Do.
Virapur ...	3rd ...	16	5¼	Do.	Do.
Hagari ...	4th W. ...	21½	5½	Do.	Do.
Bellary ...	2nd W.E.F ...	30¼	8¾	Do.	Red moorum and rock.
Bellary Cantonment	4th ...	32½	2¼	Do.	Do.
Kudatani ...	4th ...	42¾	10¼	Do.	Red moorum.
Tornagallu ...	4th ...	50¾	8	Curve L. and R. 30 chains.	Do.
Gadiganur ...	4th W. ...	54¾	4	L. and S.	Do.
Papinaikanahalli ...	4th ...	62¼	7½	Do.	Red.
Hospet ...	3rd W.F. ...	70¾	8½	Do.	Black.
Munirabad ...	4th ...	74	3¼	Do.	Red.
Kopbal ...	3rd A.W. ...	87¼	13¾	Do.	Black and red.
Bhanapur ...	4th W. ...	95¼	7½	Do.	Black.
Bannikoppa ...	4th ...	102	6¾	Do.	Do.
Harlapur ...	4th A.W. ...	112¼	10¼	Curve L. R. 26·40 chains.	Do.
Gadag Junction ...	1st W.E. ...	123¾	11½	L. and S.	Do.
Halkoti ...	4th ...	131¼	7½	Do.	Do.
Annigeri ...	3rd W. ...	137½	6¼	Do.	Do.
Dundur ...	4th ...	147¾	10¼	Do.	Do.
Hubli Junction ...	1st W.E.F. ...	159¼	11½	Do.	Red moorum.
Dharwar ...	3rd W. ...	172	12¾	Do.	Do.
Mugad ...	4th ...	180½	8½	Do.	Red.
Kambargauvi ...	4th A.W. ...	187½	7	Do.	Arable.
Alnavar ...	4th W. ...	194¾	7¼	Do.	Red.
Nagargalli ...	4th A.W.F. ...	203¼	8½	Do.	Dark clayey.
Londa Junction ...	1st W.F. ...	215½	12¼	Do.	Red.
Tinai ghât ...	4th ...	222¾	7¼	Do.	Clay.
Castle Rock ...	2nd W.E.F. ...	230¾	8	Do.	Dark earth on low ground; laterite on high.

NOTE.—1st-class stations are junctions and terminals.
2nd-class stations are engine changing ones not included in 1st class.
3rd-class stations are those with goods sheds not included in 1st and 2nd classes.
4th-class stations are all minor ones.

STATIONS—*cont.*

Station.	Buildings. Passenger. Nature.	Buildings. Passenger. Size.	Buildings. Goods. Nature.	Buildings. Goods. Size.
Guntakal Junction ...	Stone... ...	419′ × 28′	One to be built.	
Bantanahal	Do.	33′ × 23′	...	...
Baivanhal	Do.	33′ × 23′	...	...
Virapur	Do.	48′6 × 37′6″	Stone ...	146′ × 19′
Hagari	Do.	32′ × 22′6″	...	...
Bellary ...	Outside stone. Inside brick.	256′6″ × 53′	Stone	250′ × 62′ 140′ × 42′
Bellary Cantonment ..	Wood... ...	10′ × 10′	...	...
Kudatani	Stone	33′ × 30′	...	...
Tornagallu	Do.	38′ × 46′	...	...
Gadiganur	Do.	33′ × 31′	...	...
Papinaikanahalli ...	Do.	46′ × 38′	...	...
Hospet	Do.	63′ × 19′	Stone ...	60′ × 20′
Munirabad	Do.	59′ × 17′	...	...
Kopbal	Do.	59′ × 17′	Stone ...	60′ × 20′
Bhanapur	Do.	33′ × 31′	...	...
Bannikoppa	Do.	33′ × 31′	...	...
Harlapur	Do.	36′ × 17′	...	...
Gadag Junction ...	Do.	118′ × 28′	Stone ...	178′ × 33′
Halkoti	Do.	35′ × 20′	...	...
Annigeri	Do.	63′ × 19′	Corr. iron ...	84′ × 24′
Dundur	Do.	35′ × 20′	...	...
Hubli Junction ...	Do.	145′ × 35′	Stone ...	180′ × 33′
Dharwar	Brick... ..	140′ × 35′	Brick ...	290′ × 21′
Mugad	Stone... ...	35′ × 20′	...	...
Kambargauvi ...	Do.	35′ × 20′	...	...
Alnavar	Do.	36′ × 35′	...	...
Nagargalli	Do.	56′ × 24′	...	...
Londa Junction ...	Do.	152′ × 35′	...	...
Tinai ghât	Do.	35′ × 20′	...	...
Castle Rock	Brick	250′ × 35′	...	...
	All have Mangalore tiles.			

STATIONS—*cont.*

Station.	Buildings—*cont.*			
	Engine.		Workshops.	
	Size.	Capacity.	Nature.	Size.
Guntakal Junction ...	107′ × 76′	12 engines ...	Locomotive for repairs inside engine-shed.	
Bantanahal ...	...	...	...	...
Baivanhal	...	...	...	...
Virapur	...	...	...	...
Hagari	...	...	...	...
Bellary	126′ × 34′	6 engines.	Stone.	185′ × 57′
Bellary Cantonment...	...	...	...	...
Kudatani	...	...	...	...
Tornagallu ...	...	...	...	...
Gadiganur	...	...	...	...
Papinaikanahalli ...	...	...	...	...
Hospet	...	...	...	...
Munirabad	...	...	...	...
Kopbal	...	...	...	...
Bhanapur	...	...	...	...
Bannikoppa	...	...	...	...
Harlapur	...	...	...	...
Gadag Junction ..	140′ × 40	9 engines.	Locomotive for repairs inside engine-shed.	
Halkoti	...	...	...	...
Annigiri	...	...	...	...
Dundur	...	...	...	...
Hubli Junction ...	144′ × 72′	12 engines.	Main for whole system.	
Dharwar	...	...	...	...
Mugad	...	...	...	...
Kambargauvi ...	...	...	...	...
Alnavar	...	...	...	...
Nagargalli	...	...	...	...
Londa Junction ...	...	...	...	...
Tinai ghât	...	...	...	...
Castle Rock	144′ × 72′	12 engines.	Locomotive for repairs inside engine-shed.	

STATIONS—*cont.*

Station.	Buildings—*cont.*		
	Other, such as staff quarters.		Latrines.
	No.	Size.	Number.
Guntakal Junction	73	12 = 10′ × 41′ ... ... 1 = 100′ × 40′ ... ... 1 = 60′ × 40′ ... ... 52 = 26′ × 35′6″ ... ... 1 = 48′ × 32′ ... ... 1 = 32′6″ × 32′ ... ... 2 = 157′6″ × 36′ ... ... 1 = 177′ × 36′ ... ... 2 = 155′6″ × 19′	15 = 140 units.
Bantanahal	1	32′ × 22′6	...
Baivanhal	1	23′ × 20′	...
Virapur	1	48′ × 10′	2 = 32 units.
Hagari	...	...	...
Bellary	8	4 = 52′ × 36′ ... ... 1 = 62′ × 40′ ... ... 1 = 57′ × 32′ ... ... 1 = 46′ × 30′ ... ... 1 = 69′ × 10′	2 = 32 units.
Bellary Cantonment ...	...	...	...
Kudatani	1	47′ × 19′	1 = 16 units.
Tornagallu	1	64′ × 13′	1 = 16 units.
Gadiganur	1	47′ × 19′	1 = 16 units.
Papinaikanahalli	1	64′ × 13′	1 = 16 units.
Hospet	5	2 = 37′ × 16′ ... ... 2 = 34′ × 31′ ... ... 1 = 170′ × 20′	1 = 16 units.
Munirabad	2	1 = 71′ × 10′ ... ... 1 = 33′ × 31′	1 = 16 units.
Kopbal	2	1 = 48′ × 10′ ... ... 1 = 33′ × 31′	1 = 16 units.
Bhanapur	1	48′ × 10′	1 = 16 units.
Bannikoppa	1	48′ × 10′	1 = 16 units.
Harlapur	5	4 = 10′ × 10′ ... ... 1 = 33′ × 31′	1 = 16 units.
Gadag Junction	24	11 = 42′ × 36′ ... ... 2 = 80′ × 40′ ... ... 3 = 83′ × 37′ ... ... 3 = 70′ × 33′ ... ... 1 = 36′ × 33′ ... ... 1 = 25′ × 10′ ... ... 1 = 56′ × 23′ ... ... 1 = 117′ × 10′ ... ... 1 = 128′ × 10′	5 { 2 masonry. 1 zinc.
Halkoti	1	59′ × 10′	1 = 16 units.
Annigeri	1	59′ × 10′	1 = 16 units.
Dundur	1	59′ × 10′	1 = 16 units.
Hubli Junction	...	See plan	16 = 152 units.
Dharwar	1	59′ × 10′ each	2 = 32 units.
Mugad	1	59′ × 10′	1 = 16 units.
Kambargauvi	1	59′ × 10′	1 = 16 units.
Alnavar	1	71′ × 10′	1 = 16 units.
Nagargalli	1	71′ × 10′	...
Londa Junction	8	1 = 117′ } × 10′ ... 1 = 105′ } 6 = 40′ × 30′	2 = 32 units.
Tinai ghât	1	59′ × 10′	1 = 16 units.
Castle Rock	20	6 = 117′ × 10′ ... ... 13 = 40′ × 30′ ... ... 1 = 70′ × 50′	1 = 16 units.

STATIONS—*cont.*

Station.	Platforms.			
	Passenger.		Goods.	
	Covered.	Uncovered.	Covered.	Uncovered.
Guntakal Junction ...	429′ × 45′ 164′ × 28′	581′ × 45′ 369′ × 28′	The transhipment platform is used.	
Bantanahal	...	270′ × 20′	...	...
Baivanhal	...	235′ × 17′	...	...
Virapur	...	433′ × 18′	60′ × 20′	90′ × 20′
Hagari	...	...	...	...
Bellary	400′ × 17′10″	500′ × 25′	...	350′ × 28′
Bellary Cantonment ...	...	360′ × 16′	...	...
Kudatani	...	350′ × 25′	...	...
Tornagallu	...	350′ × 15′	...	...
Gadiganur	...	350′ × 25′	...	...
Papinaikanahalli ...	...	350′ × 25′	...	...
Hospet	...	485′ × 24′	60′ × 28′	255′ × 28′
Munirabad	...	350′ × 30′	...	...
Kopbal	...	500′ × 30′	120′ × 20′	...
Bhanapur	...	350′ × 30′	...	...
Bannikoppa	...	350′ × 30′	...	...
Harlapur	...	350′ × 30′	...	...
Gadag Junction ...	...	365′6″ × 16′4 668′6″ × 30′	279′9″ × 20′	68′9″ × 20′
Halkoti...	...	350′ × 30′	...	...
Annigeri	...	350′ × 30′	84′ × 24′	100′ × 20′
Dundur	...	350′ × 30′	...	...
Hubli Junction ...	...	800′ × 30′	100′ × 20′	70′ × 20′
Dharwar	...	600′ × 30′	140′ × 21′	149′ × 21′
Mugad	...	350′ × 30′	...	...
Kambargauvi	...	350′ × 30′	...	...
Alnavar	...	350′ × 30′	...	...
Nagargalli	...	350′ × 30′	...	...
Londa Junction ...	...	600′ × 30′	...	...
Tinai ghât	...	350′ × 30′	...	...
Castle Rock	...	350′ × 30′	...	...
	All 1′3″ high		These measurements do not include the platforms inside all goods sheds.	

STATIONS—*cont.*

Station.	Water.							
	Wells.		Tanks.			Pumps.	Hydrants.	Water columns.
	No.	Nature.	Size.	Capacity gallons.	Time to refill.			
Guntakal Junction.	1	40′ sq: steined 5 miles off.	77′ 6″ × 40′ × 5′	96,000	10 hours by gravitation.	2 steam 5 miles off.	4	4
Bantanahal ...	...	...	...	...	...	...	...	...
Baivanhal ...	...	...	...	...	...	...	...	...
Virapur ...	...	...	...	...	...	...	...	...
Hagari ...	1	Steined.	4 each 10′ × 10′ × 4′	9,600	6½ hours.	1 hand ...	...	1
Bellary ...	2	Do.	30 × 15′ × 5′	13,500	4½ hours.	1 do. ...	1	2
Bellary Cantonment	...	...	...	...	...	...	...	...
Kudatani ...	1	Steined.	...	...	...	...	...	1
Tornagallu ...	...	...	...	...	...	...	...	...
Gadiganur ...	1	Steined.	15′ × 15′ × 5′	6,950	6½ hours.	1 hand ...	...	1
Papinaikanahalli ...	1	Do.	...	...	...	...	...	1
Hospet ...	1	Do.	15′ × 15′ × 5′	6,950	6½ hours.	1 hand ...	...	1
Munirabad ...	...	...	...	...	...	...	...	...
Kopbal ...	1	Steined.	15′ × 15′ × 5′	6,950	6½ hours.	1 hand ...	...	1
Bhanapur ...	1	Do.	15′ × 15′ × 5′	6,950	6½ „	1 do. ...	...	1
Bannikoppa ...	...	...	...	...	...	...	...	...
Harlapur ...	1	Steined.	15′ × 15′ × 5′	6,950	6½ hours.	1 hand ...	...	1
Gadag Junction ...	2	Do.	30′ × 15′ × 5′	13,500	2½ hours.	1 steam 1 hand	2	2
Halkoti ...	1	Do.	...	...	...	...	...	...
Annigeri ...	1	Do.	13′ × 13′ × 5′	5,000	6 hours.	1 hand ...	...	2
Dundur ...	1	Do.	...	...	...	...	...	...
Hubli Junction ...	3	Do.	75′ × 25′ × 6′	60,000	8 hours.	3 steam.	10	3
Dharwar ...	1	Do.	13′ × 13′ × 5′	5,000	1½ hours.	1 steam.	...	2
Mugad ...	1	Do.	...	...	...	...	...	...
Kambargauvi ...	1	Do.	2 each 5′ × 5′ × 5′	1,500	2 hours.	1 hand ...	...	...
Alnavar ...	1	Do.	13′ × 13′ × 5′	5,000	6 hours.	1 do. ...	...	2
Nagargalli ...	1	Do.	2 each 5′ × 5′ × 5′	1,500	2 hours.	1 do. ...	...	...
Londa Junction ...	1	Do.	13′ × 13′ × 5′	5,000	1½ hours.	1 steam.	...	2
Tinai ghât ...	...	...	...	...	...	...	...	...
Castle Rock ...	1	Gravitation.	60′ diameter.	80,000	...	1 hand ...	4	2
					Approximate time.			

STATIONS—*cont.*

Station.	Fuel.			Sidings.	Dead ends.	
	Stage.	Kind.	Where stored.	Length.	No.	Length.
Guntakal Junction.	1	Wood ...	Guntakal ...	20,700′	Included in sidings.	
Bantanahal ...	...	...	...	1,135′	1	289′
Baivanhal	...	...	...	328′	1	274′
Virapur	...	...	...	1,285′	1	835′
Hagari	...	...	...	1,235′	1	335′
Bellary	1	Wood ...	Bellary ...	18,587′	8	1,986′
Bellary Cantonment	...	...	...	...	...	...
Kudatani	...	...	...	1,753′	1	285′
Tornagallu	...	...	...	...	...	...
Gadiganur	...	...	...	1,776′	1	377′
Papinaikanahalli ...	...	...	...	1,721′	1	567′
Hospet	1	Wood ...	Hospet ...	5,743′	4	1,230′
Munirabad	...	...	...	1,674′	1	395′
Kopbal	...	...	...	3,230′	1	395′
Bhanapur	...	...	...	1,195′	1	348′
Bannikoppa ...	...	...	...	1,617′	1	345′
Harlapur	...	...	...	1,647′	1	341′
Gadag Junction ...	3	Wood ...	Gadag ...	11,591′	9	2,004′
Halkoti	...	...	...	1,600′	1	390′
Annigeri	...	...	...	1,600′	1	390′
Dundur	...	...	...	1,600′	1	390′
Hubli Junction ...	1	Wood ...	Hubli ...	16,376′	...	...
Dharwar	...	...	...	6,100′	3	1,170′
Mugad	...	...	...	1,470′	1	390′
Kambargauvi ...	...	...	...	1,964′	1	390′
Alnavar	...	...	...	1,964′	...	...
Nagargalli	...	Wood ...	Nagargalli.	1,964′	...	...
Londa Junction ...	1	Wood ...	Londa ...	5,788′	1	390′
Tinai ghât	...	...	...	1,418′	...	...
Castle Rock ...	1	Wood and coal.	Castle Rock.	6,420′	2	780′

STATIONS—*cont.*

Station.	Cross-overs.	Turn-outs.	Signals.		Weigh-bridges.	Weighing machines.
			Home.	Distant.		
Guntakal Junction ...	20	6	2	2	1	9
Bantanahal	...	2	1	...	...	1
Baivanhal	1	1	1	...	...	1
Virapur	1	1	1	...	...	1
Hagari	1	1	1	...	...	1
Bellary	7	16	2	2	1	1
Bellary Cantonment ...	...	...	1	...	...	1
Kudatani	1	1	1	2	...	1
Tornagallu	...	...	1	...	...	1
Gadiganur	1	1	1	2	...	1
Papinaikanahalli ...	1	1	1	2	...	1
Hospet	3	5	1	2	...	1
Munirabad	1	1	1	2	...	1
Kopbal	1	4	1	2	...	1
Bhanapur	1	1	1	2	...	1
Bannikoppa	1	1	1	2	...	1
Harlapur	1	1	1	2	...	1
Gadag Junction ...	14	...	4	2	1	1
Halkoti	...	2	1	2	...	1
Annigeri	...	2	1	2	...	1
Dundur	...	2	1	2	...	1
Hubli Junction	...	...	1	2	2	6
Dharwar	1	7	1	2	...	1
Mugad	...	2	1	2	...	1
Kambargauvi	...	2	1	2	...	1
Alnavar	...	2	1	2	...	1
Nagargalli	...	4	1	2	...	1
Londa Junction... ...	3	8	1	2	...	1
Tinai ghât	...	2	1	2	...	1
Castle Rock	3	6	1	2	...	1

STATIONS—*cont.*

Stations.	Mechanical lifting power.	Turn-tables.	Ashpits.	Carriage examining pits.	Station-yard. Area.
Guntakal Junction.	10-ton crane.	1	9	1	6,200′ × 2,500′
Bantanahal ...	...	...	...	...	922′ × 203′
Baivanhal ...	...	...	...	...	565′ × 66′
Virapur ...	...	...	...	...	1,716′ × 489′
Hagari	...	...	...	...	154′ × 86′
Bellary	5-ton crane.	1	2	...	2,780′ × 1,260′
Bellary Cantonment	...	...	...	...	1,474′ × 52′
Kudatani	...	...	...	...	2,140′ × 300′
Tornagallu ...	...	...	...	...	524′ × 264′
Gadiganur ...	...	...	2	...	2,078′ × 300′
Papinnikanahalli ...	...	...	...	...	1,500′ × 350′
Hospet	...	1	2	...	2,200′ × 300′
Munirabad ...	...	...	...	...	1,300′ × 300′
Kopbal	...	...	2	...	2,200′ × 300′
Bhanapur ...	...	...	2	...	1,300′ × 300′
Bannikoppa ...	...	...	...	...	2,440′ × 300′
Harlapur ...	...	...	...	...	2,200′ × 300′
Gadag Junction ...	5-ton crane.	1	4	1	2,620′ × 1,500′
Halkoti	...	...	...	...	...
Annigeri	...	...	2	...	...
Dundur	...	...	...	...	...
Hubli Junction ...	7 crane.	1 engine. 8 carriage.	2	1	... ...
Dharwar	...	...	2	...	...
Mugad	...	...	...	...	...
Kambargauvi ...	...	...	...	...	...
Alnavar	...	...	2	...	...
Nagargalli	...	...	...	...	...
Londa Junction ...	...	1	4	...	...
Tinai ghât	...	...	...	...	...
Castle Rock ...	...	1	4	...	...

REMARKS.

Guntakal.—There is a transhipment platform west end of station 600′ × 20′ with a covered portion 300′ × 12′; a storage reservoir 4 miles distant, filled by water pumped from well at 5th mile, keeps the station and tank supplied.

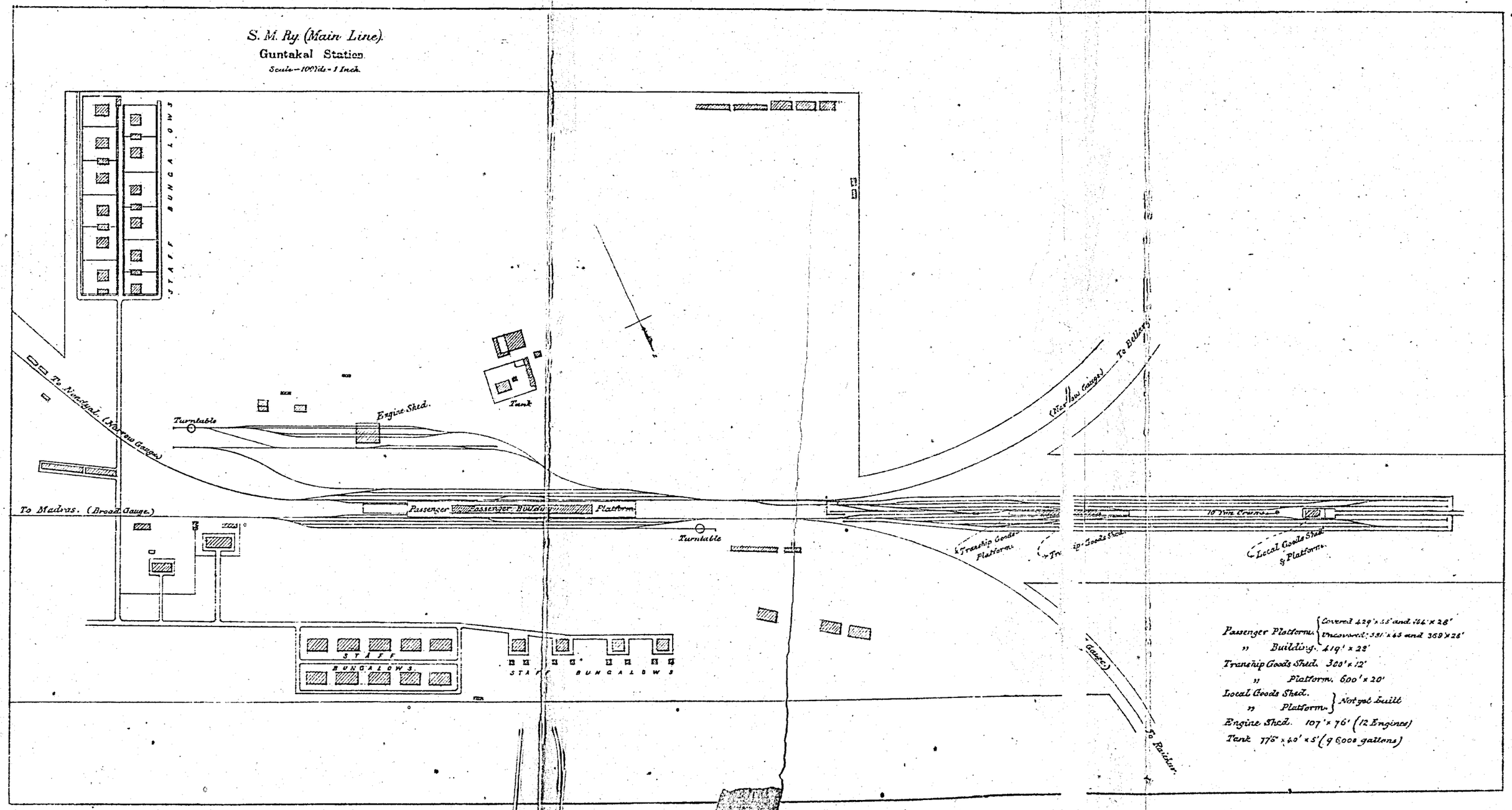
Bellary.—The permanent-way opposite passenger building and platform is covered. The total length and breadth of covered space including platform being 400′ × 42′.

Gadag.—In addition to the 24 staff quarters, &c., there are many small out-houses, lodges, and zinc sheds.

Hubli.—The workshops here are very extensive and replete with every contrivance, and repairs of every kind can be carried out. The rolling stock sent out from England is put together here and vehicles are also manufactured (see under heading "Rolling Stock"). The mechanical lifting power consists of 2 25-ton hydraulic overhead traversing cranes; 1 12-ton hand power ditto; and 1 3-ton hand power ditto; 1 5-ton, 1 3-ton, and 1 2-ton foundry cranes. There are 6 steam hammers, viz.:—1 30-cwt.. one special steam stamp, 1 5-cwt., and 2 3-cwt., also three carriage traversers and one engine ditto, 20 engine pits and 14 carriage examination pits.

Londa.—There is to be an engine-shed here (see plan) and a goods shed. The platform area is being increased and it is proposed to add on to the station building.

Castle Rock.—A new station with covered platform of the W. I. P. R. type is in course of erection. The rainfall here is very heavy.



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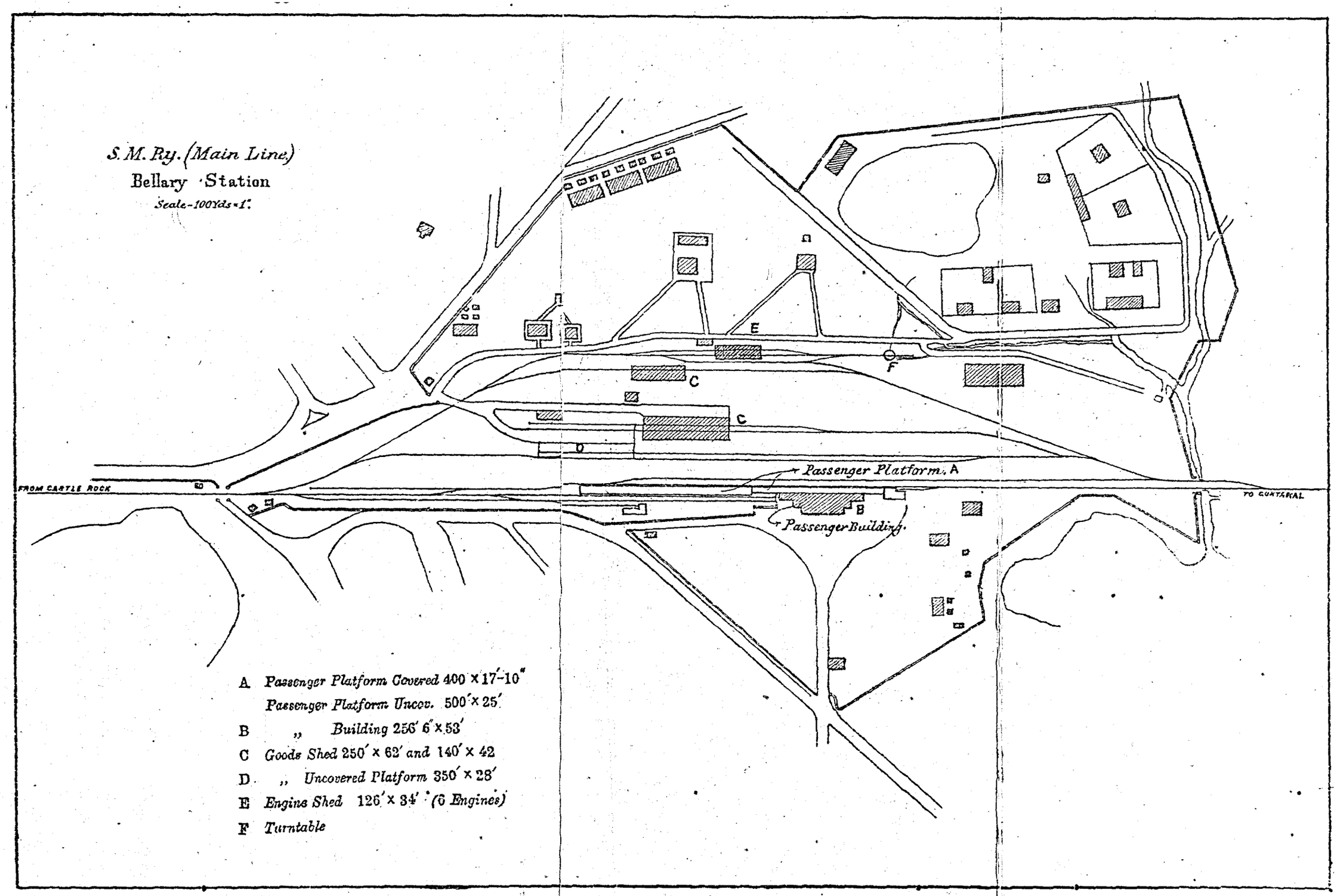

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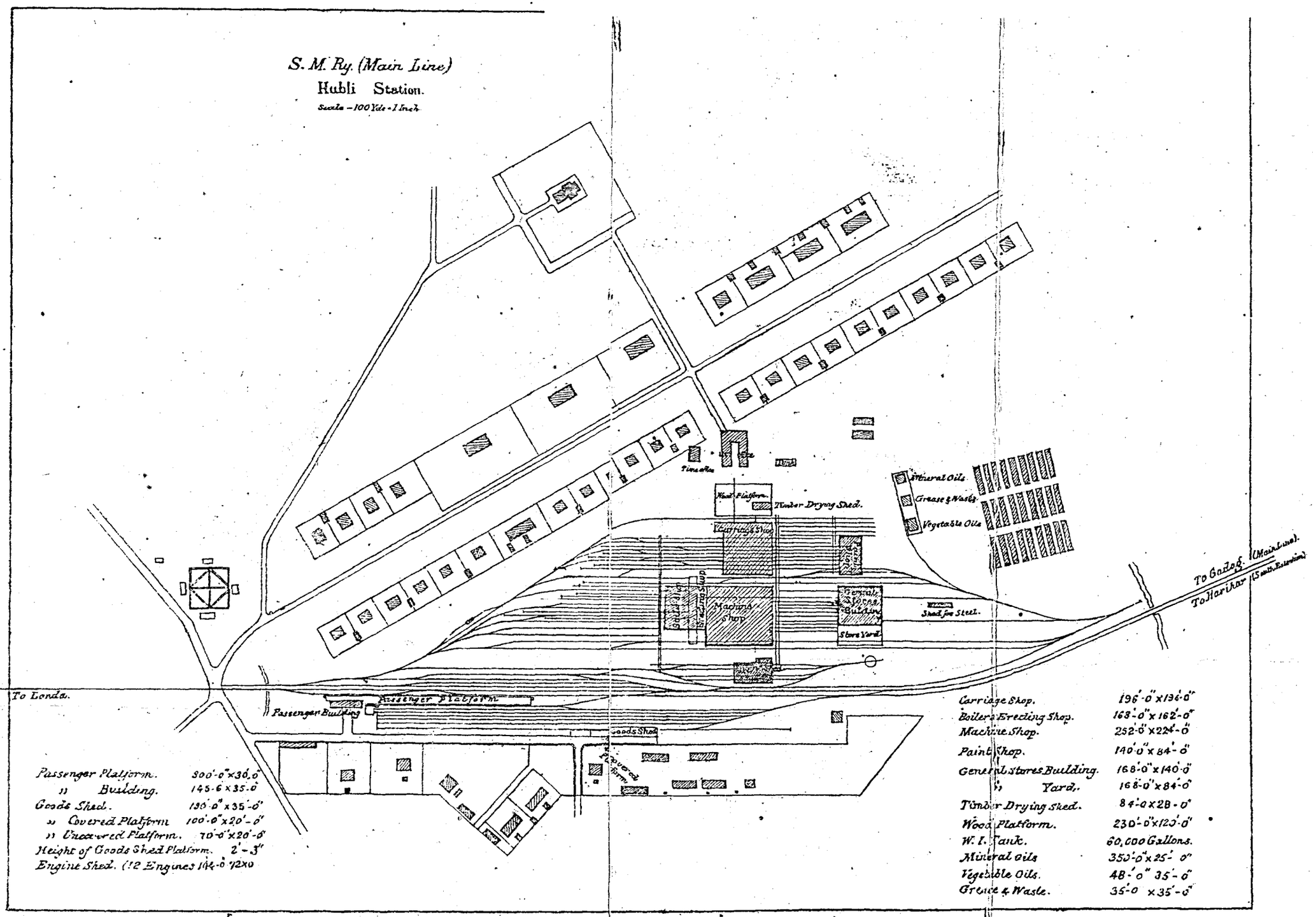

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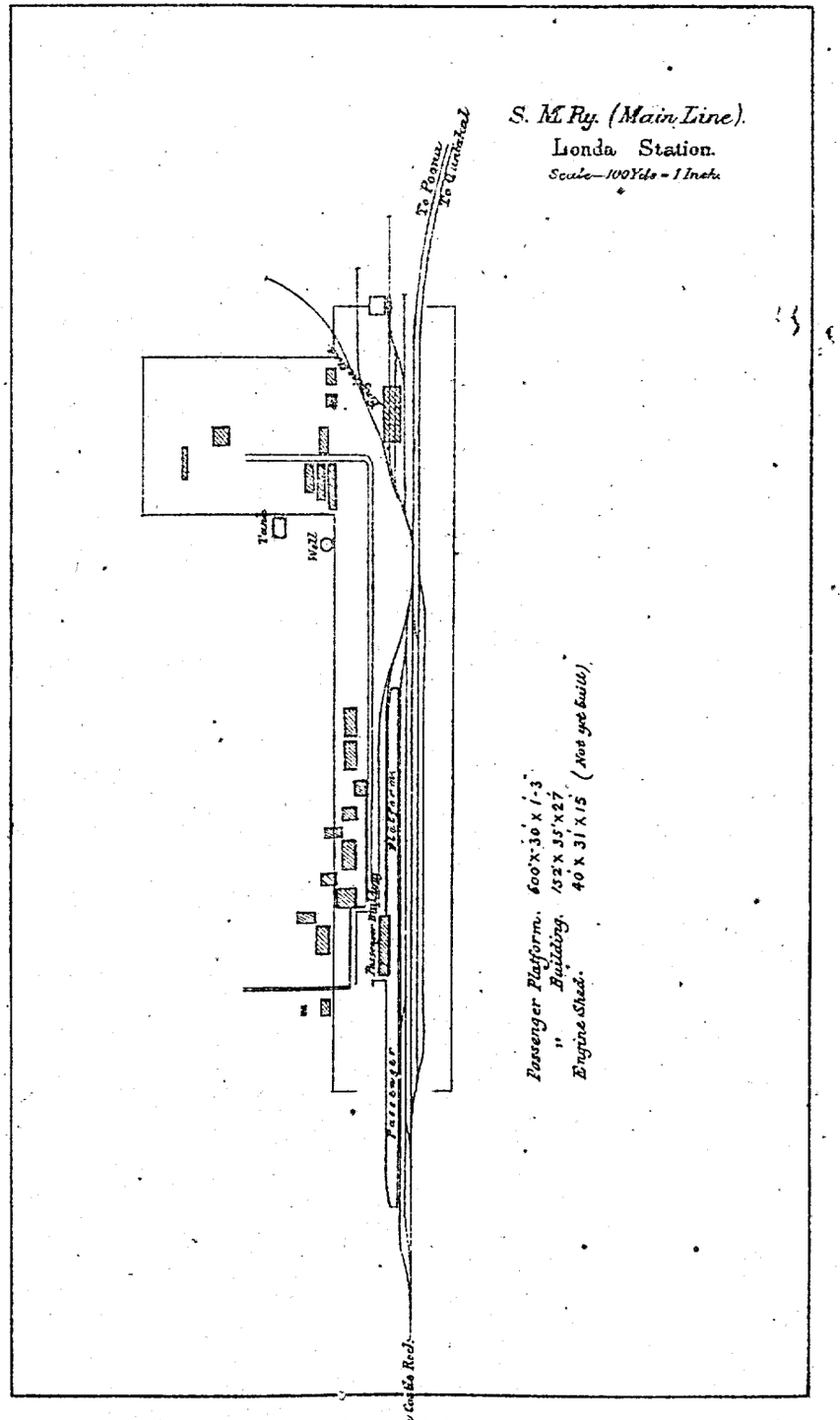

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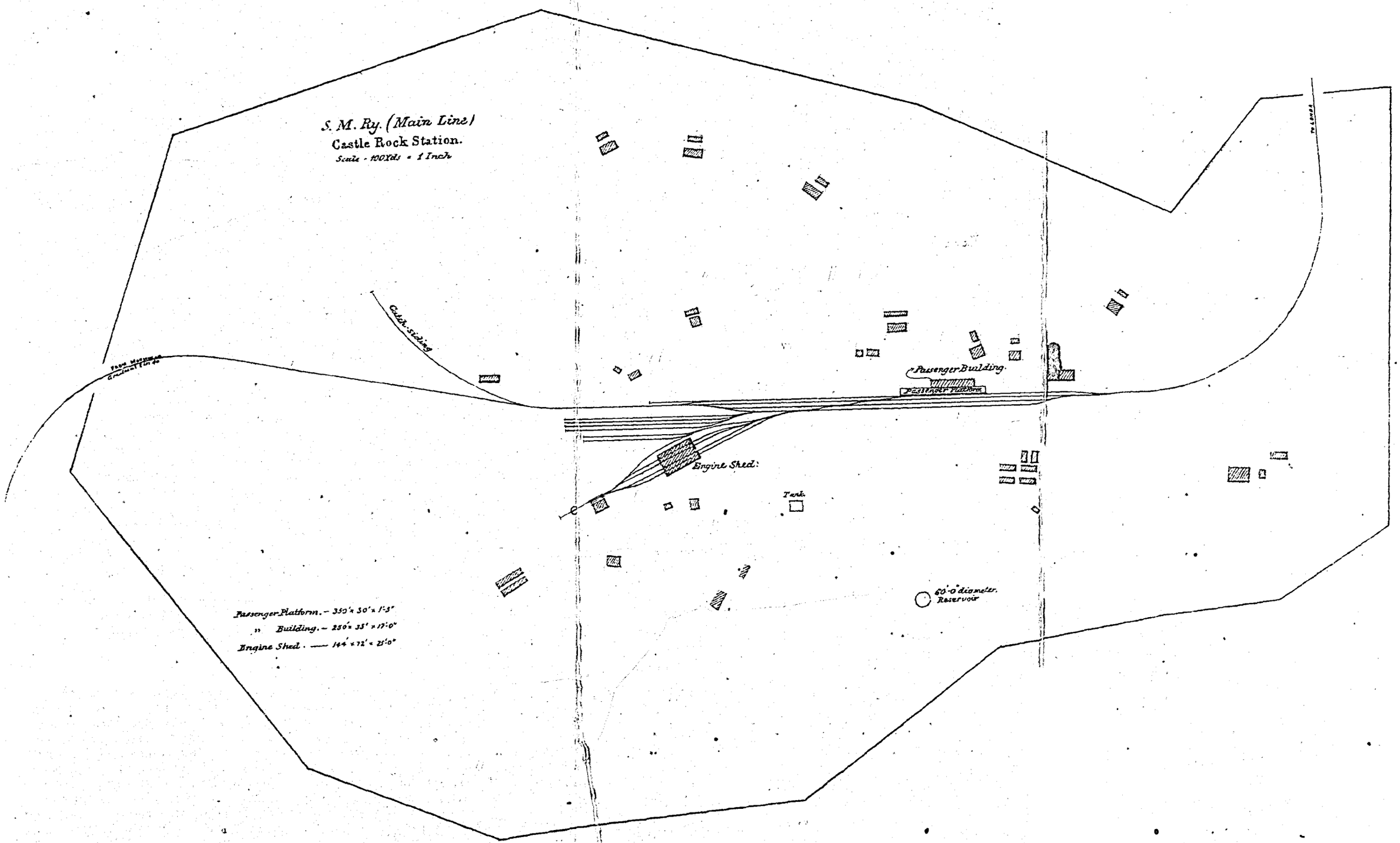

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THE COUNTRY.

Guntakal to Bellary.

The country generally is flat and open, being a black cotton plain at an average altitude of 1,180 feet above sea level. To the north-east and south-east of Guntakal there are some isolated granite hills, but between Guntakal and Bellary the country is an extensive plateau with few trees and a rich black soil, having here and there red and stony parts and broken by isolated hills, chiefly to the south between Bantanhal and Virapur, which approach close up to the line. It is watered by the Hugari river, a tributary of the Tungabhadra, running almost due south and north. Cotton, cholum, korra and other pulses are grown.

The Hugari river, crossed at the station of Hugari, by the bridge of 34—64 feet spans (about 9 miles east of Bellary) rises in Mysore and after flowing for 125 miles falls into the Tungabhadra river near Hatsahalli. It is very shallow and has a heavy bed of sand and soft loamy banks. At Moka, 2 miles north of the line of rail, the sand beds are nearly 2 miles broad, but at Permadavenhalli, where the main road from Guntakal to Bellary crosses the river by a ford, they are not so long though there is sufficient width of sand to make them tedious. When in flood it is very broad, though still shallow, and occasionally overflows its banks.

Bellary—Hospet.

The country near Bellary is flat and open and generally well cultivated. At about 18 miles distant, however, there is a marked rise and the ground becomes gradually higher and higher until within a few miles of Hospet, when it slopes down to the Tungabhadra river. This rise is caused by the parallel ranges of hills bounding the Sandur valley which terminate rather abruptly about here. Some of the higher plateaux of these ranges have an elevation of 3,000 feet. There are smaller detached ranges running from Papinaikanahalli to Daroji and from Kamlapur to Mettri. The slopes of many of these hills are well wooded. The soil is rich, alternating between black cotton and red.

Sugar-cane, paddy, cholum, rice and pulses of various kinds are grown.

On quitting Bellary the line runs along a broad valley, but from Gadiganur the low hills running along each side close in and converge on to the railway. Round Tornagallu and Hospet it is considerably wooded.

Hospet—Gadag.

From the Tungabhadra river the country rises gradually the whole way to Gadag. It is generally open and well cultivated though somewhat rocky in places. At Munirabad and Kopbal there are some small ranges of hills, and south of Gadag the country becomes much broken and hilly, the outcropping rock being mostly granite gneiss, owing to the Kappatgudd range which runs for 30 miles south-east from Gadag to the Tungabhadra. At Kopbal there is a steep rocky hill crowned by a strong fort belonging to the Nizam. From Bhanapur the country opens out into a vast plain stretching away as far as the eye can reach and broken only by two or three small hills far away to the south.

Many streams and nálás intersect the country, nearly all of which run into the Tungabhadra river.

The Tungabhadra river is formed by the junction of the Tunga and Bhadra, the former of which rises in the Western Ghâts near Bednore and the latter in the Baba Booden hills by Mangalore. These streams unite 70 miles from their source at Kurli in Mysore. The best known of the towns by which it flows are Hampságar, Hospet, Hampi, Kampli and Rampur. It contains water at all times, but in the dry season, being full of rocks, will not admit of boats. In the rainy season it swells prodigiously and becomes 8 or 10 feet higher than the rocks. Its stream is then extremely rapid and muddy. Crocodiles abound in it. In the dry season it is easily fordable in most places, and during the rainy season it is crossed by ferry-boats at many parts. These ferry-boats are round wicker baskets covered with leather about 15 feet in diameter, but at the ferry between Sovainhalli and Hesrur on the main road from Hospet to Dharwar, double boats run of the following dimensions:—25′ × 8′ × 3′ carrying 50 passengers or 4 carts or 5,000-lb. weight. Where crossed by the railway it is full of large rocks and boulders.

Gadag—Dharwar.

The line from Gadag passes at first through the centre of the Gadag sub-division of the district of Dharwar. The country to the north and east is open and level, stretching away towards Navalgund, an example of one of the outcrops of granitic rock, into a black soil plain, about 60 miles in extent, broken only by a few isolated granitic peaks 300 to 700 feet high. During the rainy and cold seasons this plain is a broad expanse of rich crops of grain, pulse, oil and cotton, but in the hot months it is full of deep fissures and swept by clouds of dust. To the south of Gadag it is hilly and fairly wooded, the Kappatgudd range running from a little south-west of the town for 30 miles in a south-easterly direction to the Tungabhadra river. These hills are about 4 miles broad with steep sides, and attain an altitude of 500 feet above the level of the plain. Along both sides of the line, however, it is quite open and level for many miles.

There are some curiously shaped low hills of granite boulders to the south near Melgund. The soil is red adjacent to the hills but black elsewhere, in the north-west and east being very rich. On approaching Hubli the water-shed of Southern India is entered running from north to south. To the west of the water-shed the country is broken by low hills with many small villages. To the east of the water-shed and towards the north is the bare black level plain before alluded to. The Shalmalla and Bennihalla streams flow through this part—the former runs over sand and gravel, 40 to 50 feet broad, between sloping earthy banks; the latter (the Bennihalla) rises at Dhundshi in Bankapur, flows north through Hubli and Ron and falls into the Malprabha. Its banks are high and steep and its bottom soft and muddy from 150 to 200 feet broad. In the rainy season it is very rapid but during the hot weather remains only in pools. It is bridged on the Bellary-Dharwar road.

On leaving Hubli and approaching Dharwar the country becomes rugged and hilly with forest, brushwood and red soil, Dharwar itself being 2,580 feet above sea level and the source of streams which flow

west to the Indian Ocean and east to the Bay of Bengal. The country may in fact be briefly summarised as being divided into two parts by the watershed running north and south through Hubli—that to the east consisting chiefly of a bare plain of rich black soil, broken only by a few ranges of low bushy hills, in which the villages are large and far apart and the water-supply scanty, stretching for about 60 miles towards the north-east, the people rich and skilful husbandmen; that to the west being hilly, rough and wooded with red and gravelly soil, the air cool and water abundant, the villages close together and the people poor but hardworking. All the streams in the south-west drain into the Tungabhadra; those in the north and north-east into the Malprabha.

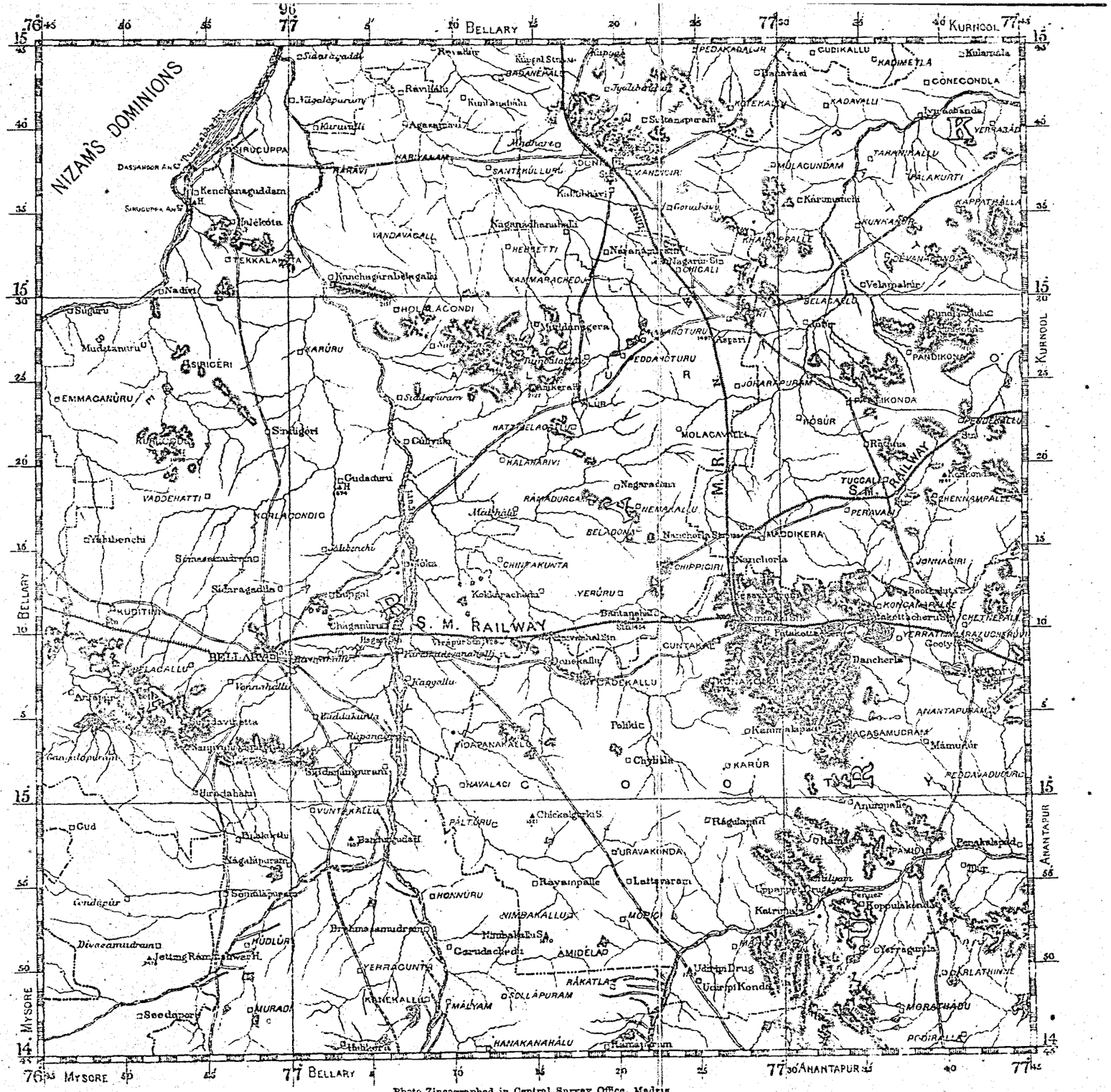
Dharwar to Castle Rock and Portuguese Frontier.

The country to the north-east, east and south-east of Dharwar is open for upwards of 30 miles. On the west and south-west close to the town are several small waving hills, whilst beyond, the land is rugged and hilly. At Haliyal, about 8 miles south of the line of rail, a plain stretching 10 to 12 miles north and south with rice-fields and grass-lands and thickly studded with trees is entered, but further west by Jaglepet (about 5 miles south of the line) a low line of quartz hills, with a lofty range beyond, whose southern slopes fall steep towards Supa, rise above the surrounding landscape overlooking deep thickly wooded valleys. Further west towards Tinai ghât the Sahyadri range is approached and the country is full of hills and forests. The soil is partly red and partly white. The crops south of the line are chiefly rice, sugarcane, millet, gram, peas, castor-seed and chena. There are many large and small streams and 20 miles south the Kalinadi river runs east and west, into which a large feeder runs past Jaglepet from close to the line.

To the north of the line of railway the country, after leaving the open land by Dharwar and having entered the sub-division of Khanapur in the Belgaum district is crowded with hills and forests, in many parts dense, the scenery being beautiful, the people few and unsettled and the tillage except in patches *nil.* Towards Jamboti the hills are especially lofty, their bases far stretching and their sides clothed with rich evergreen brushwood. The soil is red and stony. The chief source of water is the Malprabha running from west towards the north east and its tributaries. Further west the Sahyadri range is entered dividing British and Portuguese territory and forming a portion of the vast Western Ghâts extending all down the west coast of the Indian peninsula.

From Dharwar westwards the country becomes more and more wooded and wild. A portion of Kanara is passed through shortly before the Portuguese frontier is reached and the vast forests, chiefly of teak, for which that district is celebrated, extend up here and surround the line. As far as Alnavar the valleys are fertile and productive, but beyond this it is all dense jungle.

The Braganza ghât of 16 miles running down from Castle Rock to Collem, in Portuguese territory, presents some very fine mountain scenery and the beautiful falls of Dudh Sagur pass under the railway four and-a-half miles from the frontier.



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NIZAMS DOMINIONS
KAMPLI
HUVINAHADGALLI
HIRAHADAGALI
HOLLALA
CHIGAUERI
KOTTUR
HARPANAHALLI
HAMPASAGAR
THAMBRAHALLI
Hampapattanam
Tummalapuram
Devalapuram
Bonnakallu
Ambali
Hallalibandi
Shidegallu
Karchobanahalli
Harakanahalu
Tumbaragudda
CHORANUR
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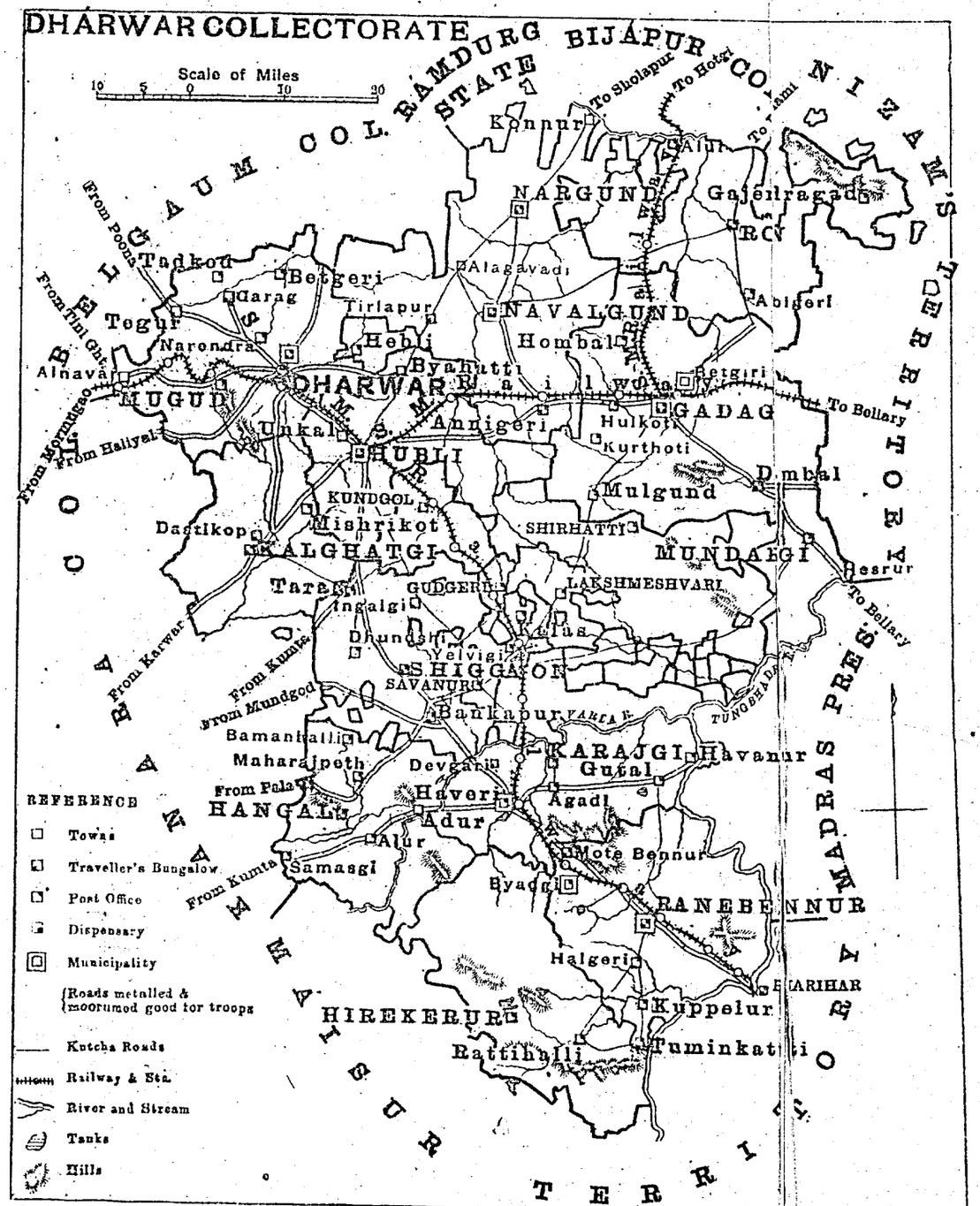
Dharwar
Mayurara
Budanur
Kittur
Bellary



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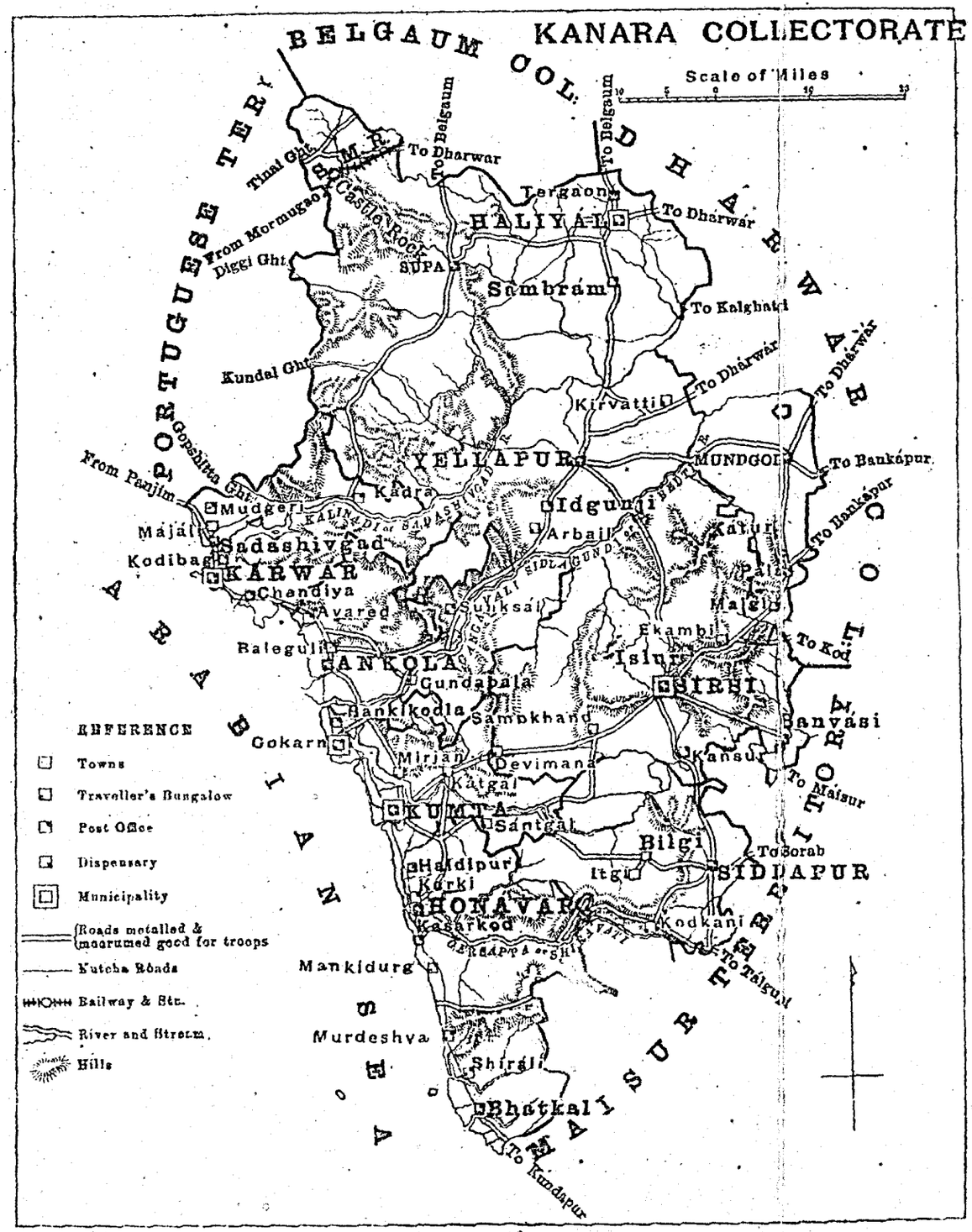

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Roads.

The Main Road.

The main road for ordinary traffic from Guntakal to the Portuguese frontier is a continuation of the trunk route from Madras to Cuddapah, Cuddapah to Gooty, Gooty to Guntakal.

Guntakal to Bellary.

From Guntakal to Bellary it runs almost due east and west and is parallel to the line of rail at a distance of less than two miles from it. It passes through the villages of Godakal and Paramadavenhalli, at the latter of which it crosses the Hagari river by a ford. It is a made road and passable at all seasons except in some few places for about a fortnight during the rains. There are public bungalows at all the stages and a large traffic is carried on along it. At both Godakal and Paramadavenhalli there is encamping ground and good water.

Bellary to Hospet.

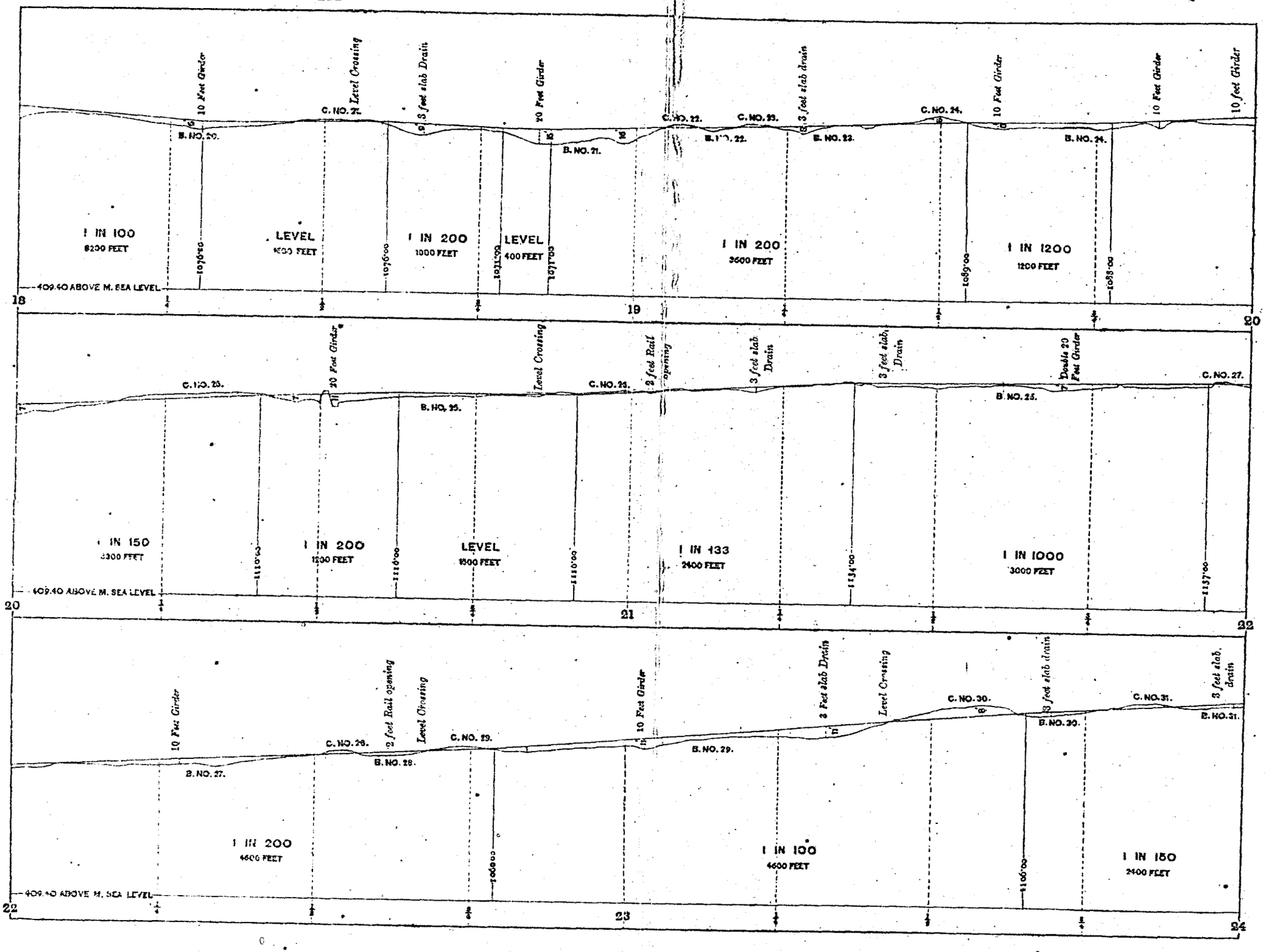
On reaching Bellary it passes through the town and, after crossing the line 3½ miles from it, continues parallel with the railway as far as Kudatani 12½ miles, being distant about a mile and-a-half from it. Here it inclines southward but again crosses the line 4 miles east of Gadiganur. From Gadiganur it runs for 14 miles along the north side of the railway at about half-a-mile from it, until the 35th mile, when it again crosses the line and enters Hospet town 4 miles on. It is well metalled and made throughout. The largest streams crossed are the Daroji nálá at the 18th and the Korikampa nálá at the 21st mile from Bellary. There are bungalows at all stages and good camping ground and water.

Hospet to Gadag.

At Hospet it leaves the line of rail and takes a south-west direction along the southern bank of the Tungabhadra river, which it crosses at Sovainhalli, 35 miles from Hospet, by a ford in dry weather and by a ferry in the rains (see Tungabhadra River), and passes through the villages of Ballahunsi, where it crosses the Chinna Hugri, and Hampsagar, where there is a rocky nálá having excellent water. From the Tungabhadra it continues north-west for 32 miles to Gadag through Mundargi and Dumbal. It is made and metalled throughout. Between the Tungabhadra and Gadag the nálás are very numerous but the monsoon in this district is light.

Gadag to Dharwar.

From Gadag the road follows the line again practically the whole way. As far as Annigeri it is quite close along the south side, after which it takes a bend south but runs into the railway again at Hubli, from which up to Dharwar it is parallel and along side the line. The



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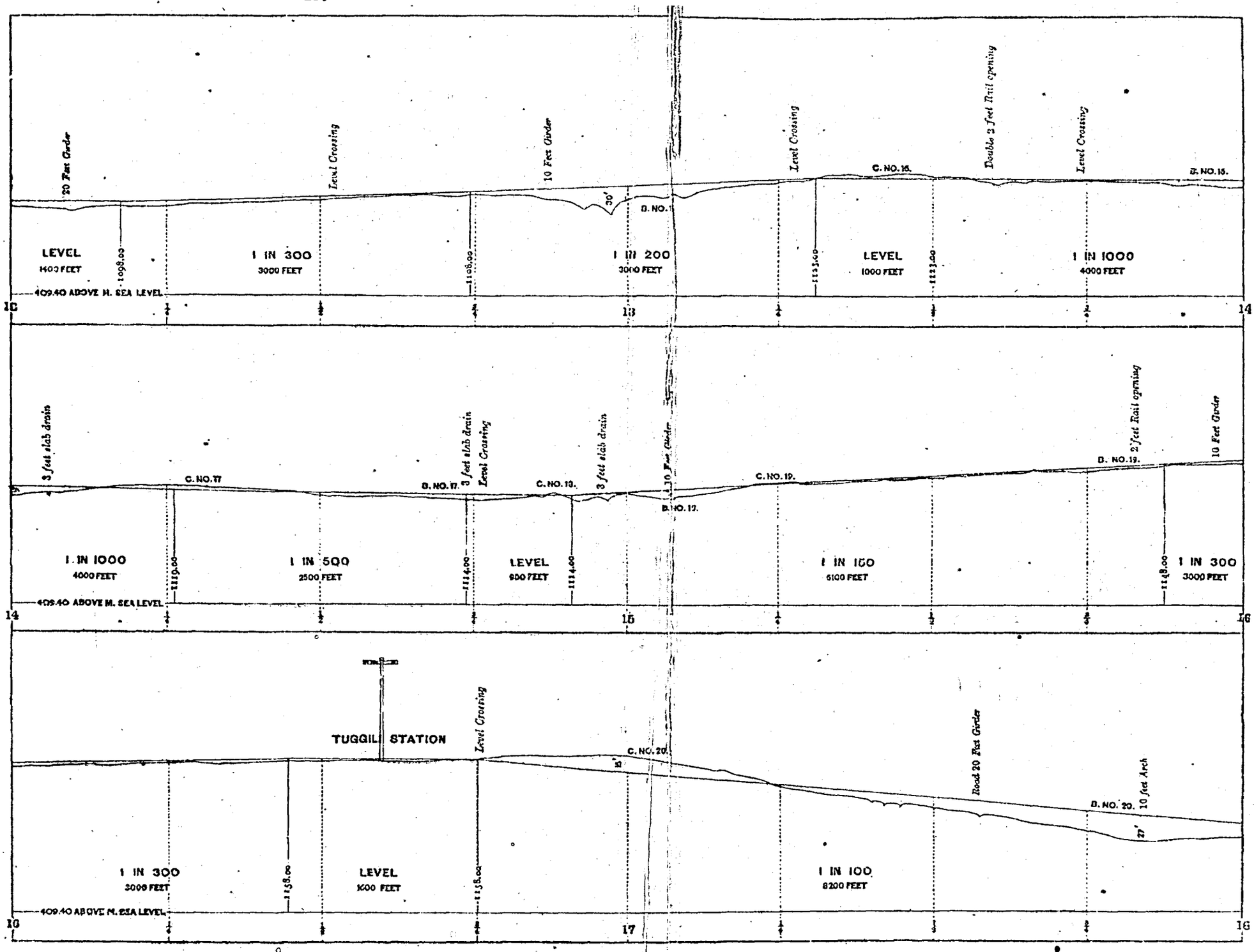

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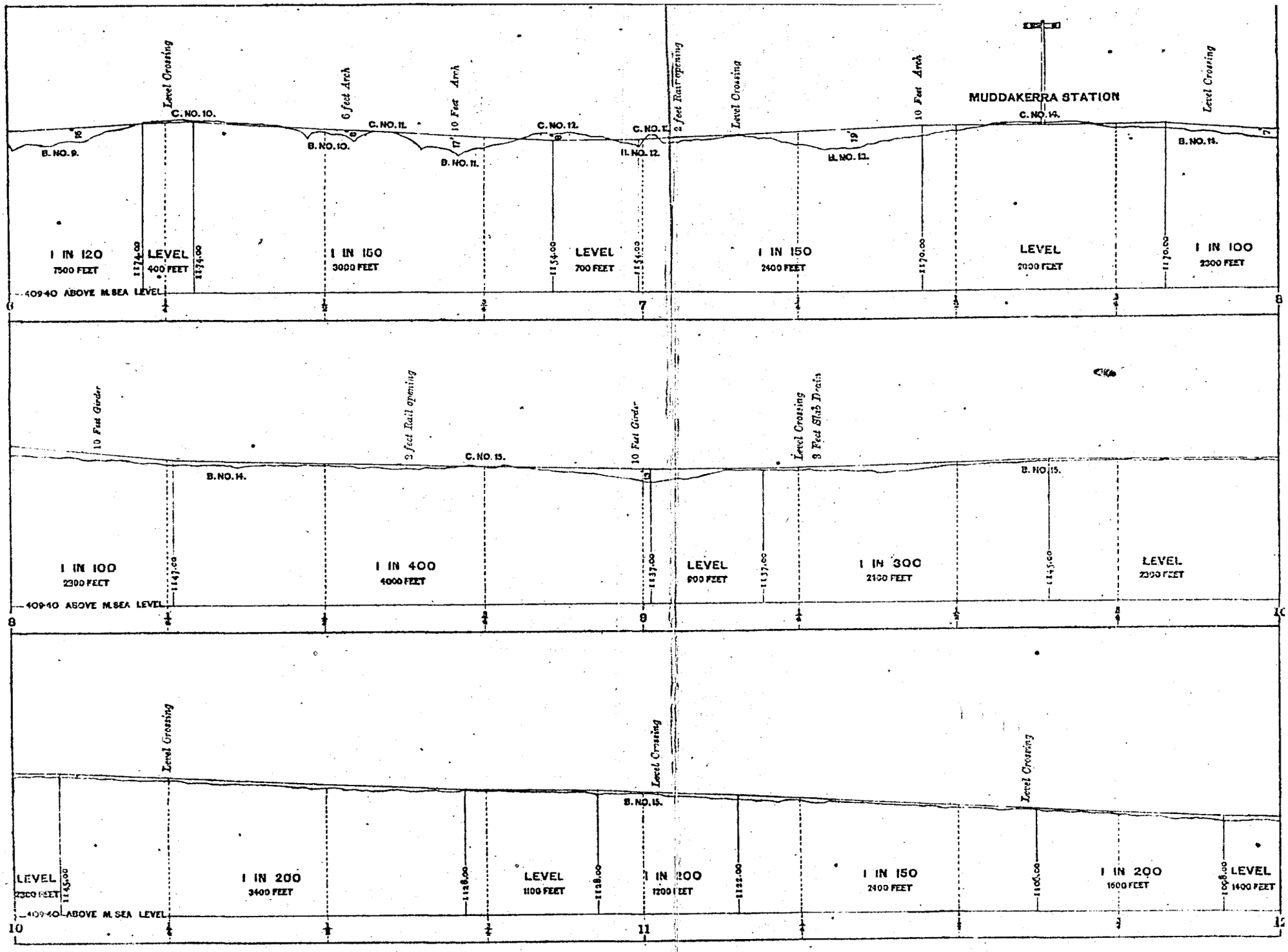

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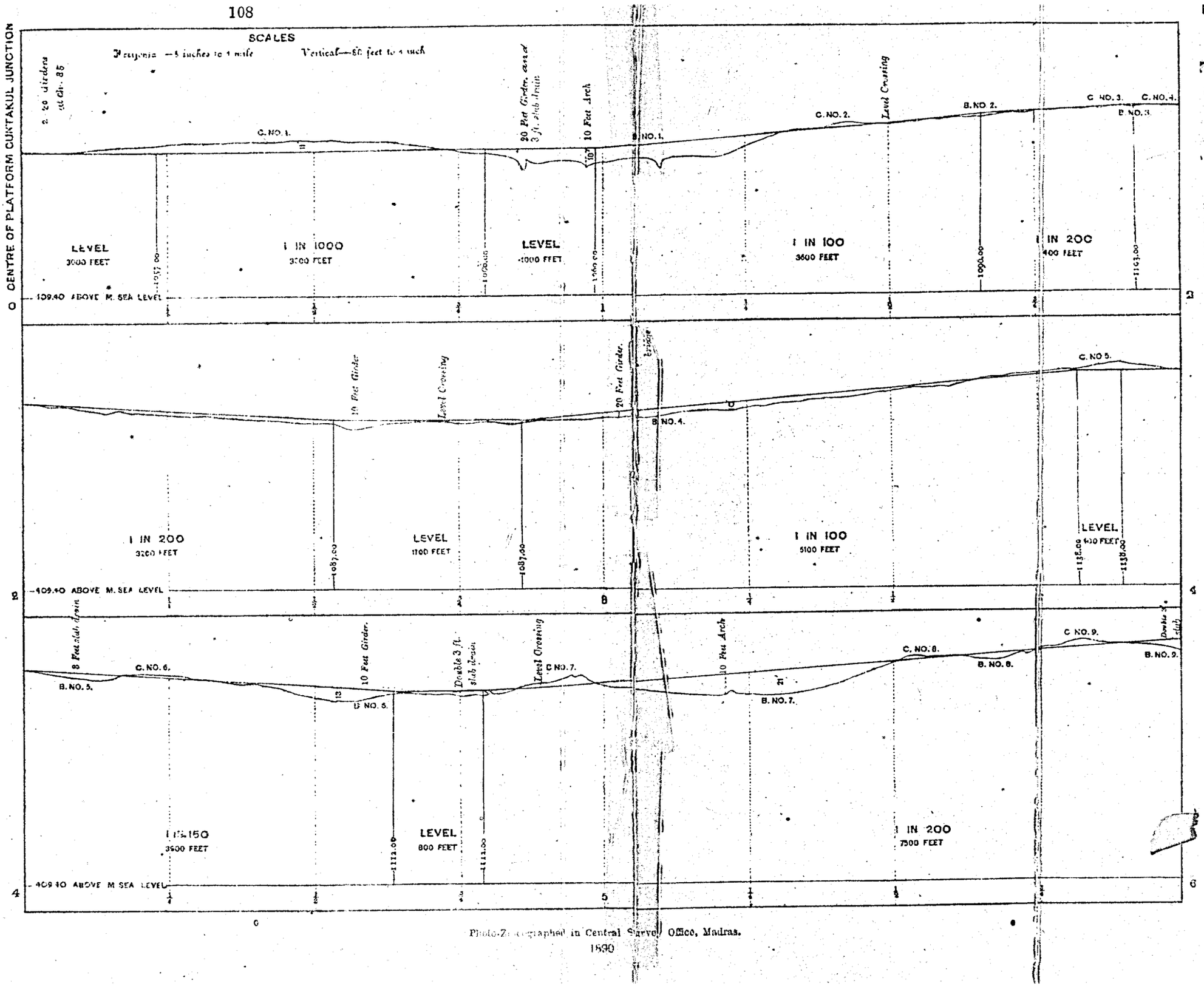

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The ballast is of—

Mile	0 to 78½	... ...	Broken stone.
,,	78½ to 88¾	... ...	Sand.
,,	88¾ to 105½	... ...	Broken stone and gravel.
,,	105½ to 201	... ...	Broken stone.
,,	201 to 230	... ...	Broken stone and moorum.
,,	230 to 255	... ...	Sand and moorum.
,,	255 to 276	... ...	Gravel and sand.

The type of stations between Guntakal and Nandyal differs very considerably from those on other parts of the system. The buildings are composed of two square stone dwarf towers with a waiting-shed, for natives, of corrugated iron in the centre connecting them, a verandah running round the front and two ends. In the smaller stations from Malkapuram to Nandyal there is only one stone tower.

Nandyal itself is much larger and has many bungalows and staff quarters round it. The third-class waiting-shed here is very commodious and is capable of accommodating several hundred passengers and there is excellent encamping ground at the west end opposite the station building. The water-supply of Nandyal is said to be unreliable in the hot weather, but there are 150 wells in the town which is close by the west end of the station. This is the principal town of the Nandyal taluk, of the Kurnool district, and the head-quarters of the Deputy Collector, Tahsildar, Police Inspector and Deputy Conservator of Forests. It is situated on a flat plain on the eastern bank of the Kunder river and is from 700 to 800 feet above sea level. It has a population of 8,907, of which 3,112 are Mahomedans, and contains about 2,288 houses. The Nandyal tank, just above the town, covers 793 acres and has a bund 5,780 yards long by 22 yards wide. There is a weekly market at which every sort of supplies are sold. Two and-a-half miles east (mile 92½ from Guntakal) the Cuddapah-Kurnool canal is crossed by a 60-feet span girder bridge, and the main road on to Cumbum runs along the south of the line and crosses a large nala one mile from Nandyal by a masonry bridge of 17 arches. At mile 1¼ from Guntakal there is a stores siding running down to a detached row of quarters and storehouses. At Maddikera and Tuggalli there is good camping ground opposite the station. The country round is quite flat, but becomes hilly and broken with low ranges of rocky hills covered with boulders about Tuggali.

At Pendekallu and Kurnool Road the water-supply is good. The latter is a crossing station and is commanded by hills running close by on south. Up to Rangapuram it is fairly open, but from here on it gets very hilly with rocky jungly country and the Erramala ghâts are crossed before reaching Panyam, the line running for some distance between parallel ranges of rocky hills covered with scrub.

Kondakapilli, mile 72¼, is the ghât block station and is of no use except for this purpose. There are large quarries here, from which most excellent stone is obtained for the works east of Nandyal. From Panyam to Nandyal it is level and cultivated.

There is encamping ground opposite nearly all the stations between Guntakal and Nandyal, but the country is generally wild, rocky and hilly with hardly any cultivation and few supplies. All round Nandyal, however, it is a black soil plain with rich cultivation. The climate is very hot and further east up in the ghâts very feverish and unhealthy.

All the waterways will be found marked in the "working section," and a separate list of the more important bridges is given together with a drawing of that over the Kondair as a type. To these may be added the three viaducts in the ghât section. These latter, from their size, isolated position and the cover afforded by the surrounding forests, might be liable to injury from disaffected bodies.

The terminus of this 276 miles of railway is on the south side of the Kistna river immediately opposite to Bezwada, to which the Nizam's State Railway from Warungal runs, connecting it with the large garrison of Secunderabad.

It is proposed also to construct an East Coast line from this point up to Calcutta. The Buckingham canal runs in a direct line, along the coast, from the Kistna terminus to Madras, and from Bezwada to Rajahmundry and Cocanada.

Branch canals also connect the terminus with Masulipatam and the coast, from which latter it is 40 miles distant.

south of Hubli, and passing through Tadas unites with the road from Bankapur and continues on through Sirsai and the Devimani pass to Kumta. This is a first-class road bridged and metalled throughout.

(*d*) The Hubli-Sholapur road running north and passing through Tirlapur at 16 miles, Nadgunda at 32, Konnur at 48 (where it crosses the Malprabha by a ford), Bijapur 116, and Sholapur (by Hotgi the terminus of the Bijapur Branch) 177 miles. It passes over black soil, is not metalled or moorumed, and is bad during the rains.

From Dharwar, in addition to the Poona-Harihar trunk road, four good made roads branch off, viz. :—

To Byahatti 12 miles east, from which a fair weather track continues to Hebsur and Dundur.
To Kalghatgi 20 miles south.
To Halial 22 miles south-west.
To Betgeri 12 miles north.

A short branch of metalled road leads to Garug off the Poona-Harihar road.

Dharwar to Portuguese Frontier.

Between Dharwar and the Portuguese frontier two good roads run south, viz. :—

(*a*) The Dharwar-Karwar road passing through Halial, Yellapur and the Arbail pass, 74¾ miles long and from 18 to 24 feet wide, bridged and metalled throughout. The main road from Belgaum runs into this at Halial. From Yellapur on it is a continuation of the Hubli-Karwar road.

(*b*) The Kadra-Belgaum road running through Supa and the Aushi pass. This road is connected with the one above (*a*) by another good road running direct from Halial to Supa crossing the Birchi nala half way. It is moorumed or trap gravelled and except one or two streams now bridged throughout. In the rainy season the numerous branches of the Kalinadi river overflow their banks. The scenery of hill and forest is very fine.

From Yellapur a good road leads to Sirsai, where it joins the Hubli-Kumta road continuing on through Sampkand, over the Devmani pass, Katgal, Devgi to Kumta port. It is metalled and bridged throughout except at Devgi where there are ferry boats.

Two good roads run north—one the continuation of the route from Yellapur and Halial crossing the railway near Alnavar; and the other a continuation of the Kadra-Belgaum road crossing the railway by Londa.

In addition to the foregoing, many fair-weather tracks practicable for bullocks diverge along the Sahyadri range. Water is abundant, but supplies are scarce and the climate wet.

MAIN LINE—EASTERN DIVISION.

GUNTAKAL TO KISTNA TERMINUS.

From Guntakal to the Kistna terminus, on the opposite bank of the River Kistna to Bezwada, now forms the eastern half of the main line of the S. M. Railway. It was formerly known as the "Bellary-Kistna State Railway" but was transferred to the S. M. on the 1st January 1888.

The line at present is only open for traffic as far as Nandyal, 90 miles, but is laid up to mile 114. When completed it will have a total length of 276 miles. It is very undulating throughout, and although running practically west and east winds about considerably, that part between mile 70 and mile 125 having many sharp and frequent turns.

From mile 102 to mile 125 is the Nundicanama ghât section where the Eastern Ghâts are crossed. Here the banks and cuttings are very high and deep, many 70 feet, and the curves sharp and numerous, most having a radius of 603 feet. The gradient is almost continuous at 1 in 100.

At mile 115½ there is a tunnel 250 feet long with side walls of stone lining and arching of brick—its western end being on a curve. And at mile 117 (Dorabavi) there is another tunnel 1,526½ feet long of similar construction.

There are three viaducts in the ghât section crossing deep ravines, viz., at mile 116, Dorapilli, 1 span of 100 feet and 1 span of 40 feet; at mile 116⅛, Doratangi, 3 spans of 100 feet; at mile 116⅜, Dorabavi, 1 span of 150 feet, 1 span of 250 feet, 1 span of 150 feet, and 1 span of 66½ feet. They are all girders resting on massive stone piers of great height, the viaducts being 53, 147 and 182 feet, respectively, above the ravines they cross. The one at Dorabavi is a very striking piece of engineering work; the central girder of 250-feet span is unusually massive, and the distance between its top and bottom boom very great. They are all three in a line close together and the tunnel at mile 117 is entered immediately after crossing Dorabavi viaduct. It would appear from the nature of the ground about here that if these viaducts were destroyed the line might be carried round the re-entering angles without involving an excessive curve.

Permanent-way.

The permanent-way conforms to the standard and is similar to the rest of the S. M. R. system.

The sleepers are laid as follows :—

Mile	0 to 23¼	... ...	"Steel."
,,	23¼ to 82	... ...	Wood (Pinkado).
,,	82 to 103	... ...	"Steel."
,,	103 to 114	... ...	"Wood."

From mile 114 to 276 it is intended to use "Steel."

Lateral Communications.

Between Guntakal and Bellary there is lateral communication from the main road to the south by a small road running south-east from Paramadavenhalli to Anantapur passing through Uravakonda. This road is passable at all seasons. It crosses the Penner river close to Marutla.

Bellary—Hospet.

From Bellary town and cantonment roads run to all points of the compass, the principal one, however, being the trunk road from Bangalore to Secunderabad, running south to north-east. This road is metalled and bridged all the way between Bangalore and Bellary and is practicable for all arms at all seasons; from Bellary northwards it runs *viâ* Adoni, Raichore and Janampet and is metalled and bridged, except over the Hugri river crossed at Moka by a ford nearly two miles broad with heavy sand, as far as Alúr (27 miles 2 furlongs); from thence to Raichore it is partially metalled and bridged but, as a rule, practicable at any time. Between Raichore and Janampet the road is unmade, but the soil of the country is hard and stony so that it is passable at all seasons. Beyond Janampet it is fair and practicable at all times. Three large rivers, the Hugri, Tungabhadra and Kistna, are crossed between Bellary and Secunderabad on this route. The first is fordable except during the very heavy rains, when it might not be so for a day or two. The Tunghabadra, 69 miles from Bellary, is fordable in the cold season, but at other times is crossed by boats. The Kistna, 108 miles from Bellary, is half-a-mile wide and is fordable after January, at other times it is crossed by boats.

In addition to the foregoing there is a good road north-east to Kurnool (223 miles), the first 27 miles of which is the same as that just described, *i.e.*, as far as Alur, from whence it diverges in two directions, one going east to Guntoor, 276 miles from Bellary, and the other crossing the Tungabhadra and running due north to Secunderabad cutting the route *via* Raichore at Janampet (282 miles). As far as Kurnool this road is metalled and, except at the Hugri and Hindri rivers, bridged and passable for wheeled transport at all seasons. Beyond Kurnool it is made but unbridged and difficult in the rainy season, especially in the Doab between the Tungabhadra and Kistna rivers, where the soil is deep black cotton.

Four other lateral roads run from Bellary—one south-east to Anantapur, one due north to Siragupa, and two short branches of 10 miles each leading south, one to Hiradahahi and the other to Rupanagudi on the Hagari. These are all fair-weather roads though some portions of them have been properly made. Between Bellary and Hospet a road runs north-west from Kudatani to Daroji and Kampli, from both of which there is direct communication with Hospet; and from Tornagallu on the railway the ghât road goes to Sandur.

Hospet—Gadag.

From Hospet there is lateral communication—

(*a*) North-east to Kamlapur and Kampli, the former 5 miles distant and the latter nineteen. At Kamlapur there is a branch road of 14 miles leading to Daroji where there is a large tank with a bund 3 miles in length and 60 feet in height.

(*b*) North-west to Chitwadi, 2 miles, and on to Hossur on the banks of the Tungabhadra.

(*c*) South-east to Ramandrug, 14 miles long. This road is one of the three ghâts leading up to the Sanitarium, the gradient of which is easy. Of the other ghâts one passes along the Sandur valley through Yettinhatti to Tornagallu where it joins the trunk road to Dharwar; the third and steepest is made down the western slopes of the range and continues *viâ* Maglapur and Donaikankera to the Dharwar road, which it joins at Ballahunsi.

(*d*) South to Kudlighi and Chittaldroog.

(*e*) South to Harpanhalli and Harihar.

A road of 28 miles connects Kudlighi and Harpanhalli.

Between Hospet and Gadag there is communication from Hampsagar and Sovanihalli (ferry over Tungabhadra) to Harpanahalli and Harihar, at which latter place the trunk road from Bangalore to Dharwar is joined. From Mundargi a metalled road leads to Bagewadi, seven miles, and from Dumbal there is also a made road running into the Nizam's dominions to Kopbal.

Gadag to Dharwar.

At Gadag a road runs north to Ron five and twenty miles, twelve miles of which, to Naregal, is metalled and bridged, but the remaining portion is only cart track and passes over a black soil country.

In continuation of this road there is communication south to Bankapur and on to Mundgod, Pala and Kumta, but the first 36 miles to Yelligi (a station on the Hubli-Harihar Branch) is only cart track and passable during the fair season. From this, however, on to Kumta 92 miles it is bridged and metalled, a large cotton traffic being carried on here. From Annigeri a good moorumed road leads to Navalgund 12 miles. From Hubli, the central point of all the main roads—

(*a*) The Poona-Harihar or principal one, runs north and south. It passes through Belgaum and the subdivisions of Dharwar, Hubli, Bankapur, Karagi and Ravebenner and is bridged, metalled and fit for heavy traffic at all seasons. From Harihar it continues on over the Tungabhadra into Mysore.

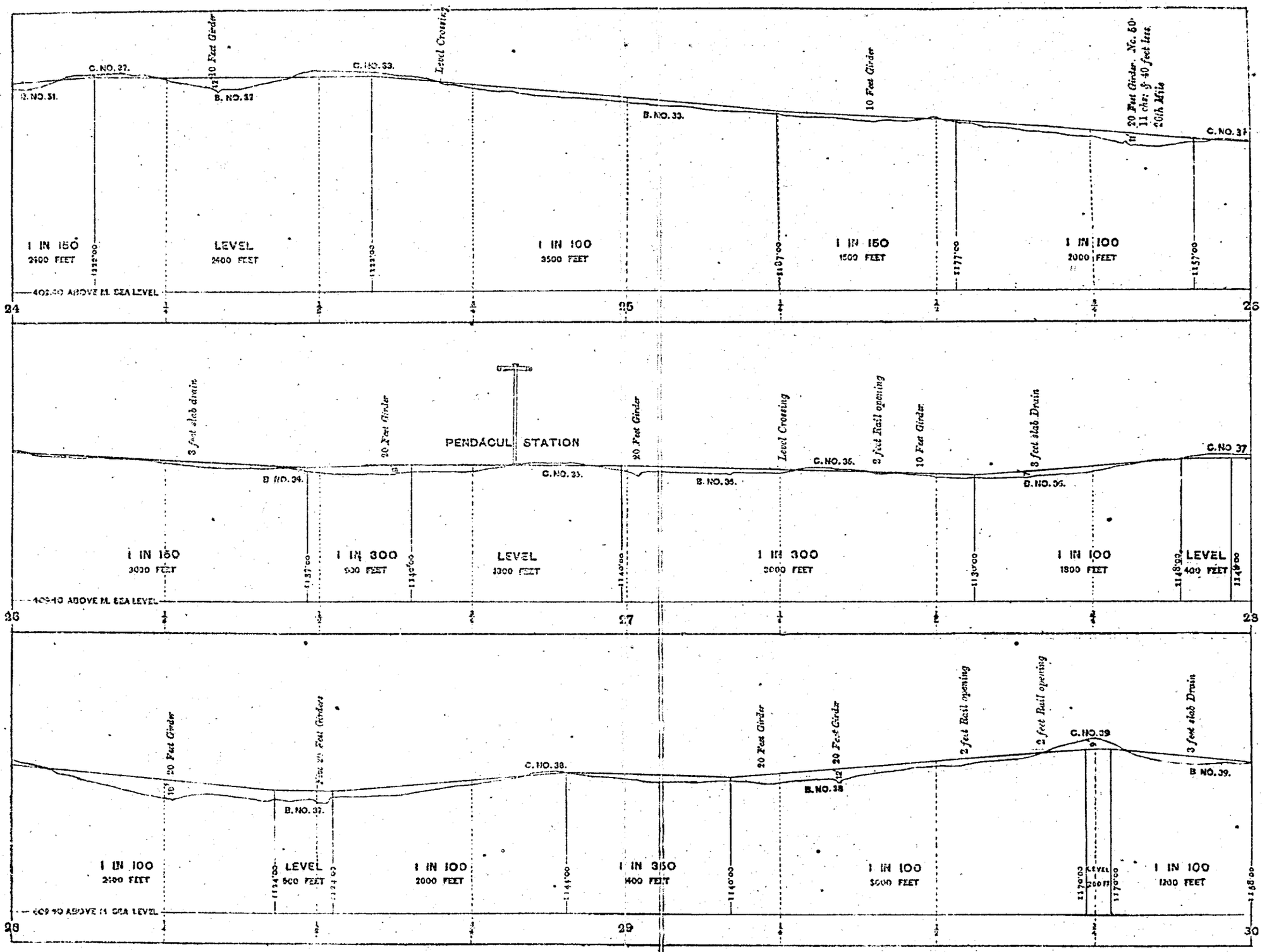
(*b*) The Hubli-Karwar road, a continuation of the trunk road from Bellary and Gooty, passes through Kalghatgi and Yellapur and leads to the port of Karwar on the West Coast. It is an excellent road, being bridged throughout and metalled with schist granite and gneiss, and is from 18 to 24 feet wide.

(*c*) The Hubli-Kumta road running to the port of Kumta, in the Kanara district, leaves the Poona-Harihar road at Trimalkop, 14 miles

Bennihalla, a tributary of the Malprabha, is crossed at Shirguppi, and is deep and muddy. Hubli is the centre of all the main roads in this district, and a very large traffic is carried on between it, and Gadag, and Dharwar. It is partially metalled and partially moorumed or laid with decayed trap and is bridged throughout.

Dharwar to Castle Rock and Portuguese Frontier.

At Dharwar the main road or direct route to the Portuguese frontier ceases to follow the trunk road from Madras, Cuddapah and Gooty, which here continues north-west to Belgaum, but generally pursues the same course as the railway crossing it several times and finally meeting it at Burulakood on the Tinai ghât road. Here it leaves the line and descends into the Konkan, or below ghât country, by the Tinai ghât *viâ* Anmode, the Goa frontier being met half way down the ghât at 59 miles from Dharwar. It is moorumed only and though passable by troops would be very heavy in the monsoon, particularly as the rainfall in the Western Ghâts is very great. A large wood traffic from the Kanara forests is carried on along it and tongas can travel on it at any time of year. Water is abundant but in the ghâts much impregnated with decayed vegetable matter. Supplies about Dharwar are plentiful but become scarce further west.



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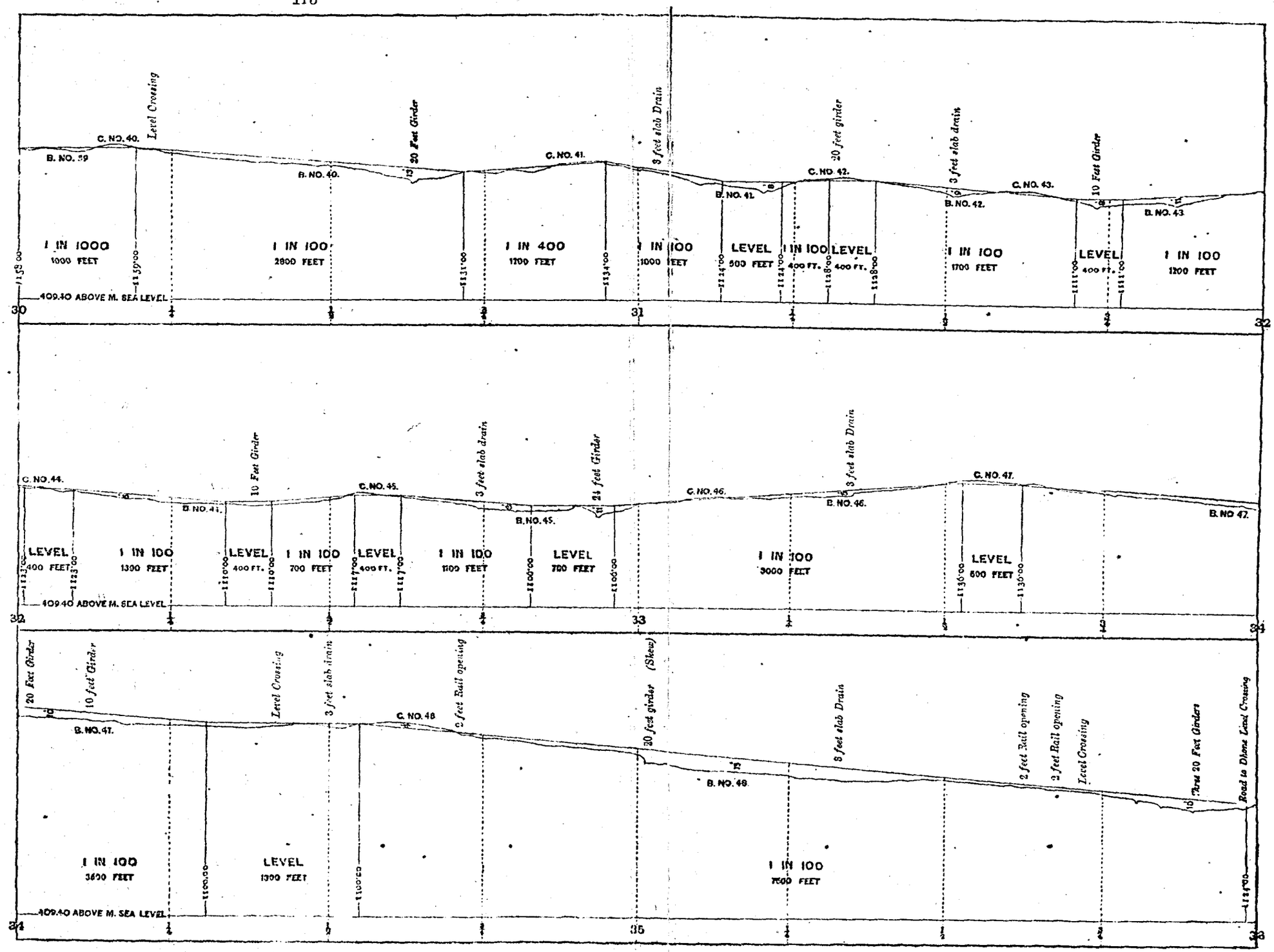

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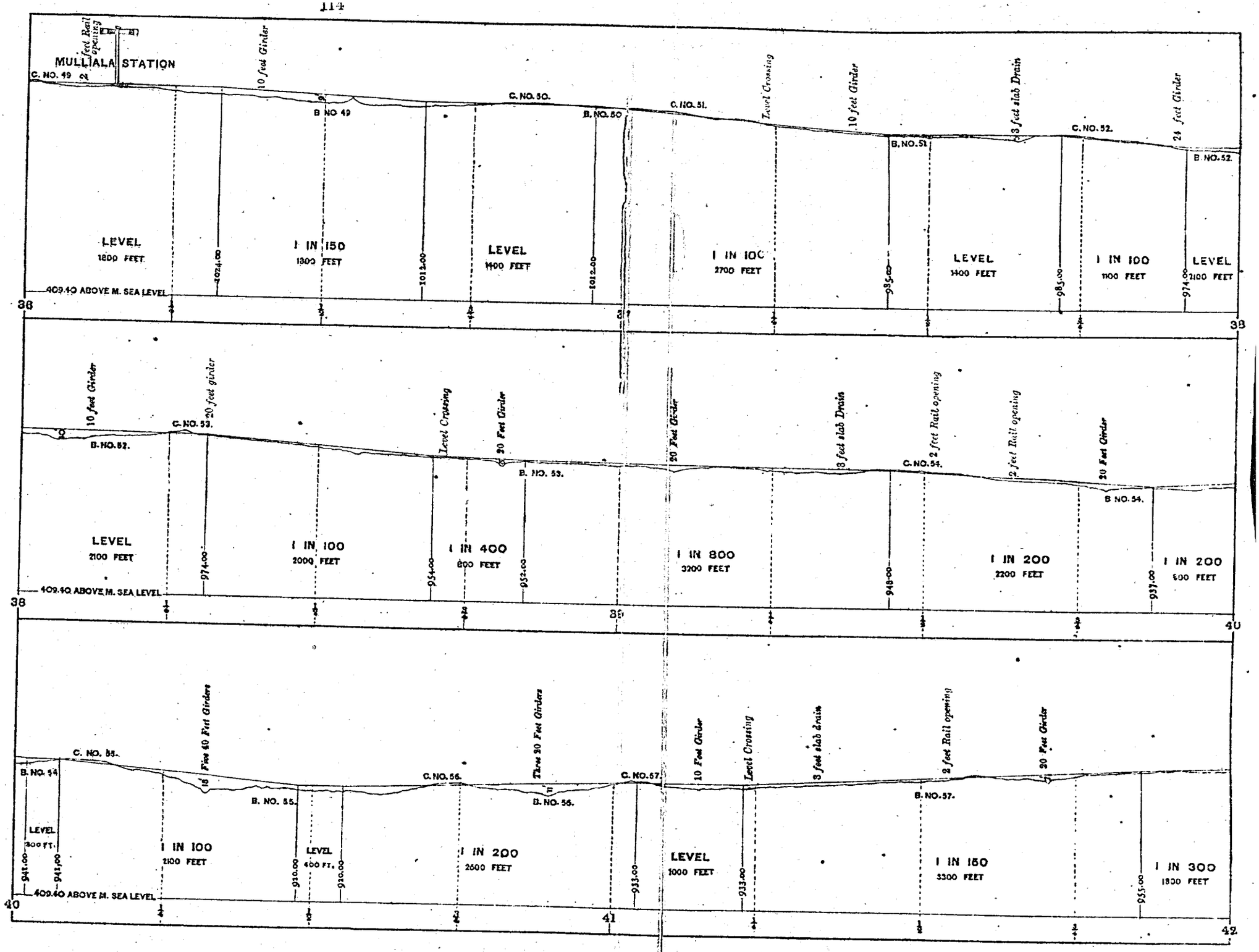

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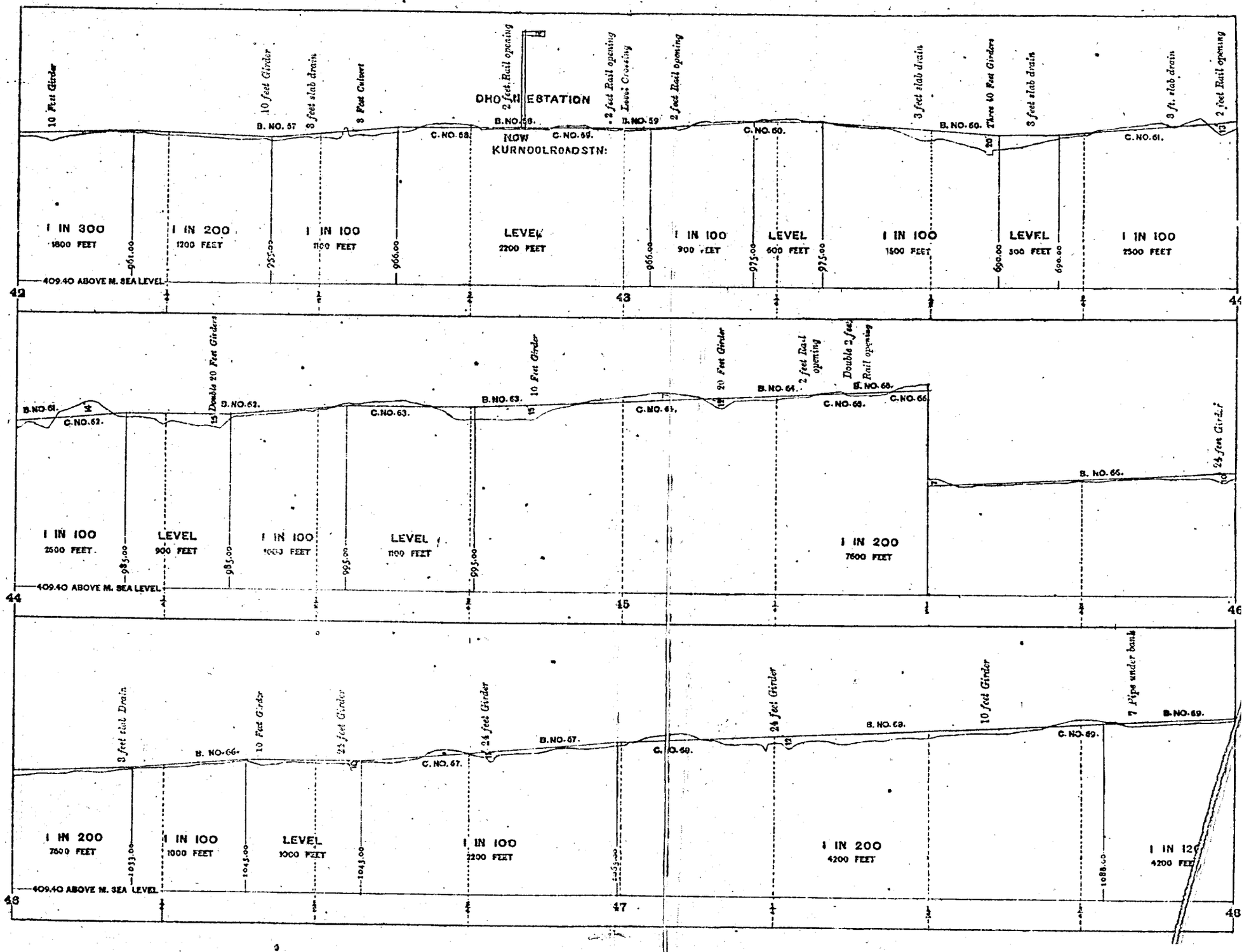

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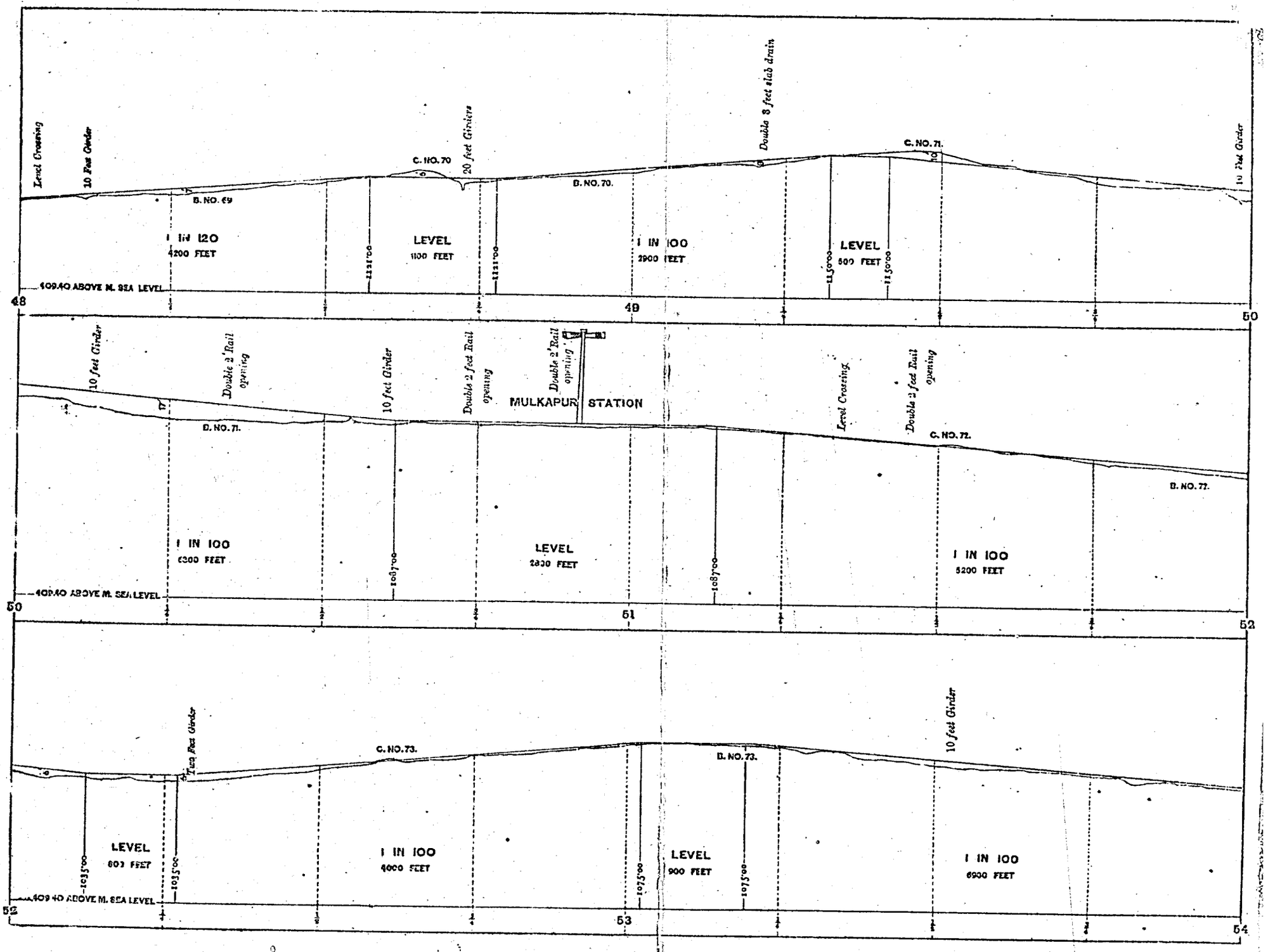

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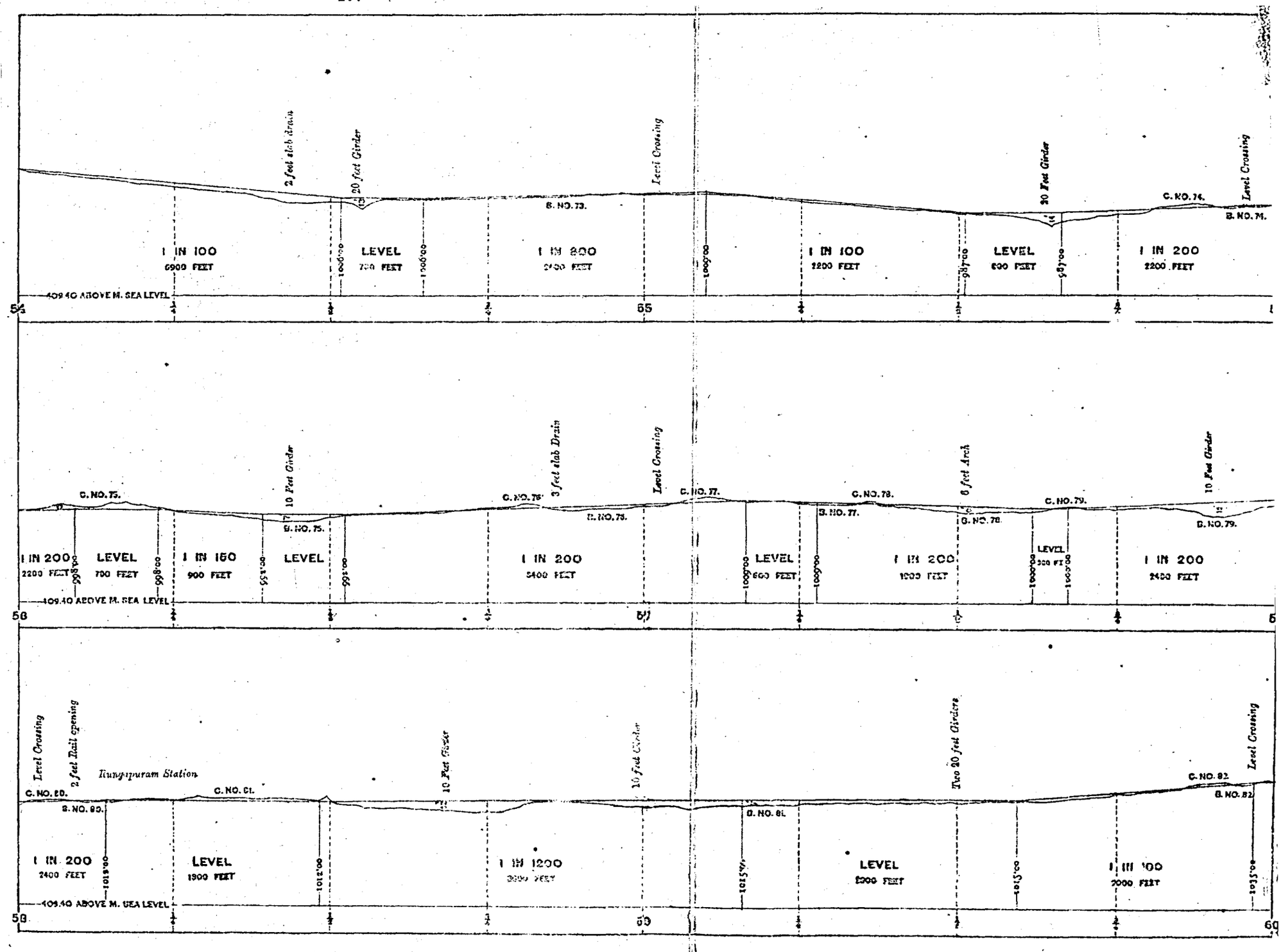

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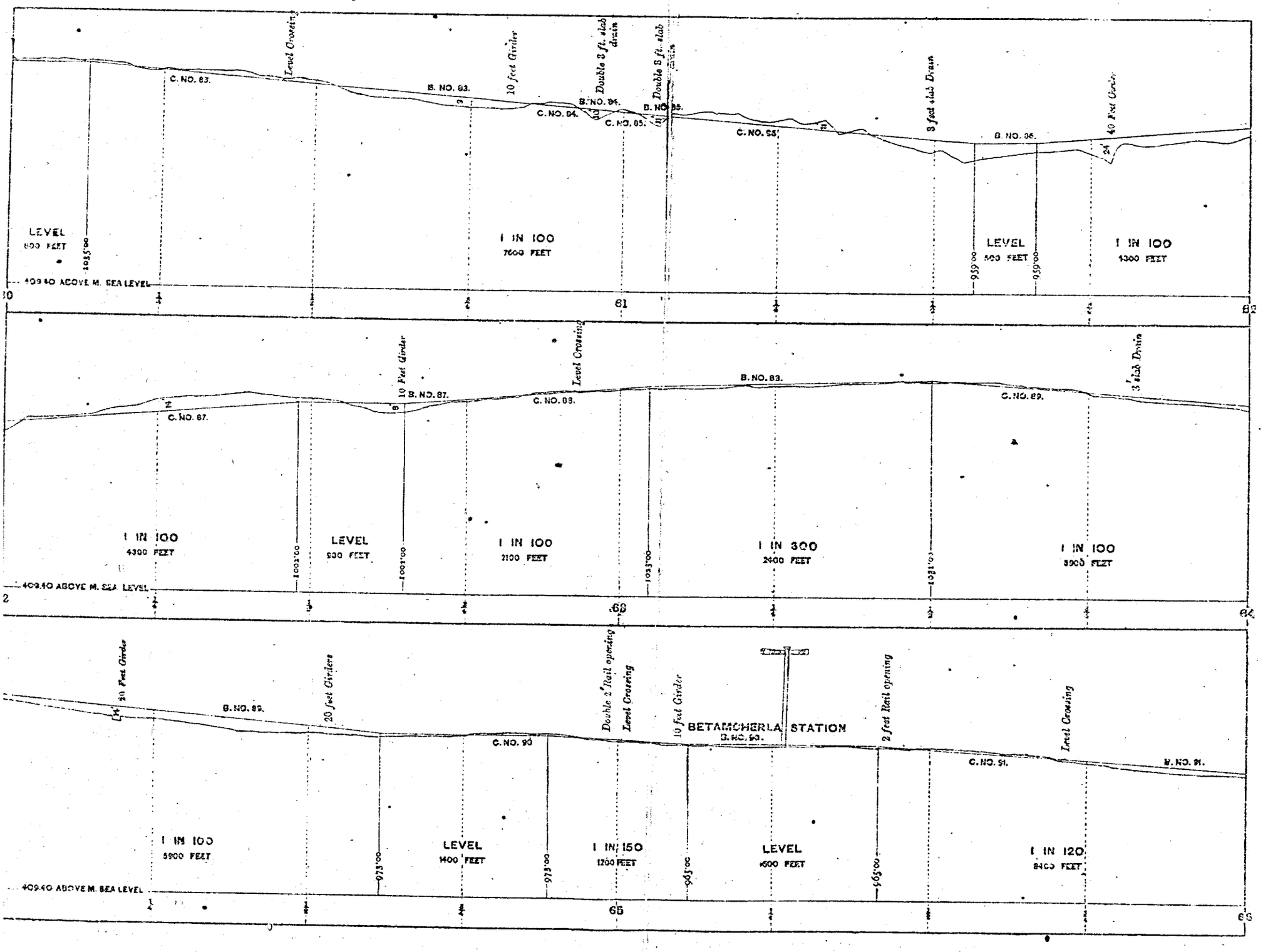

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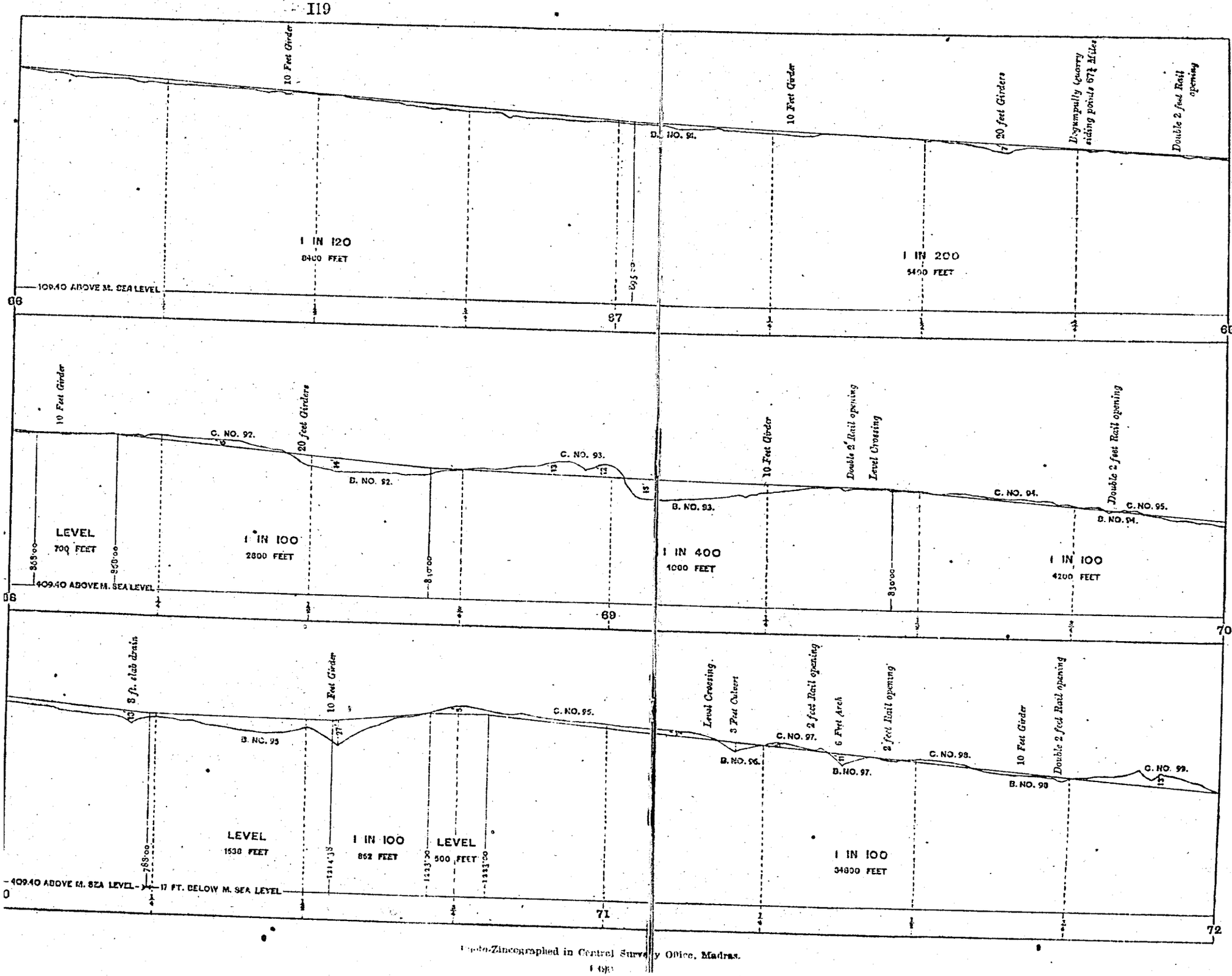

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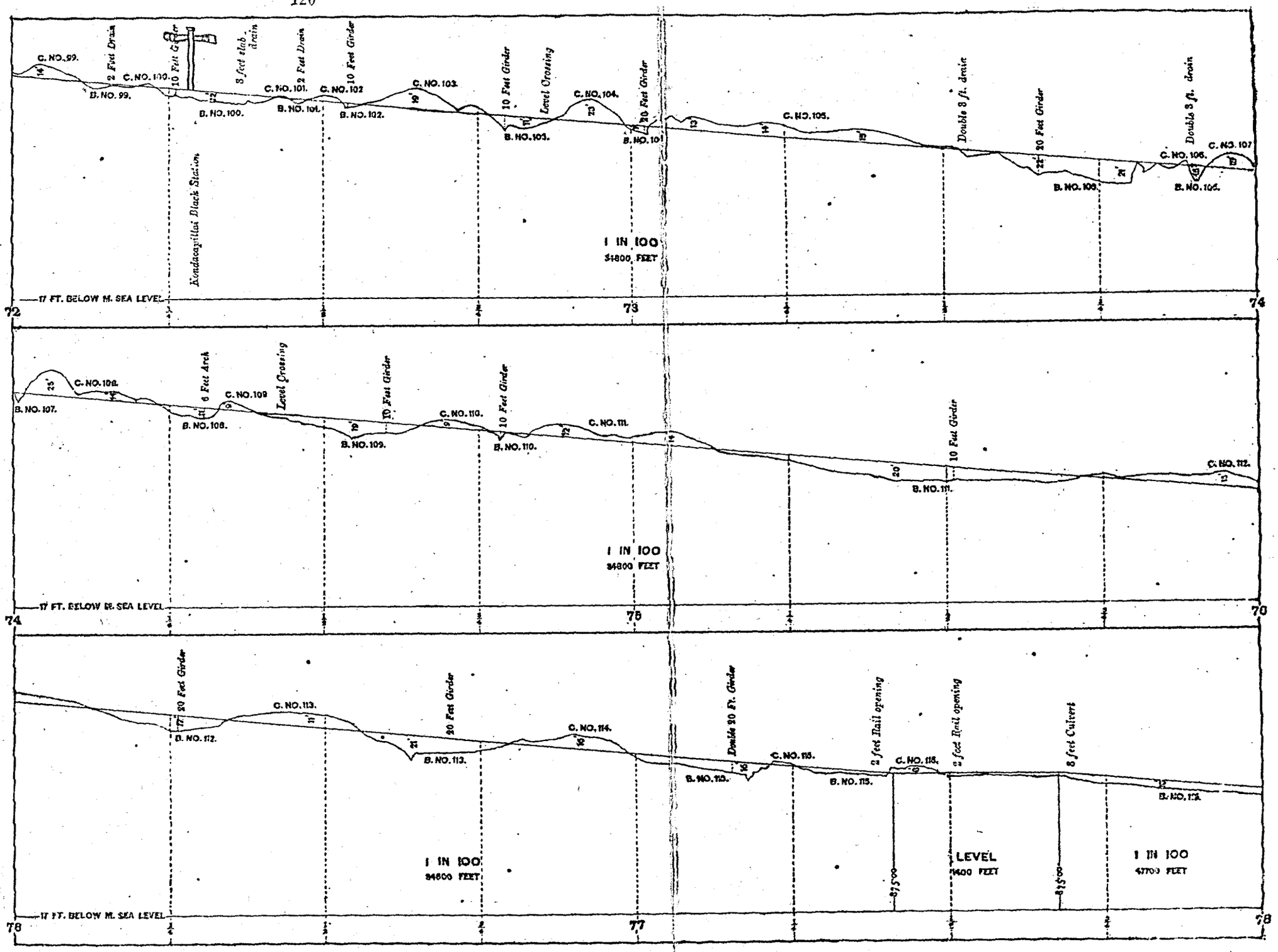

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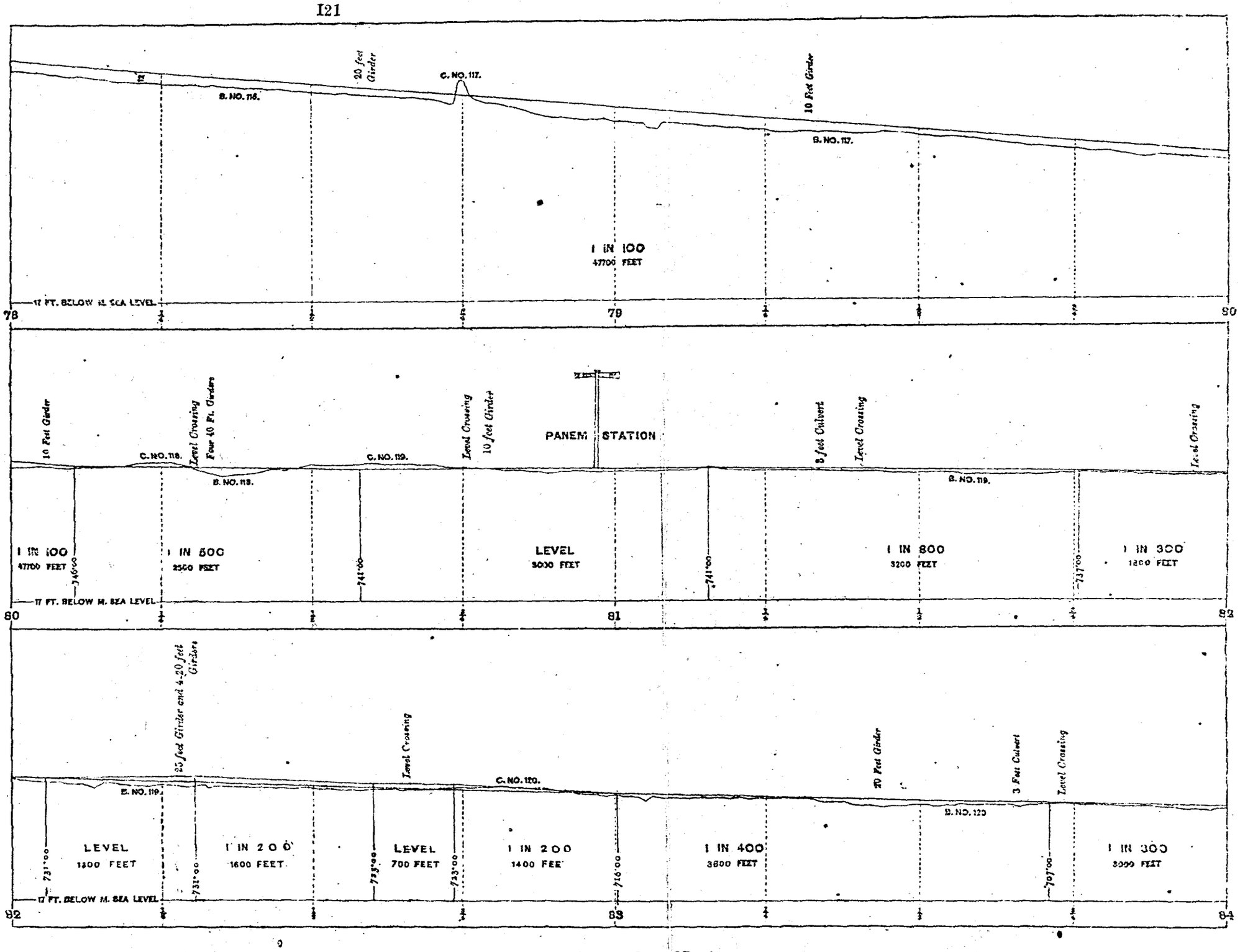

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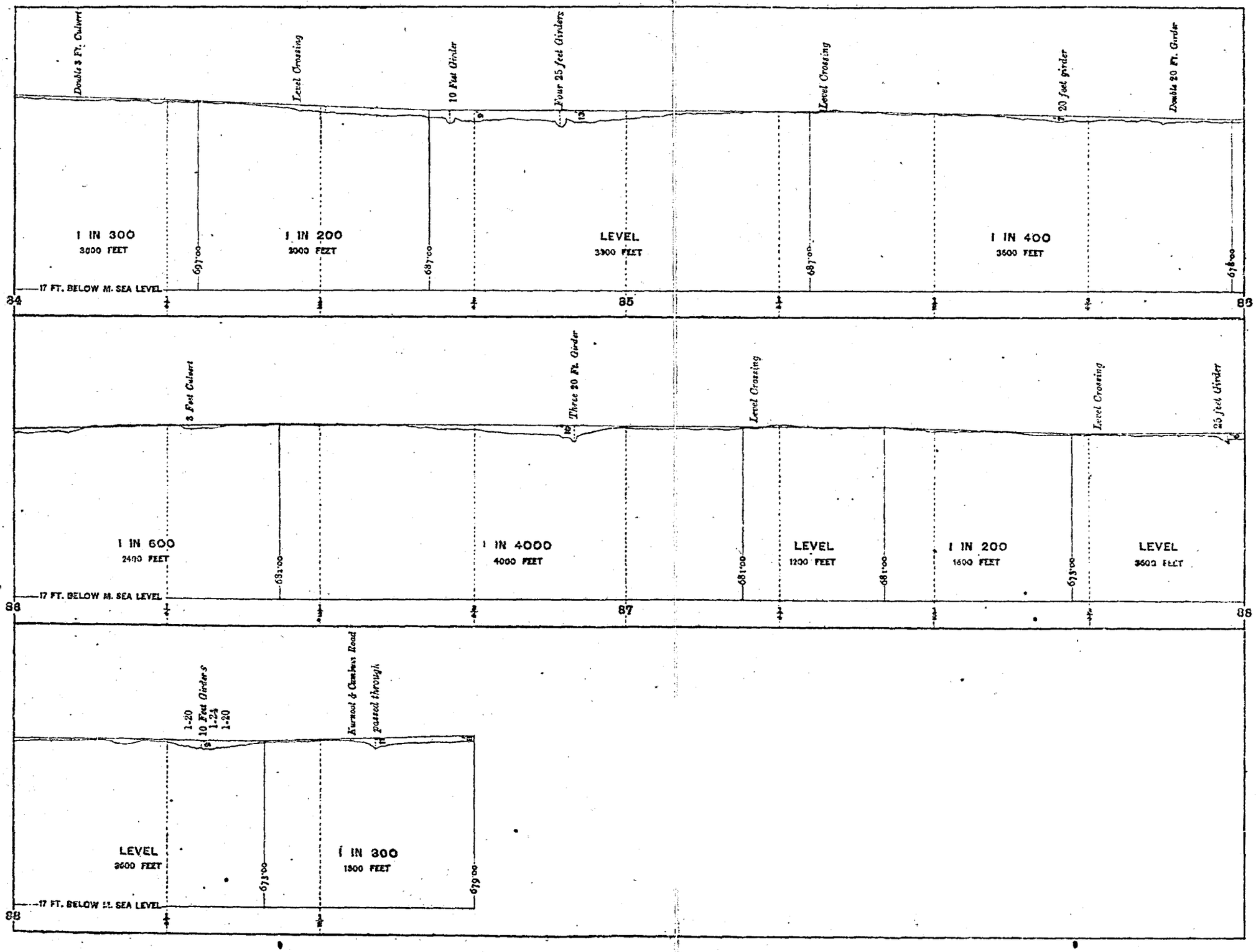

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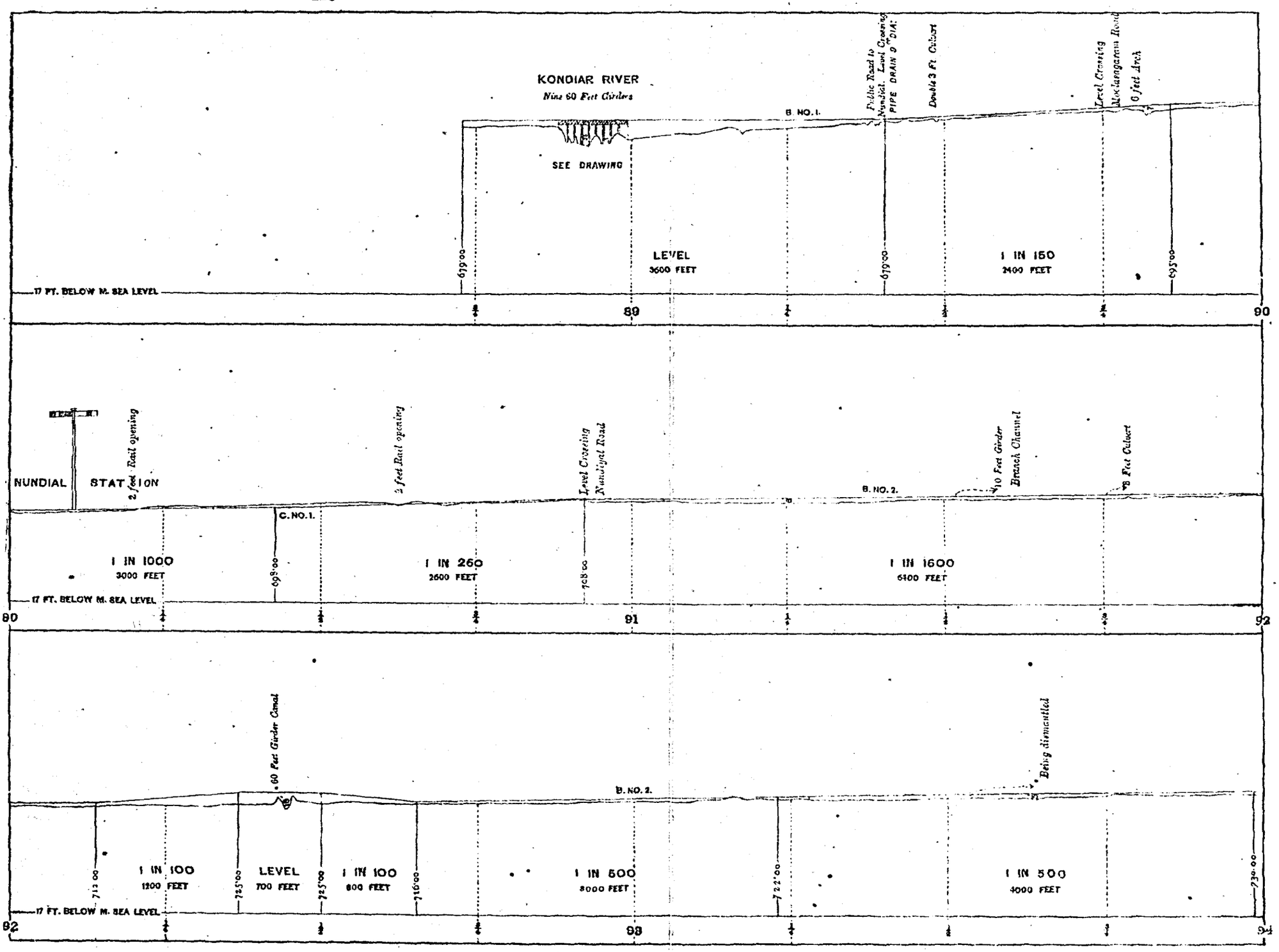

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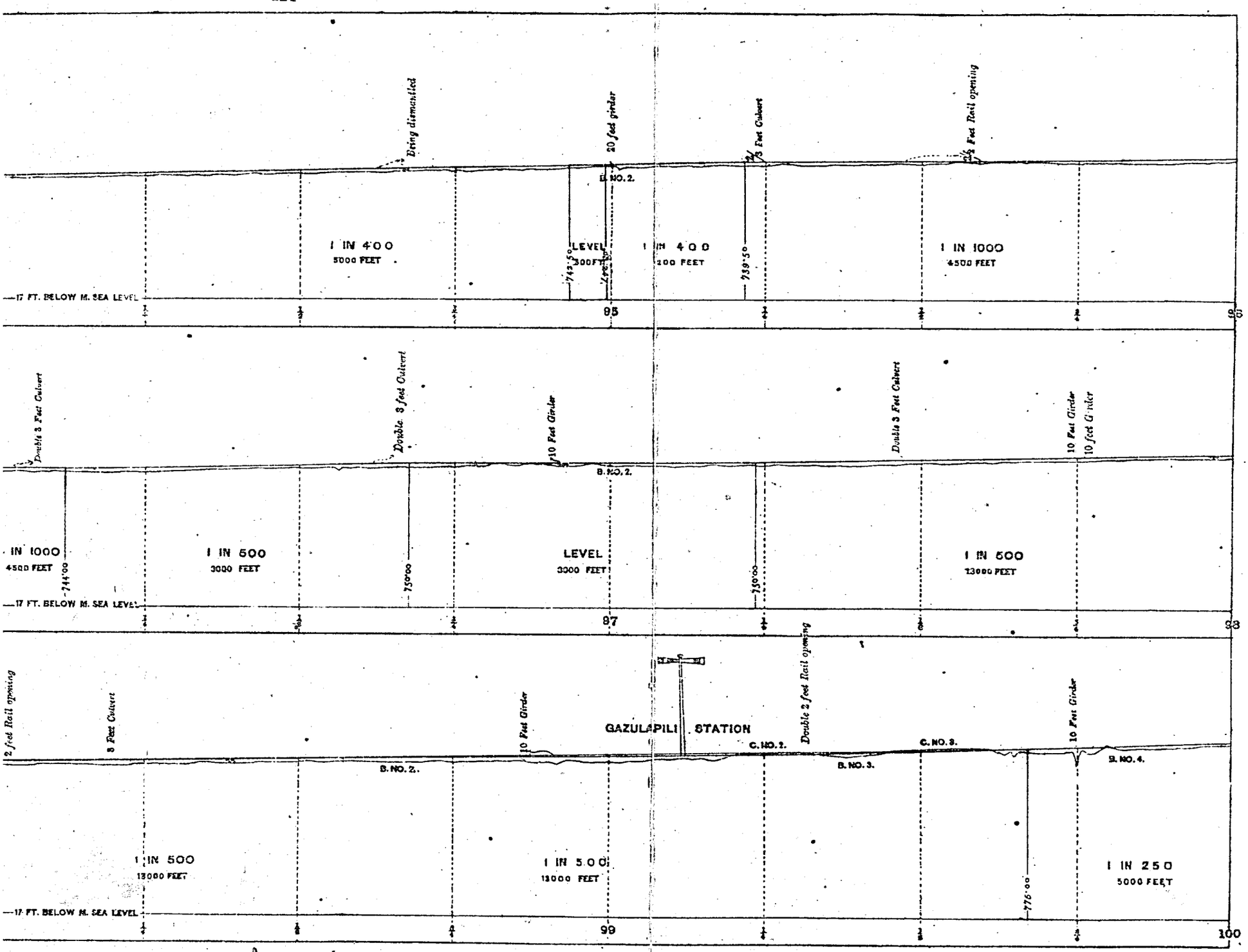

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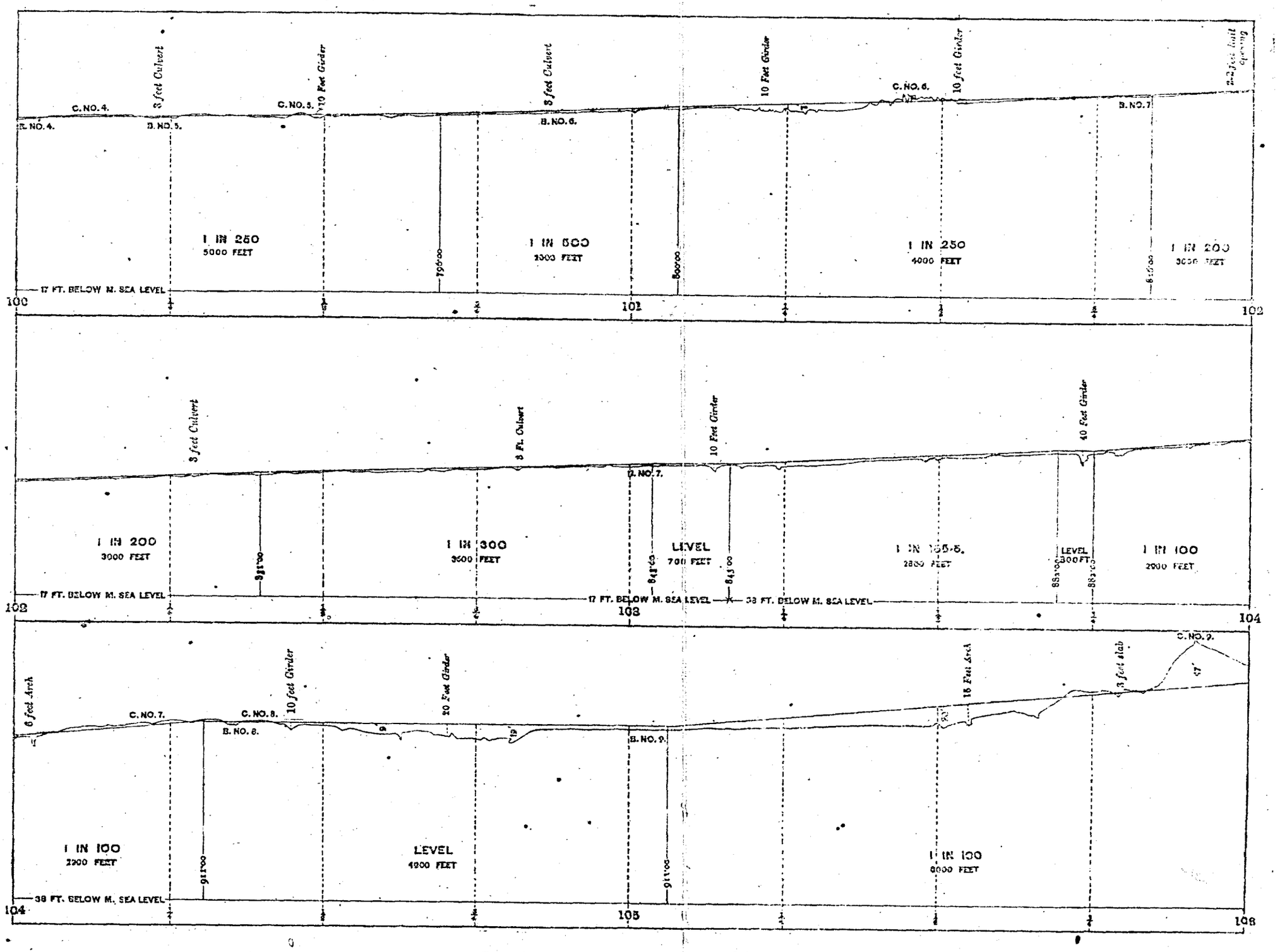

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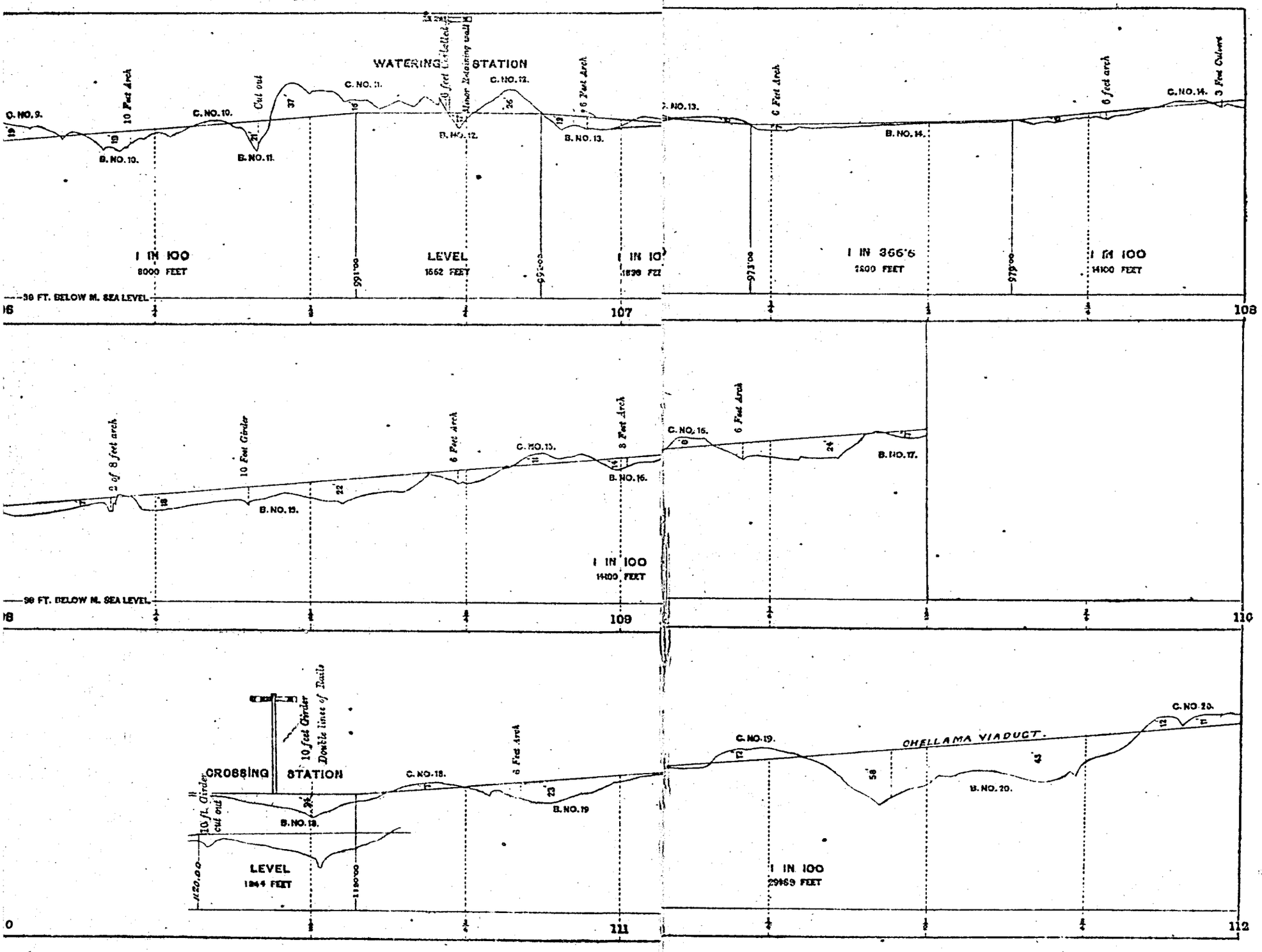

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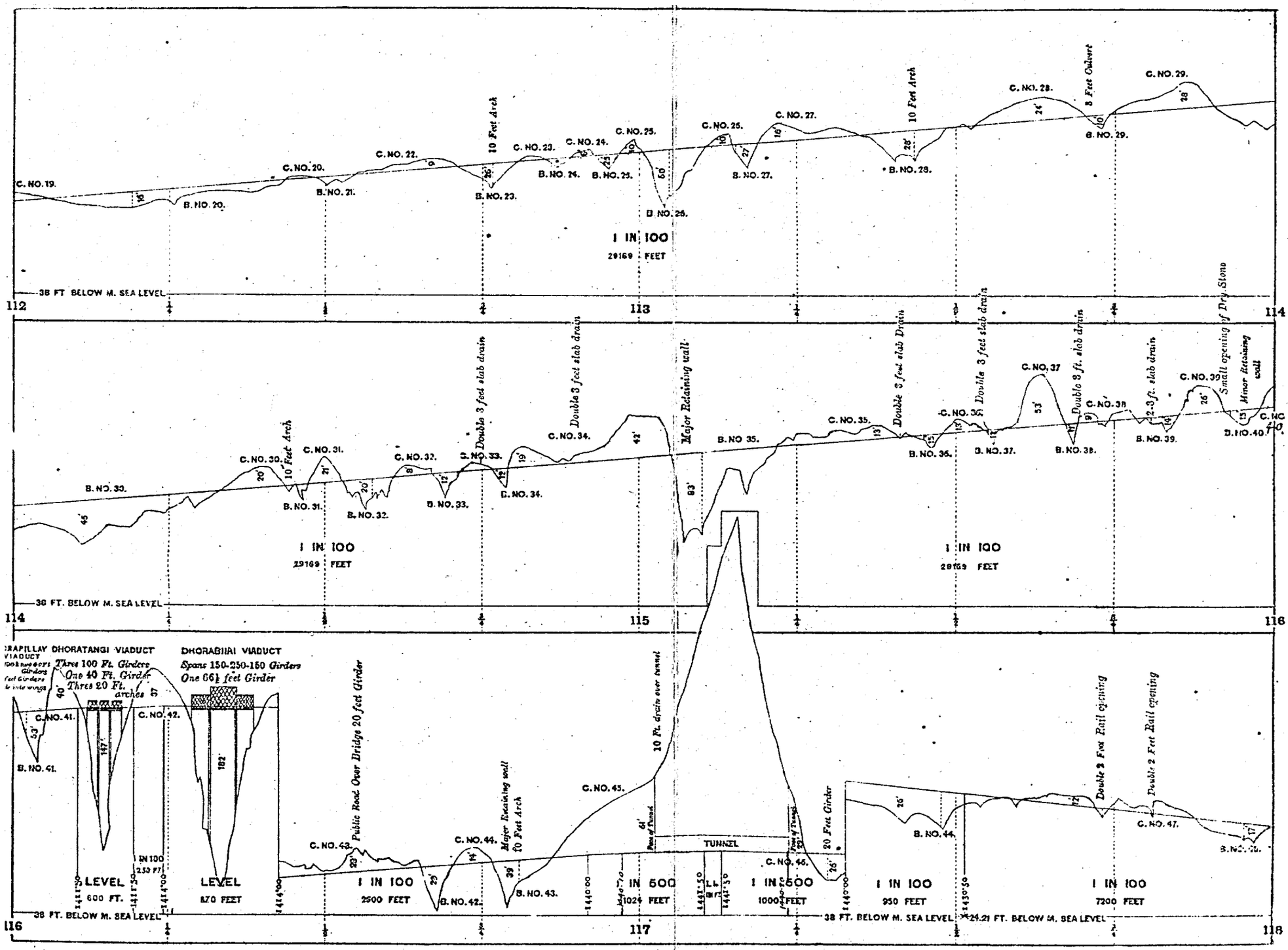

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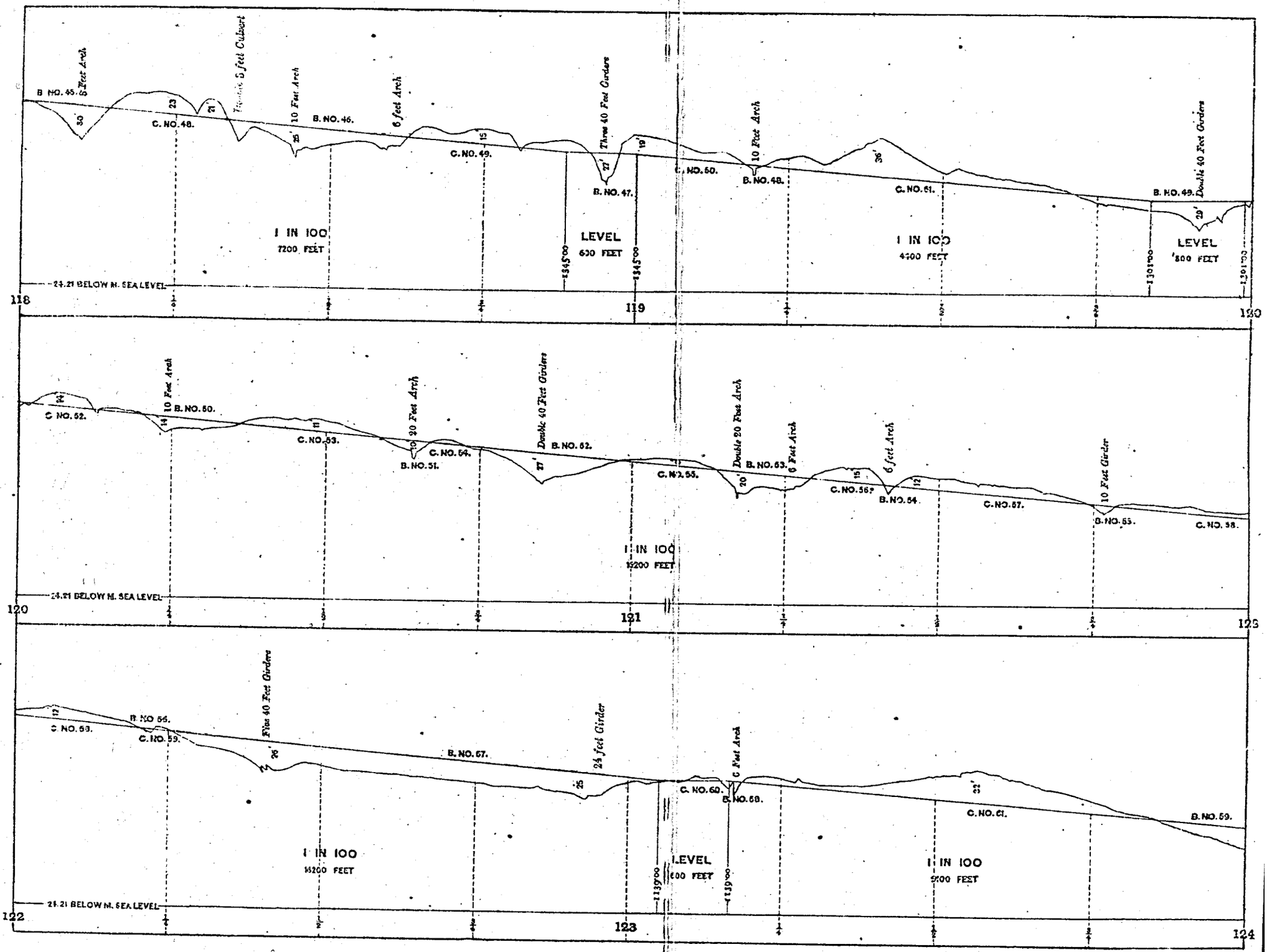

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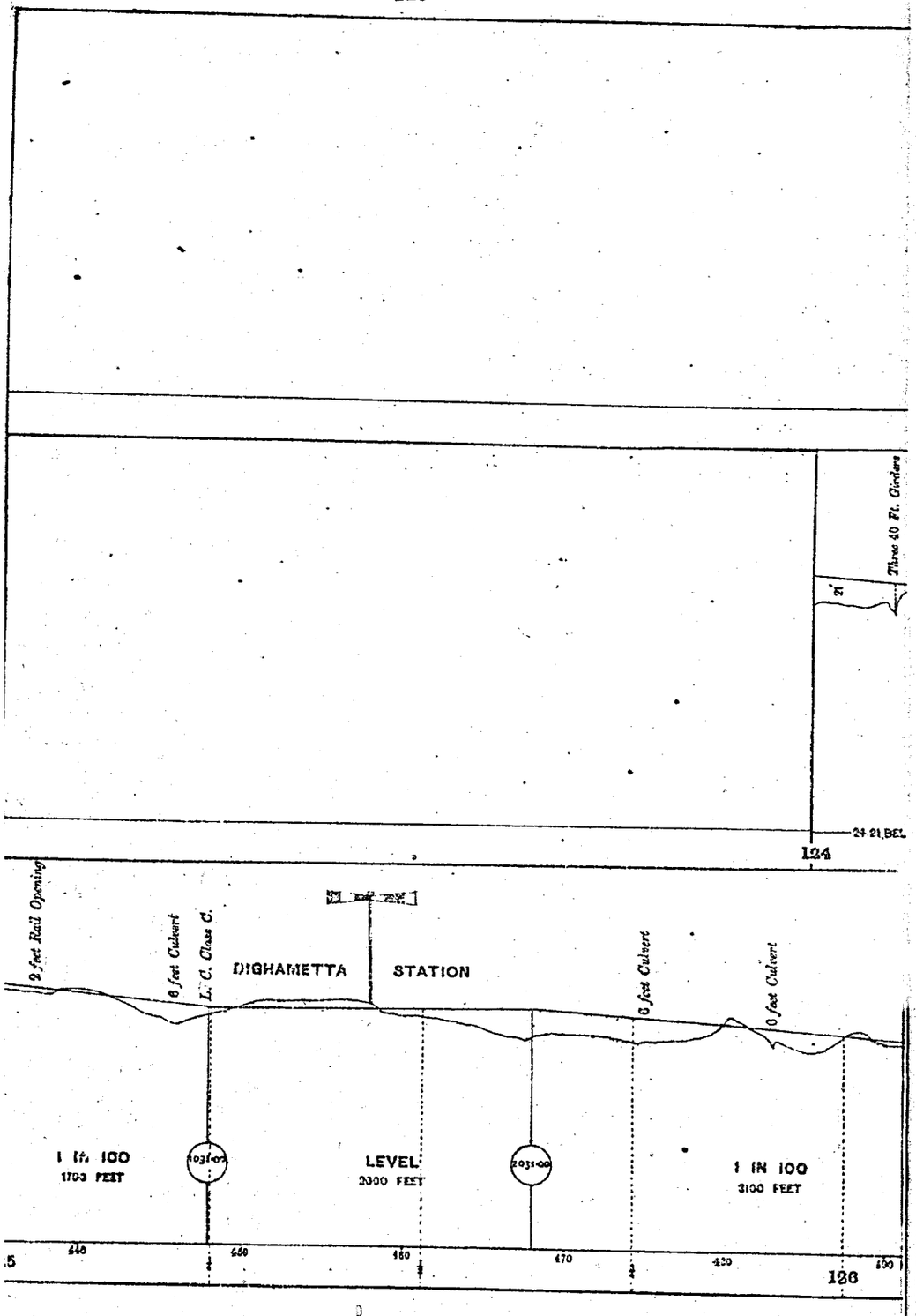

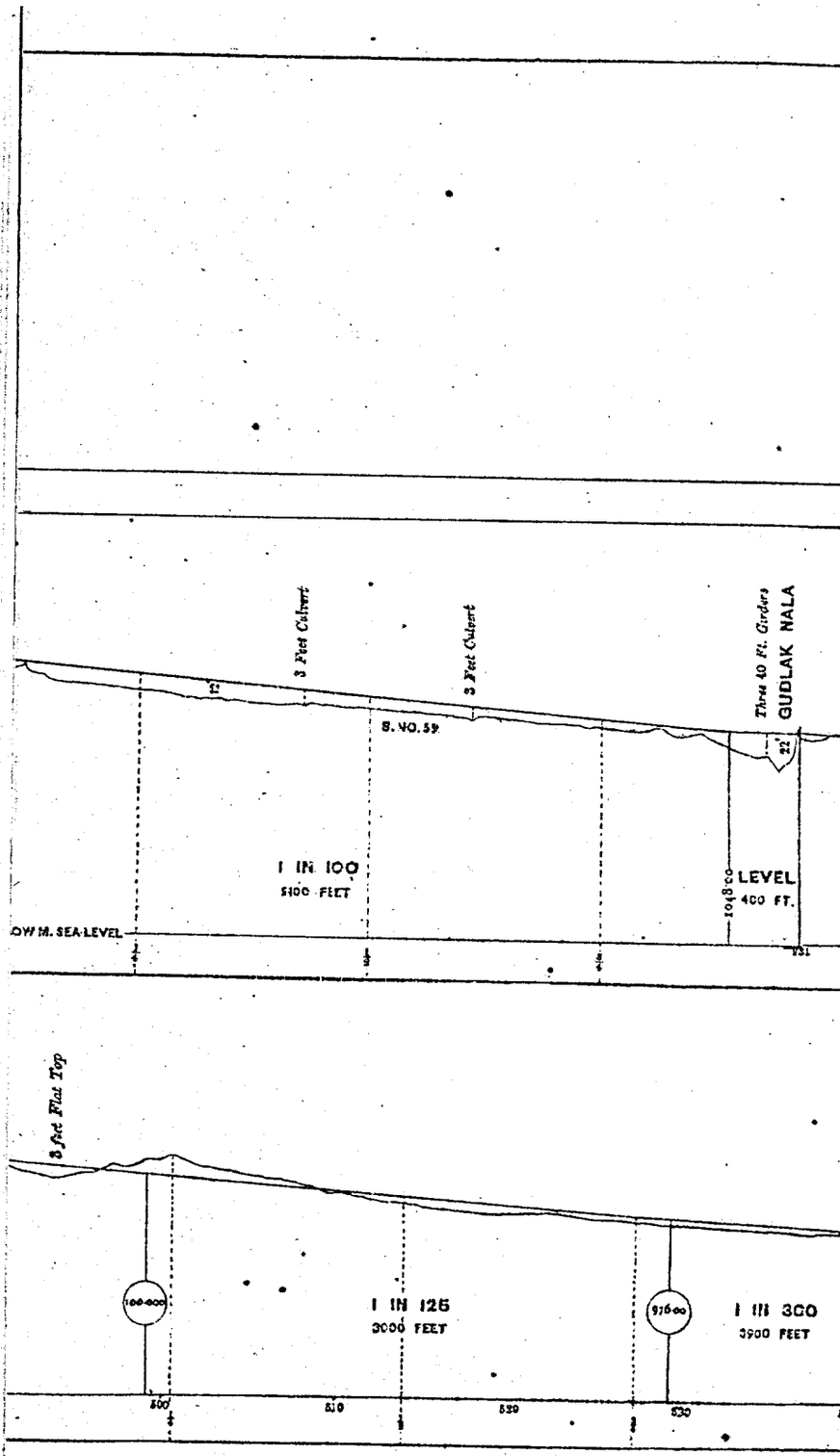

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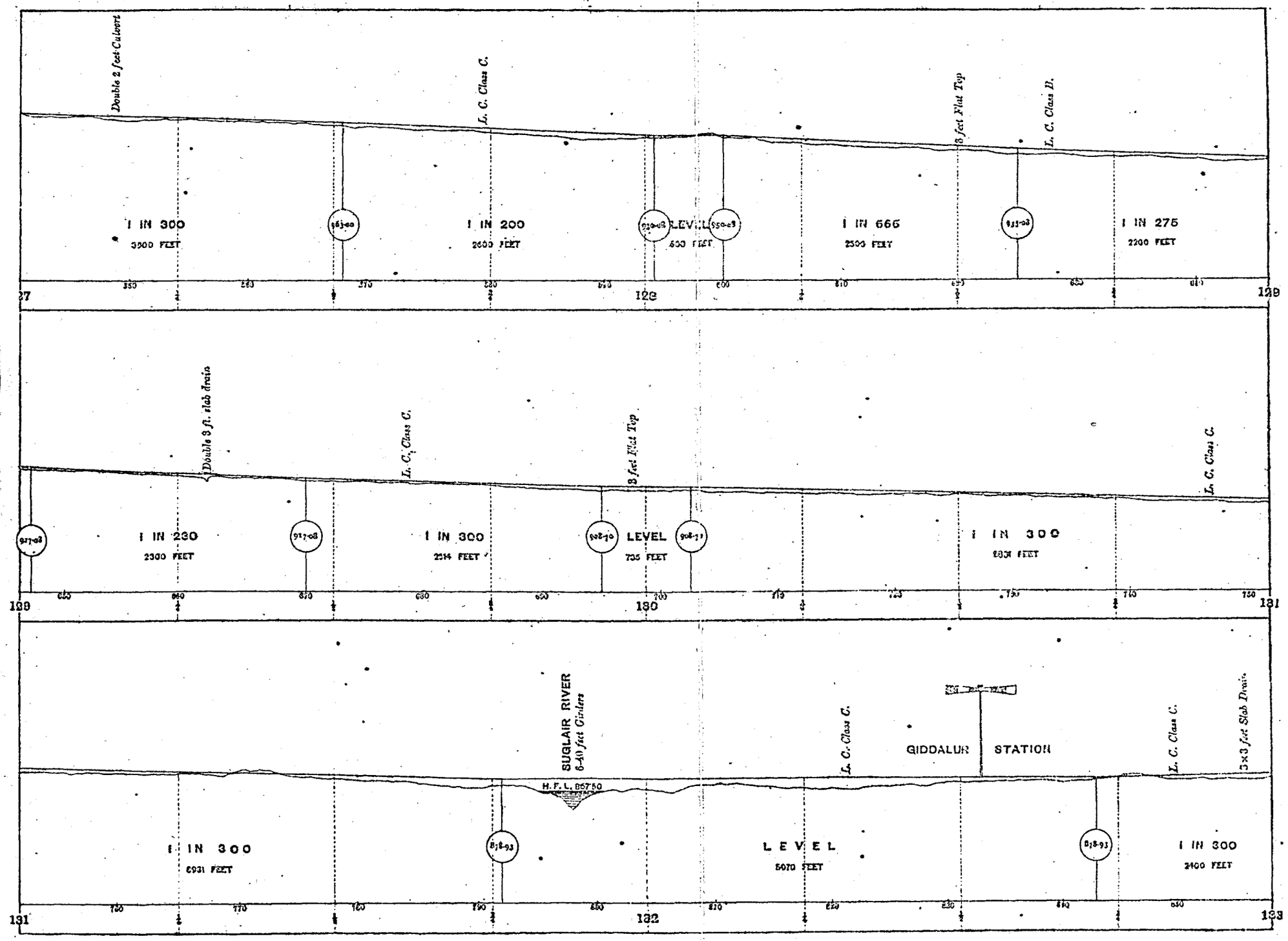

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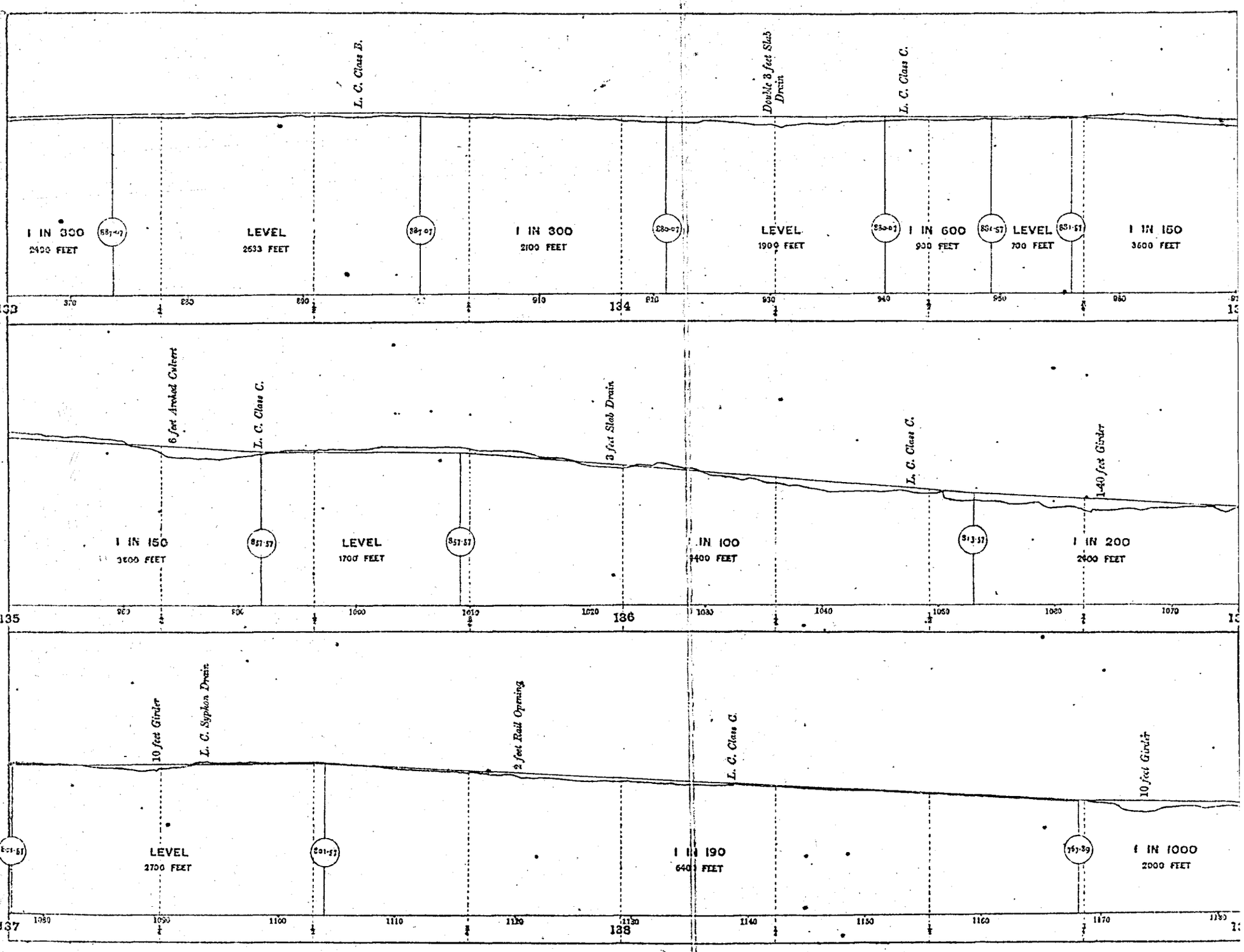

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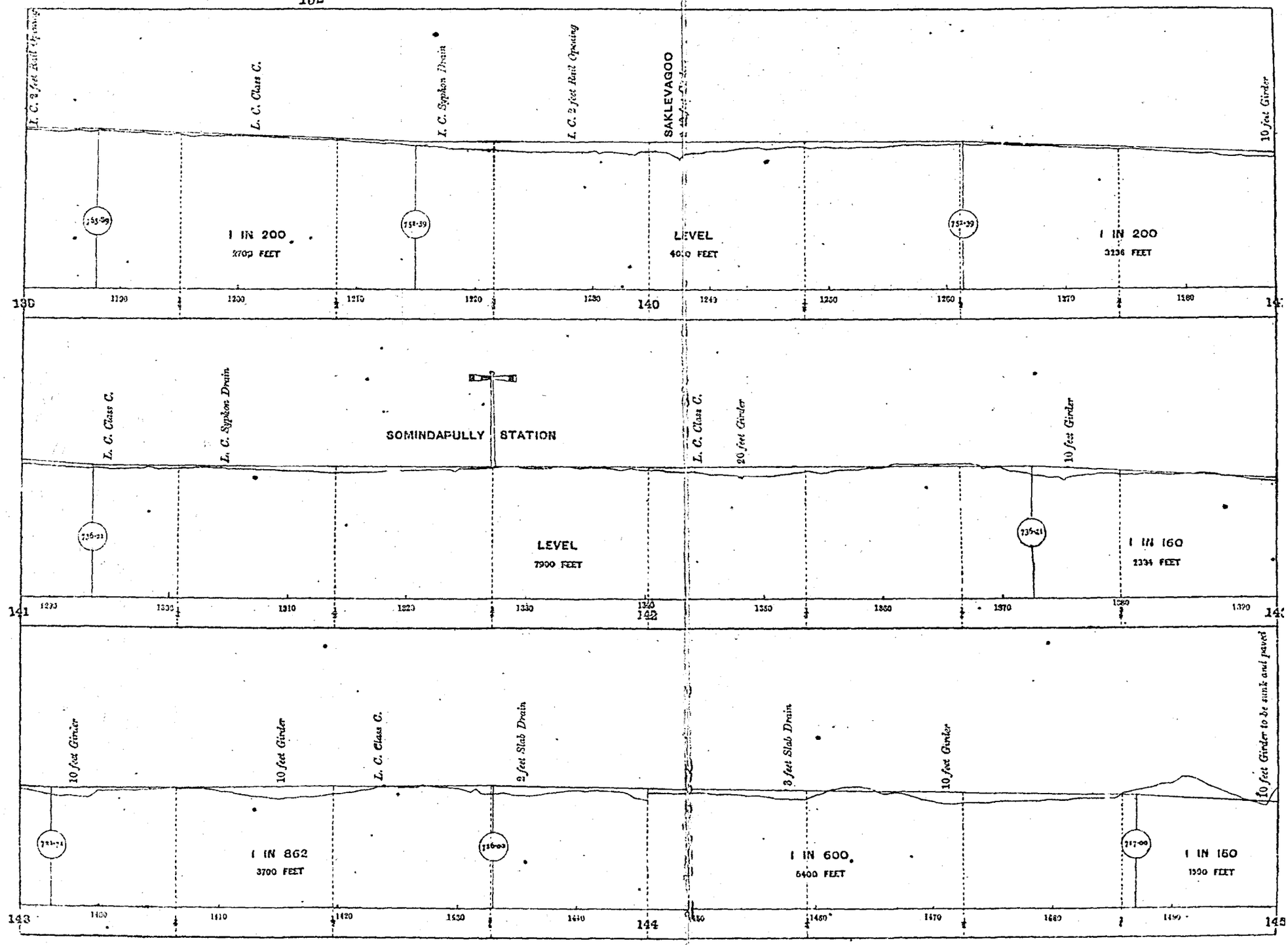

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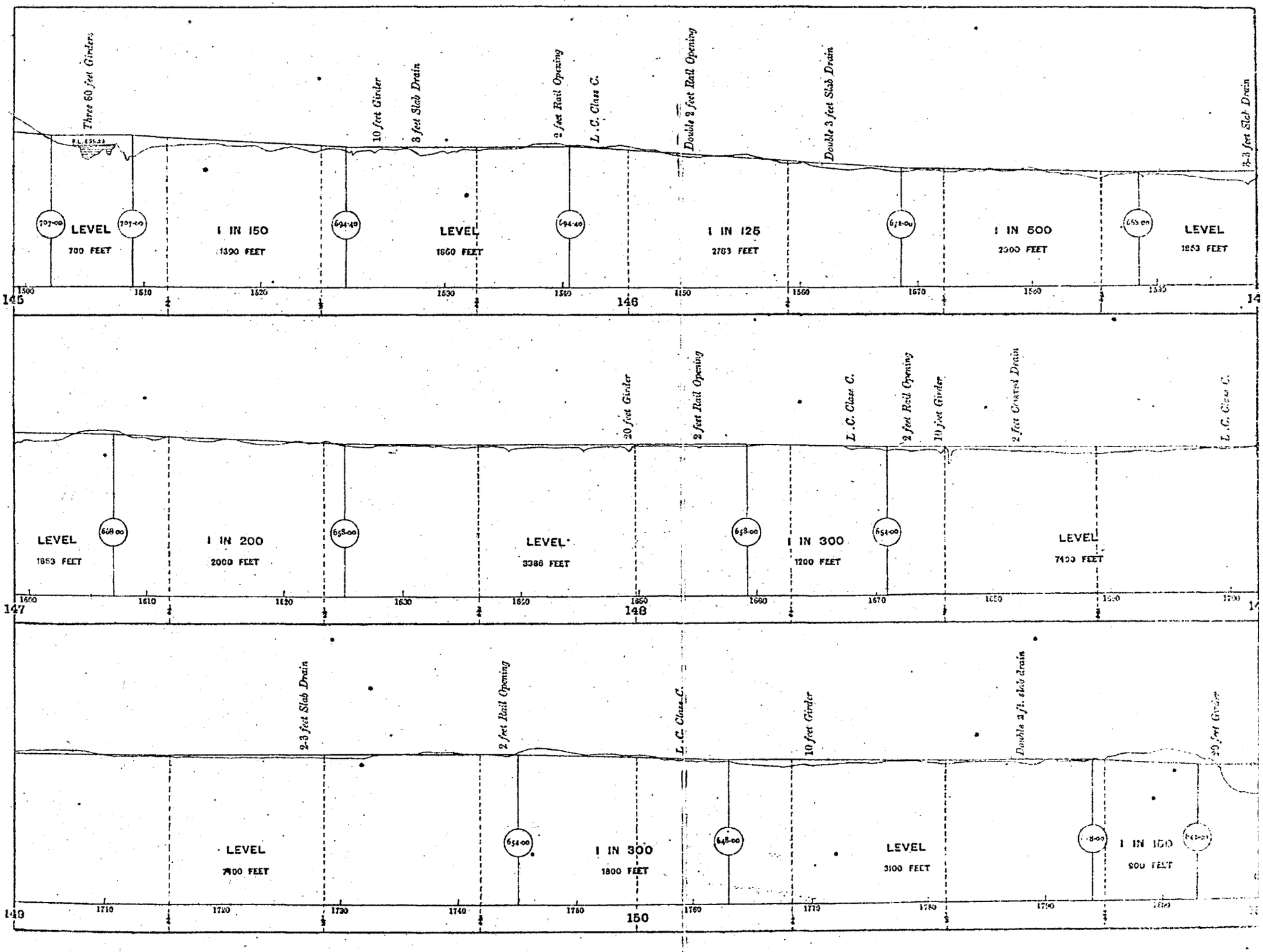

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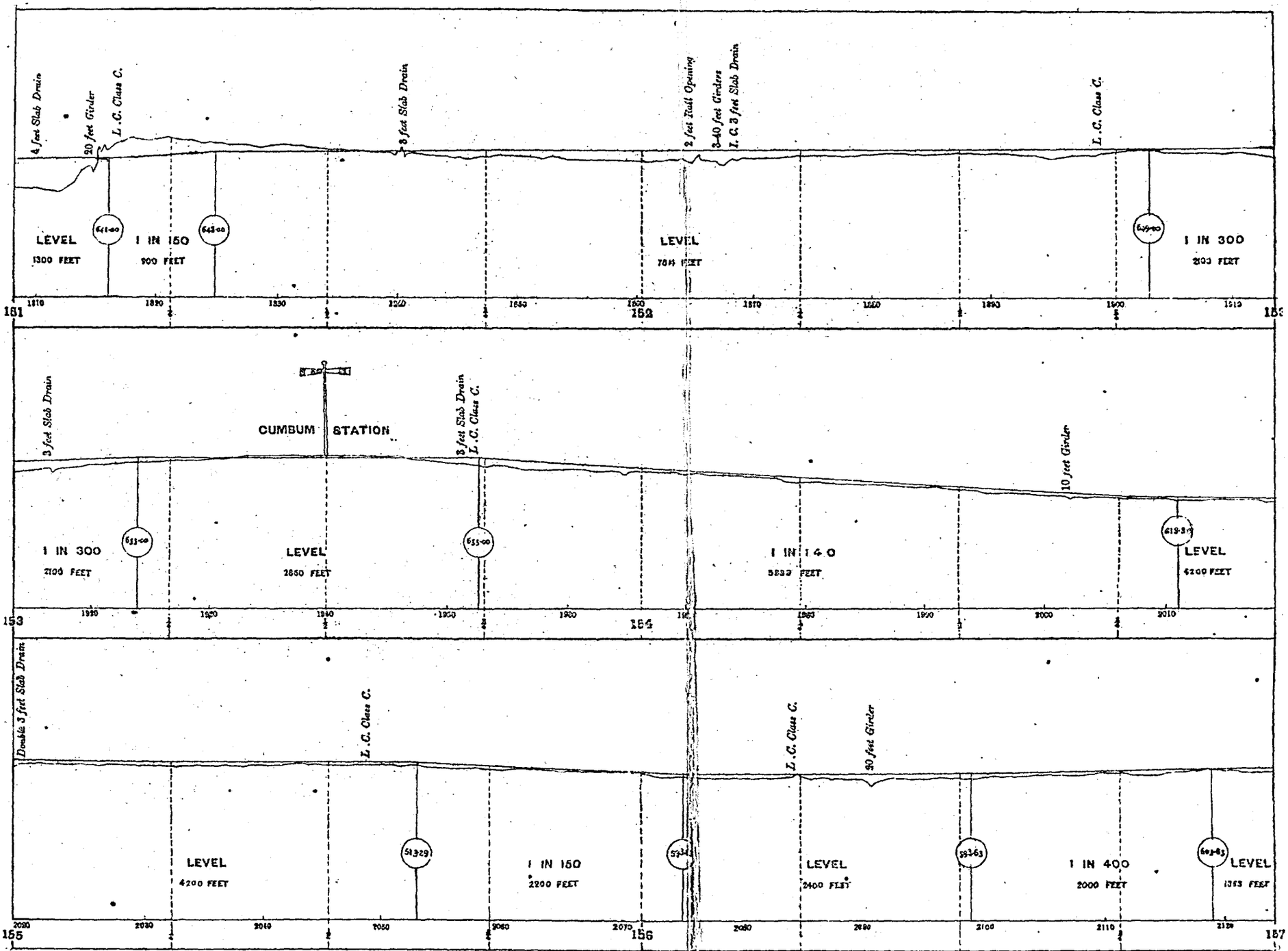

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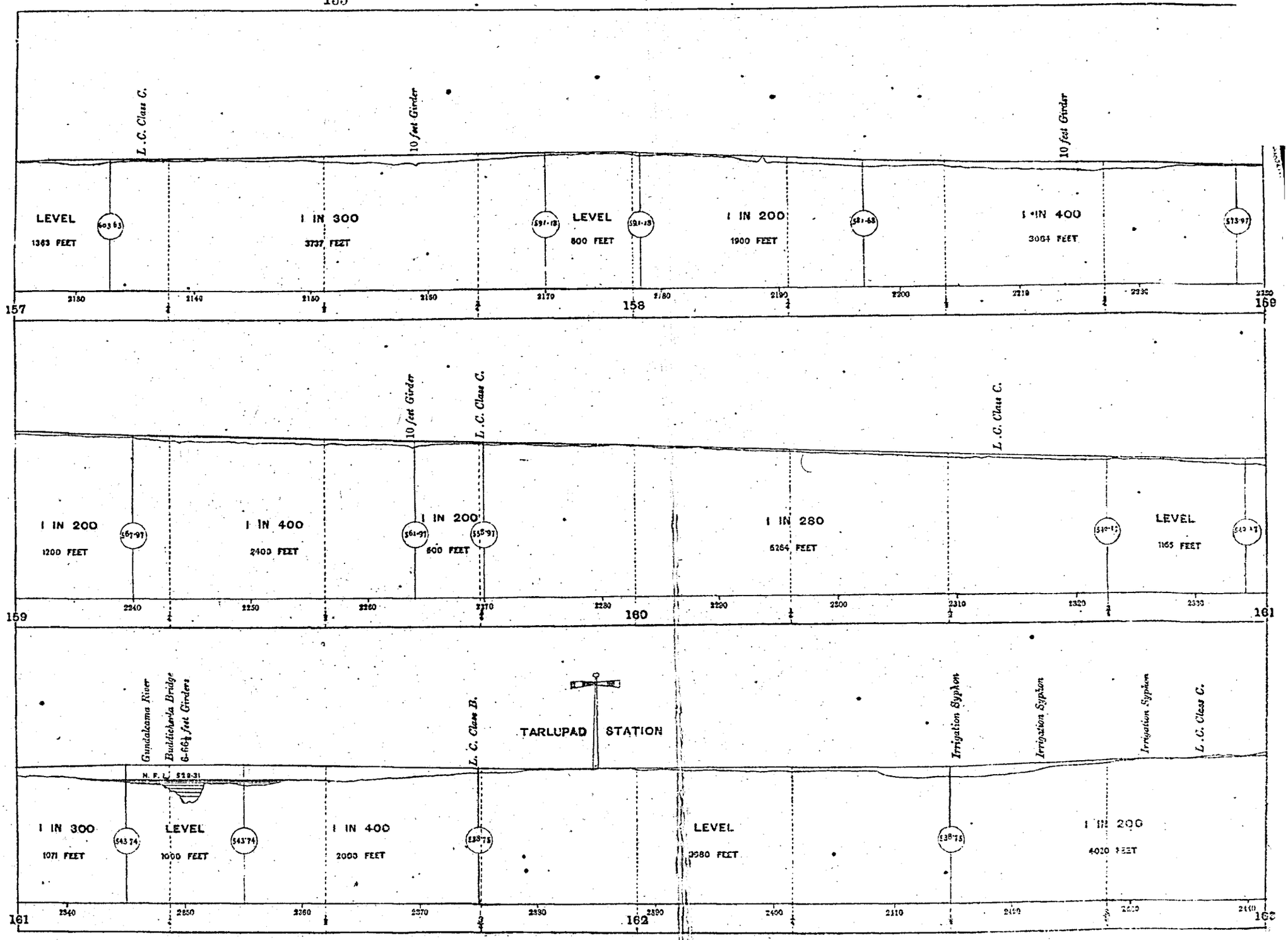

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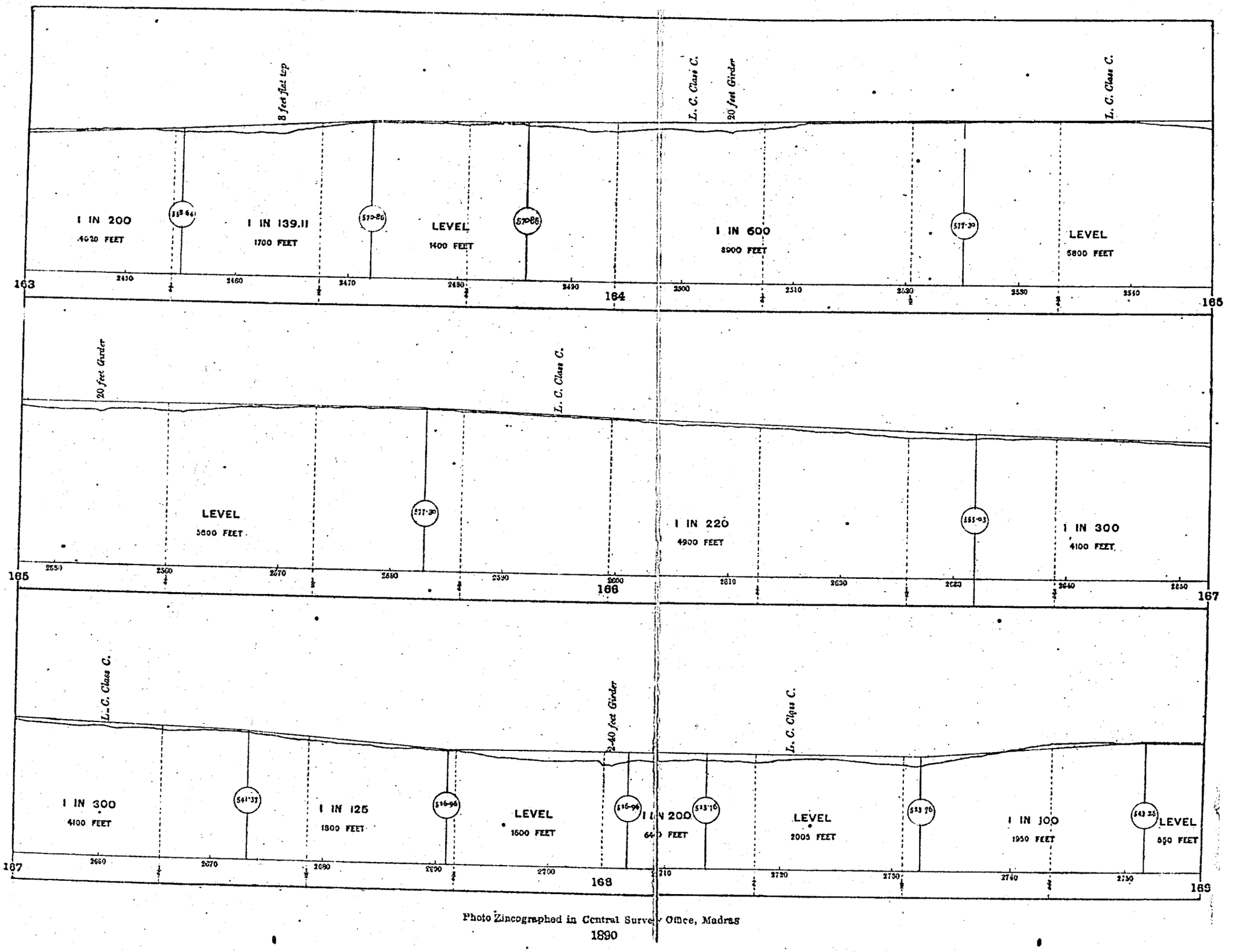

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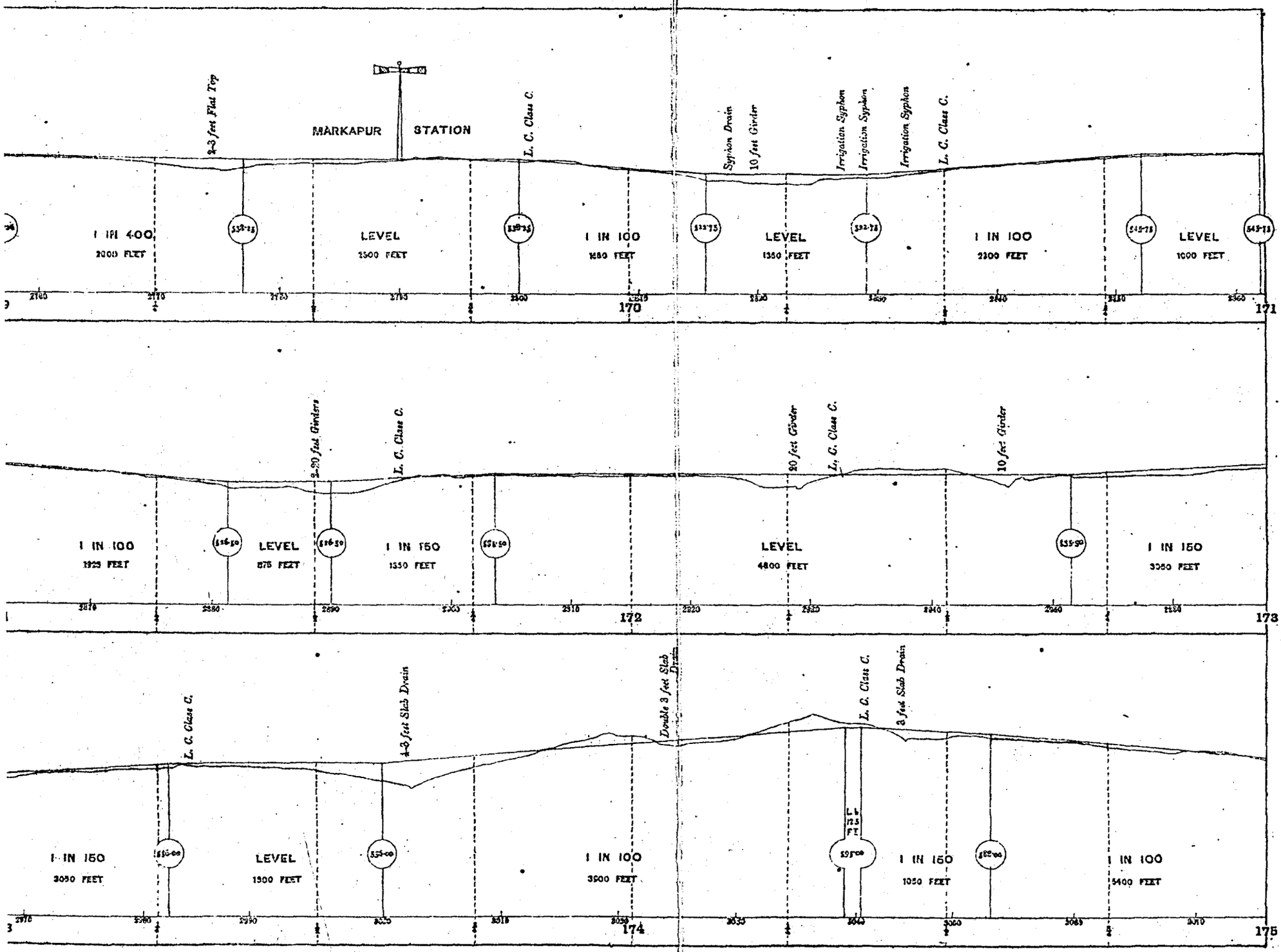

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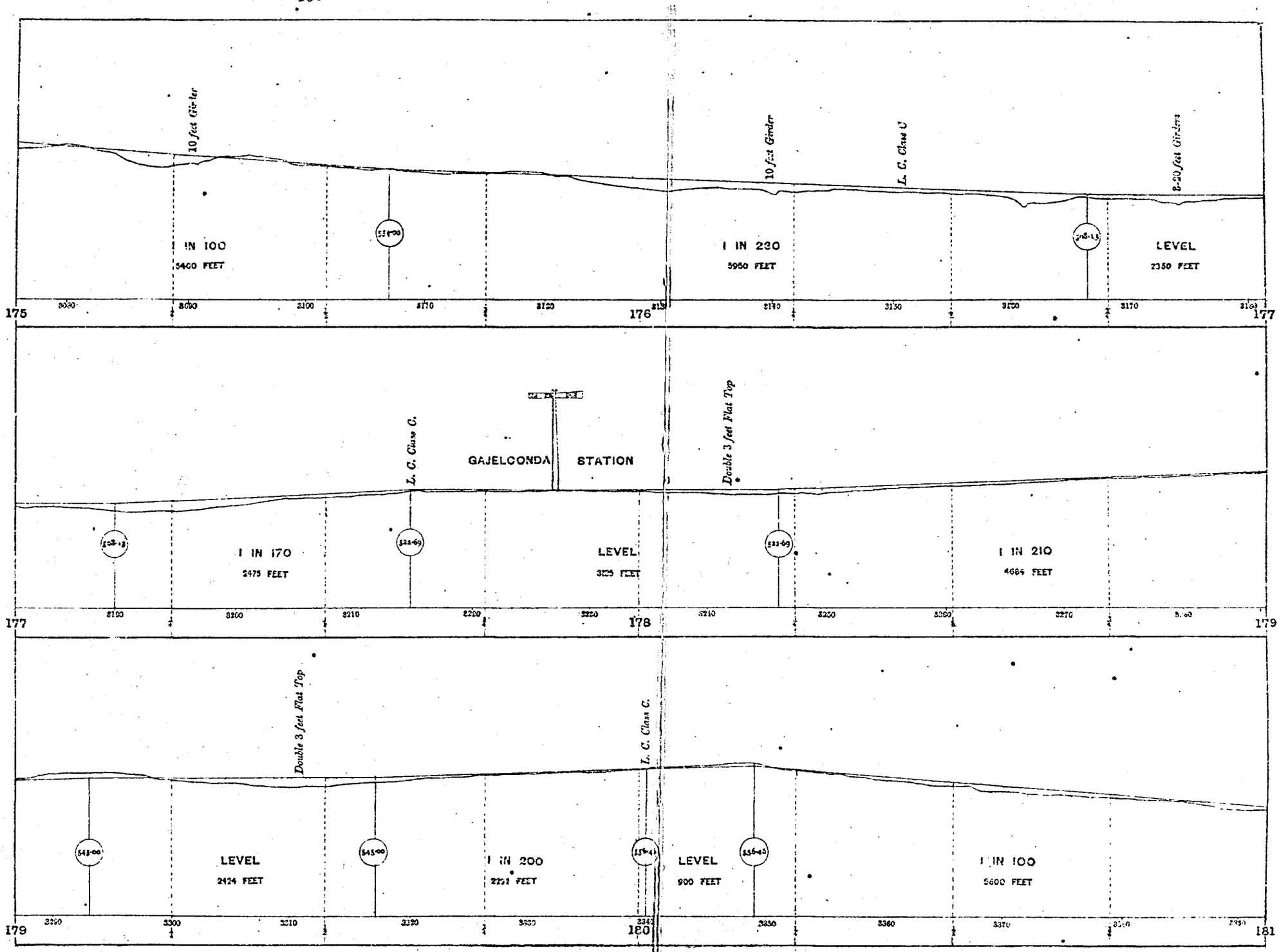

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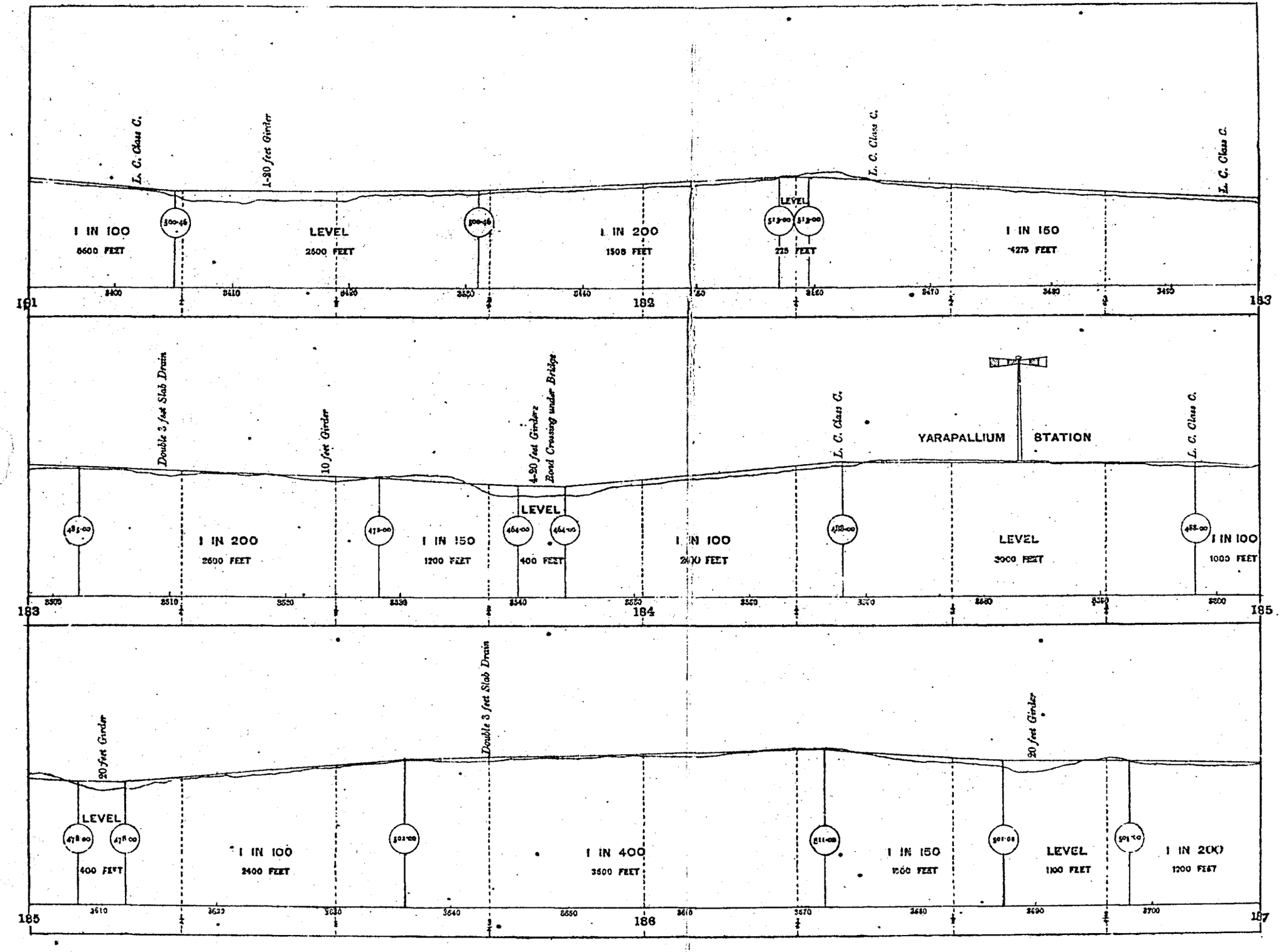

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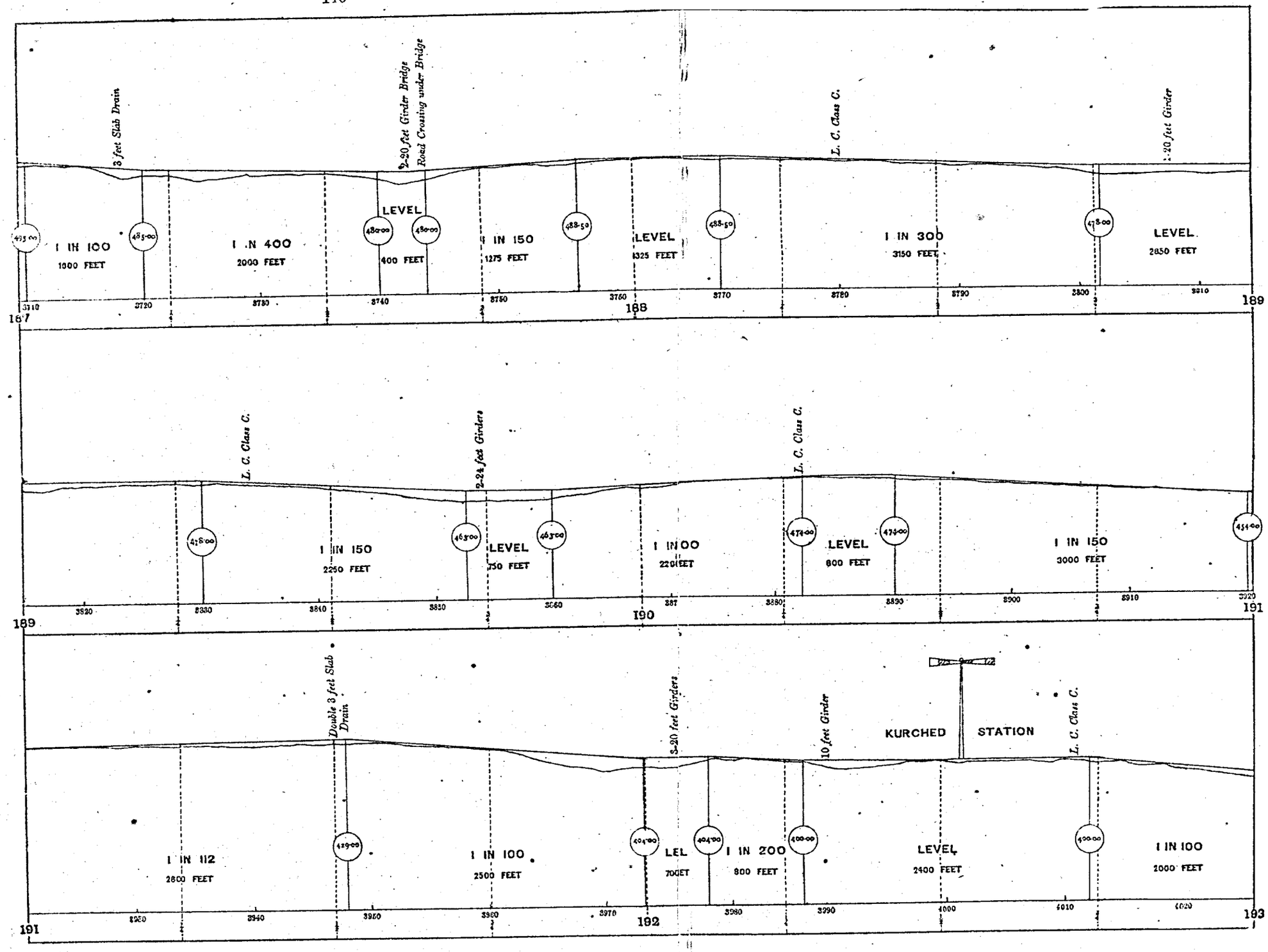

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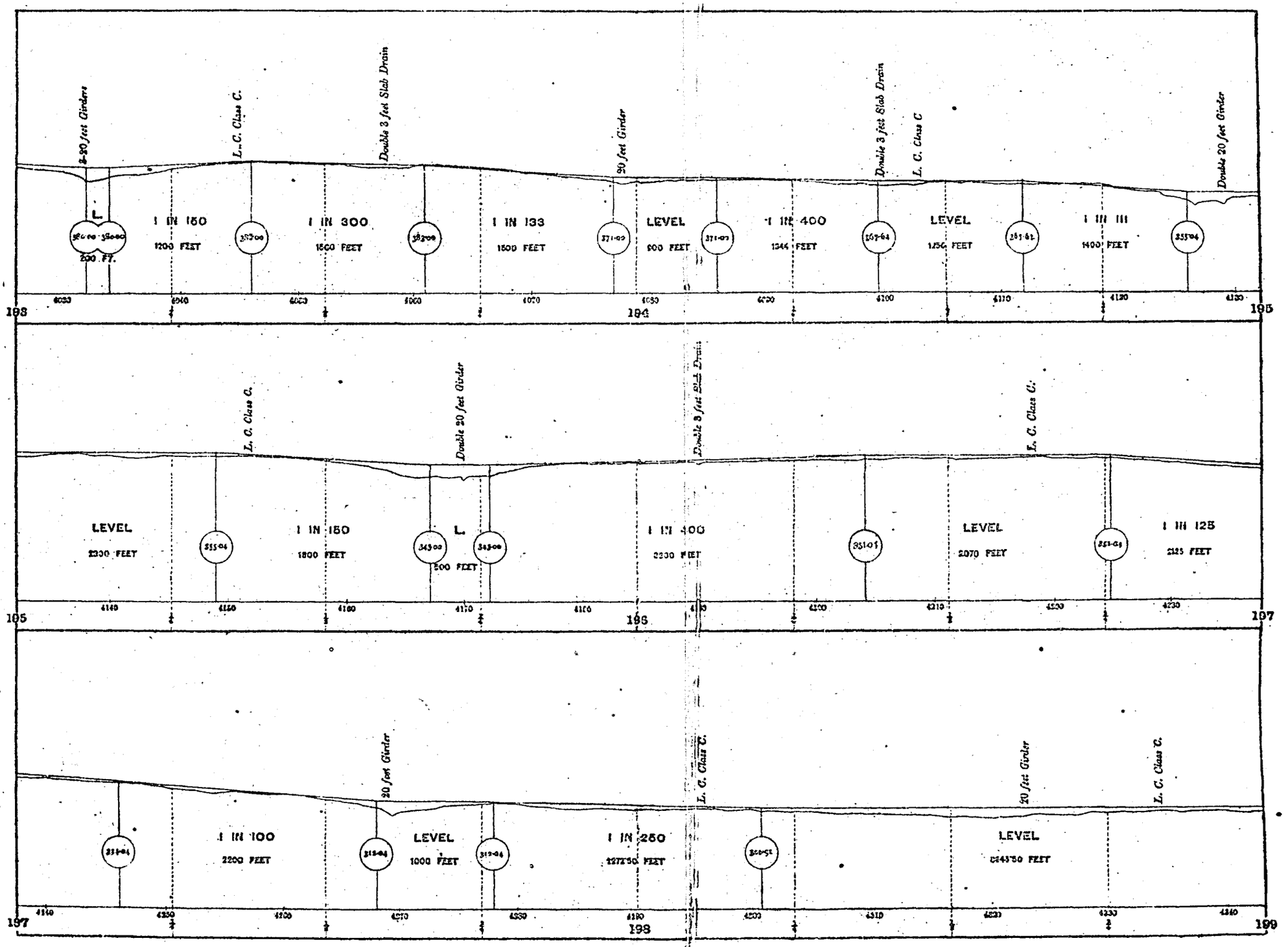

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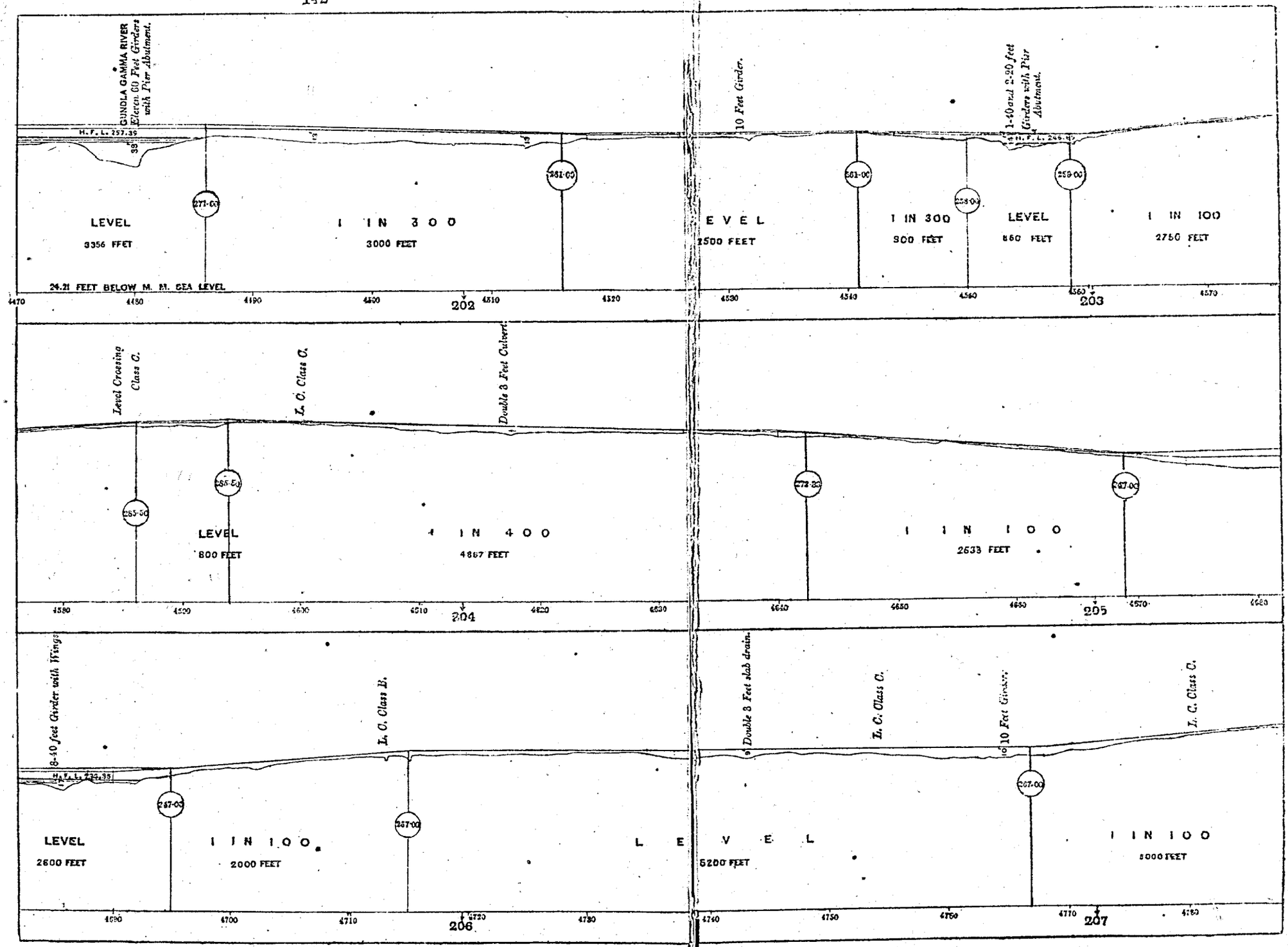

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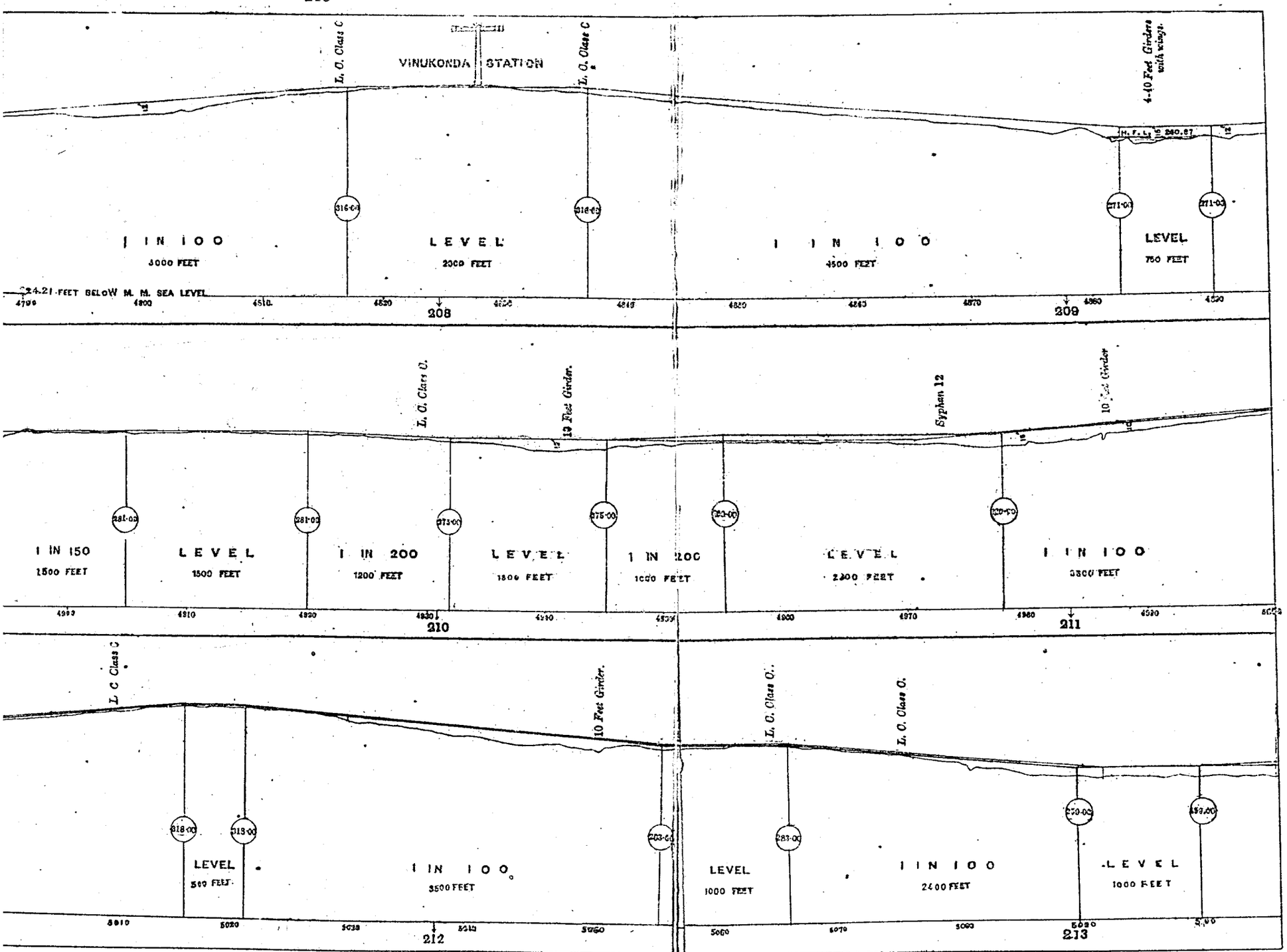

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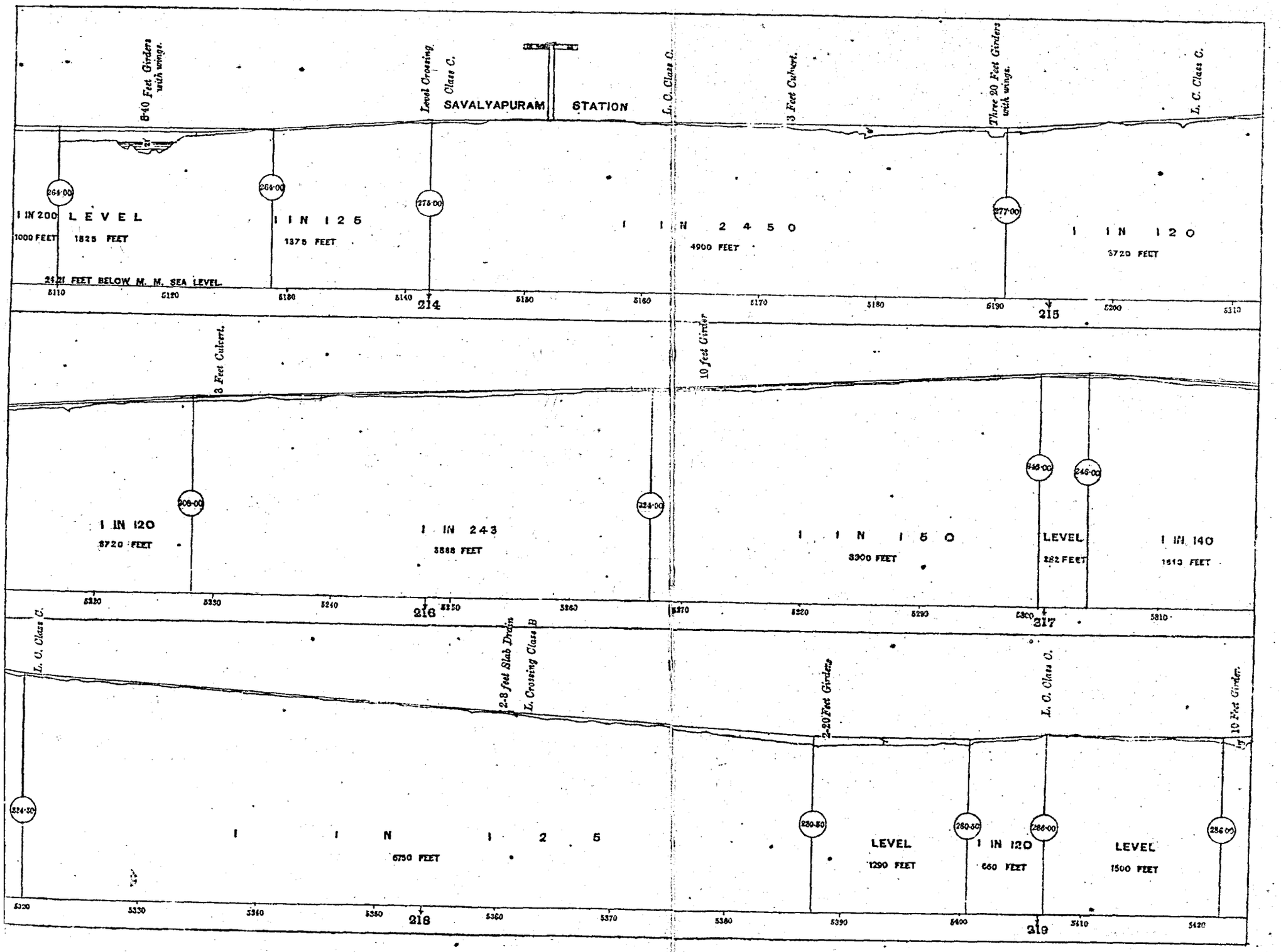

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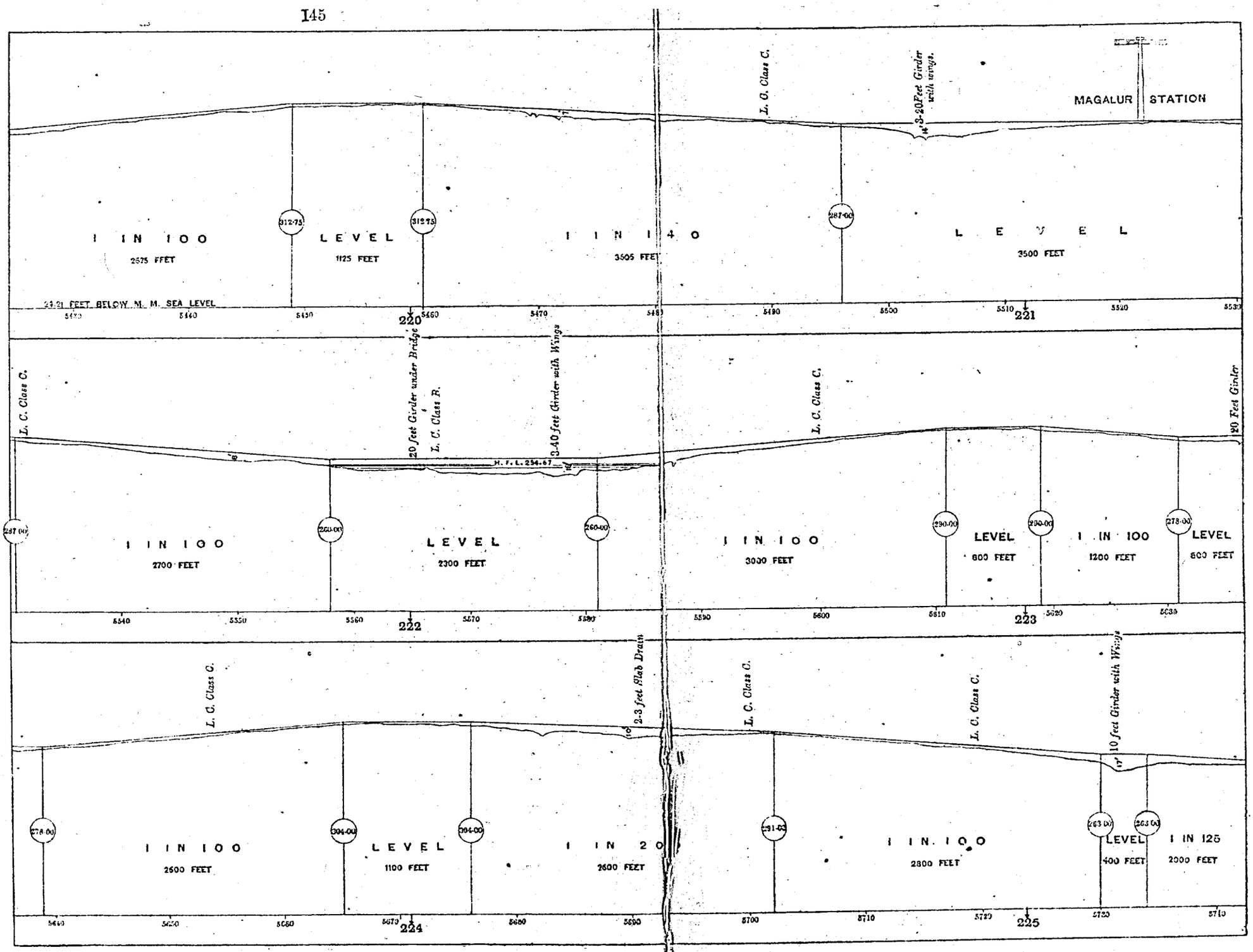

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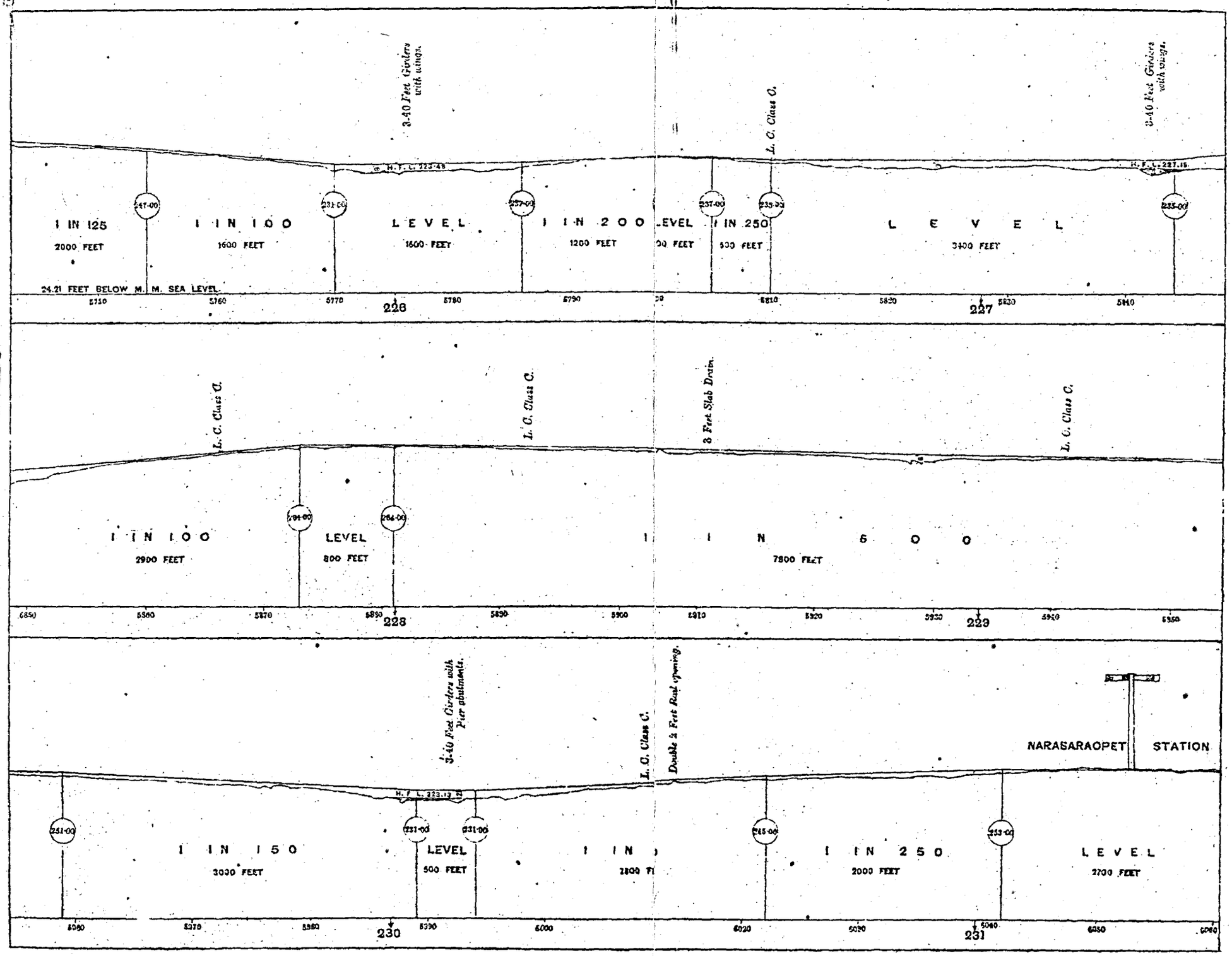

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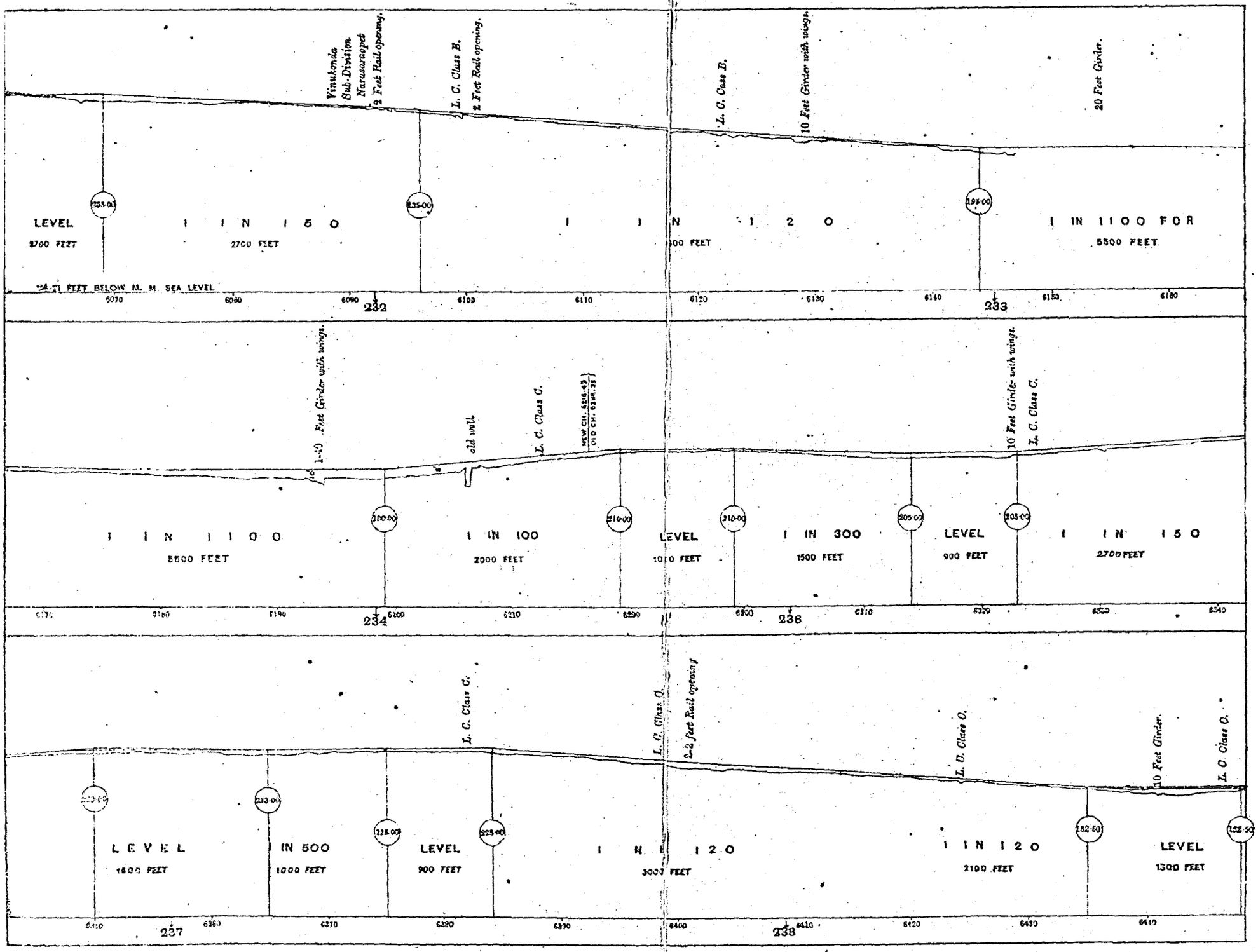

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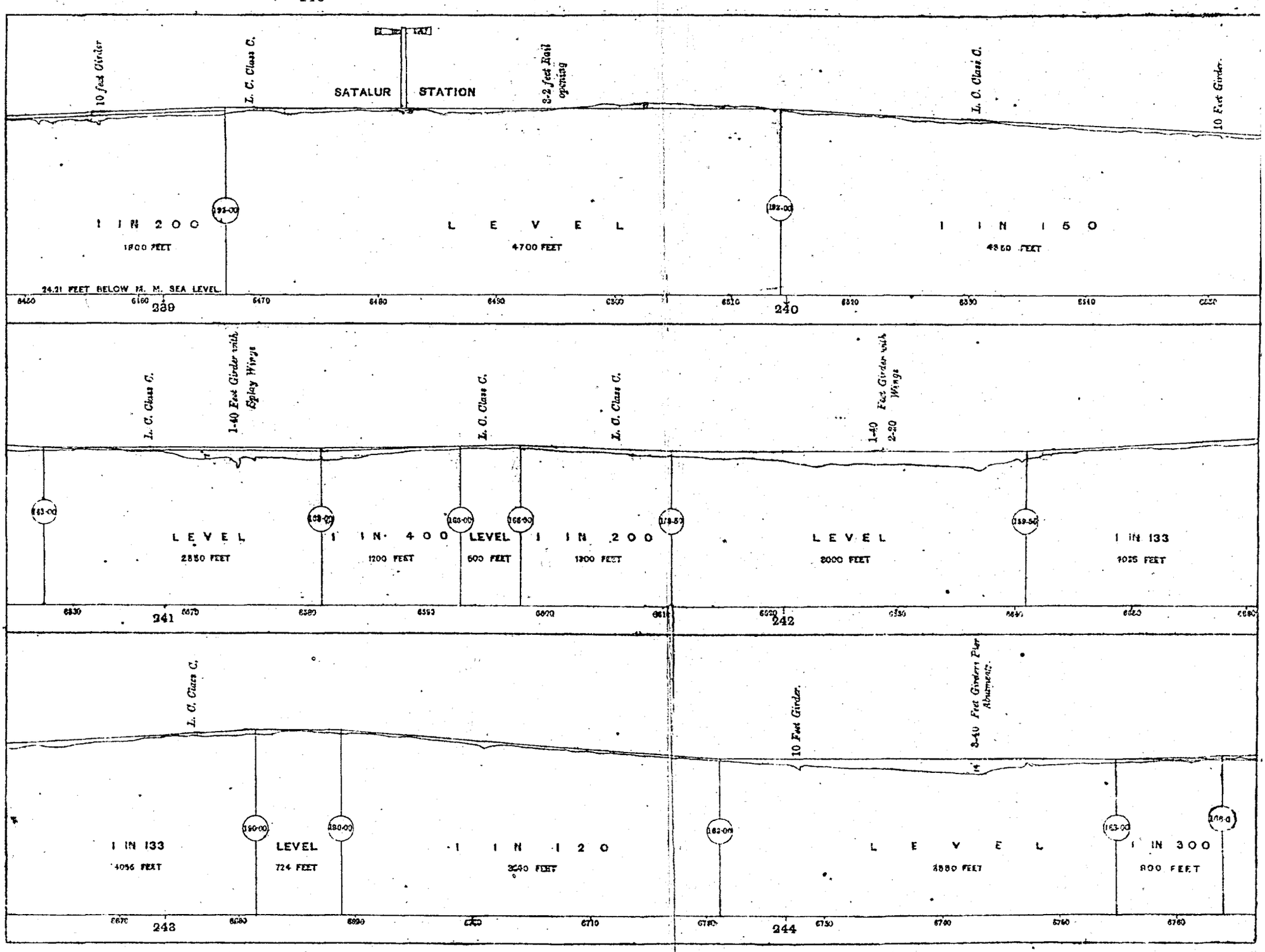

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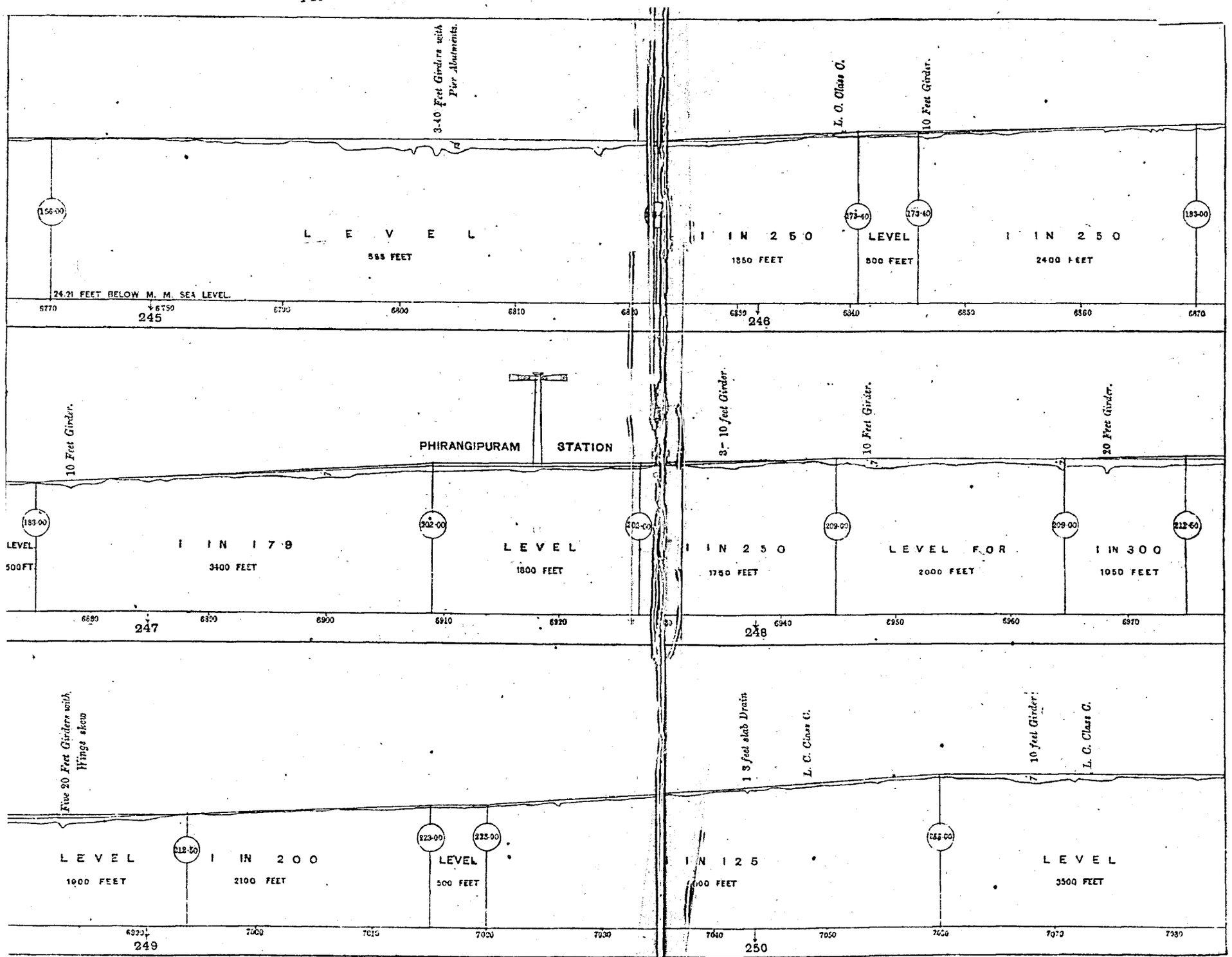

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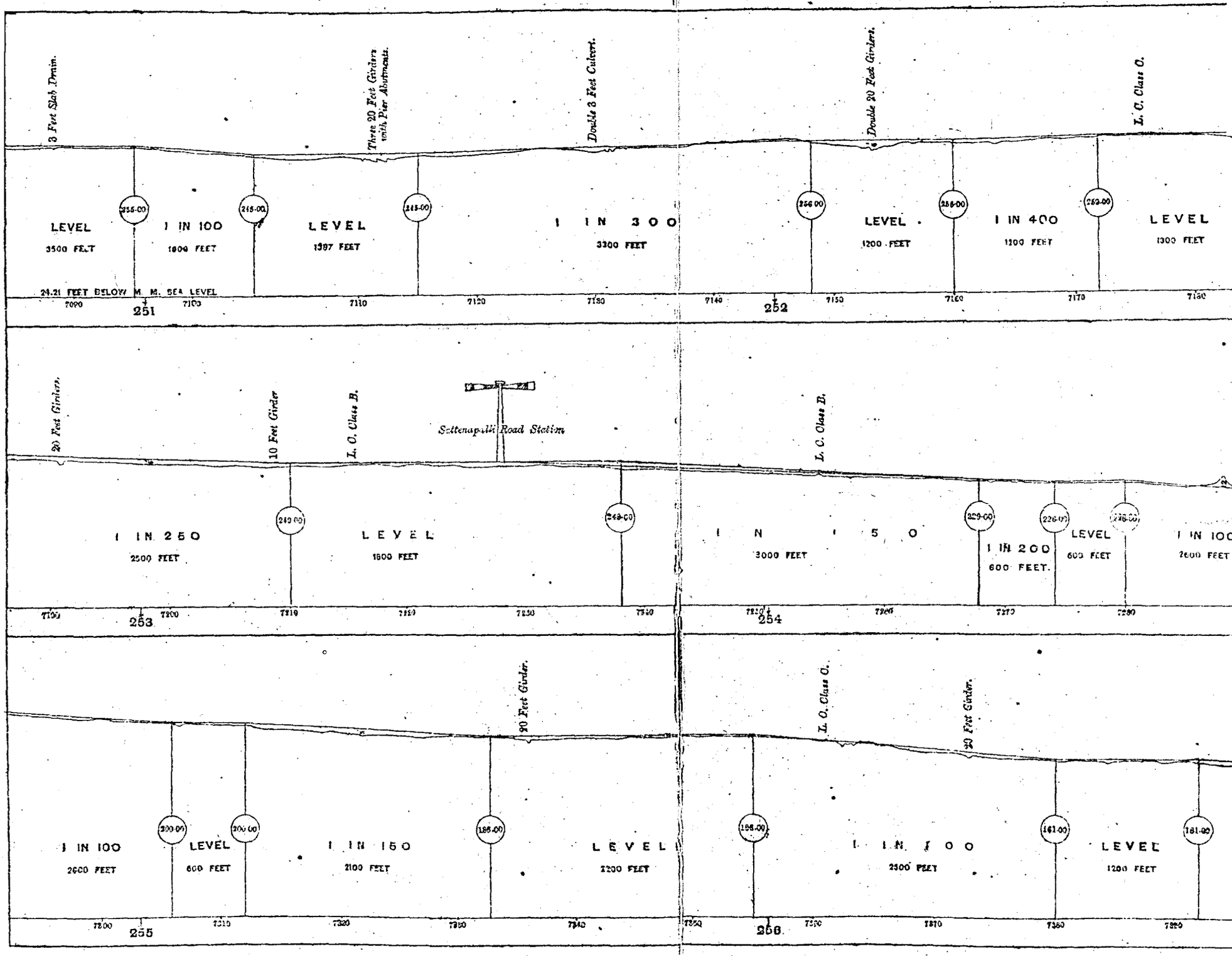

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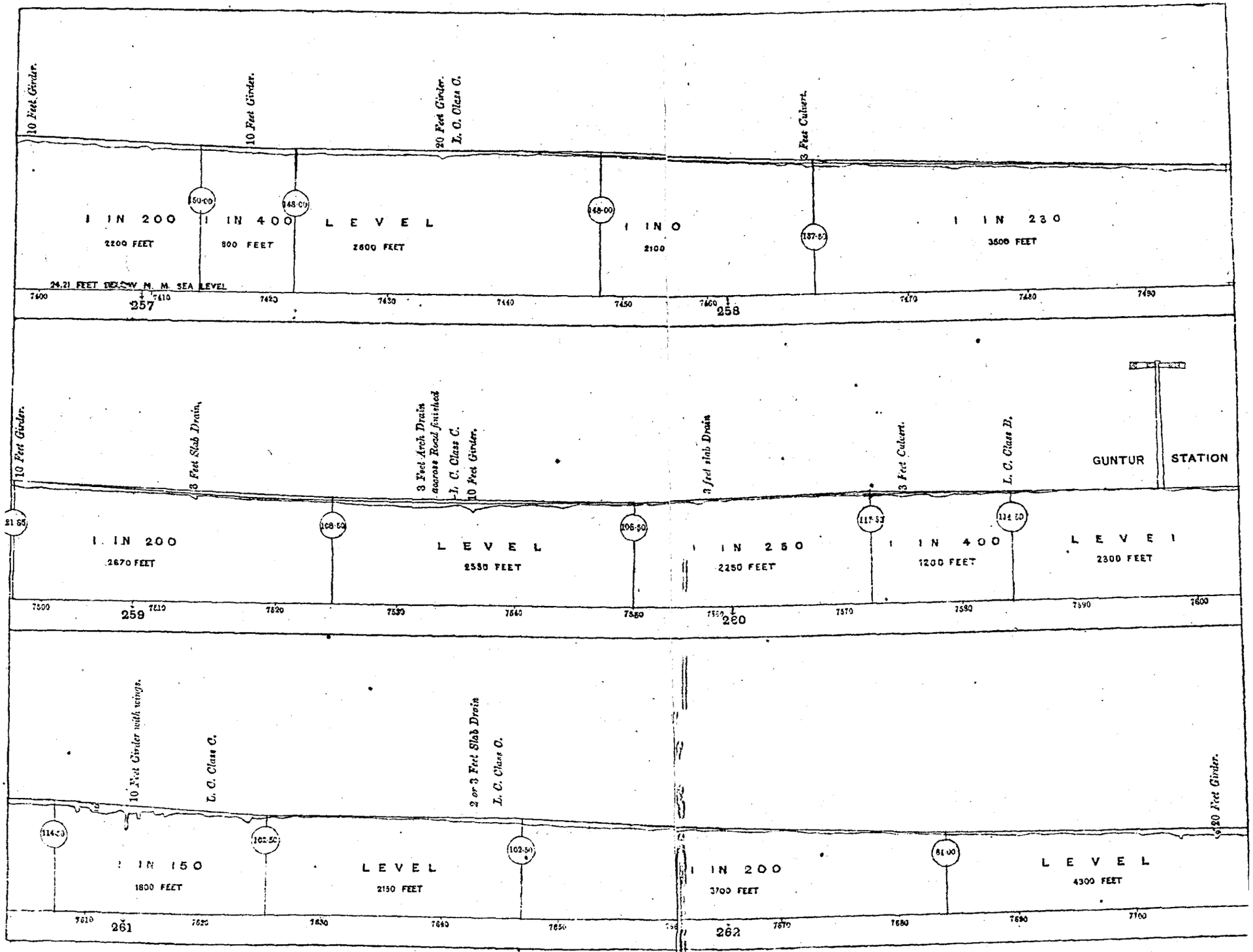

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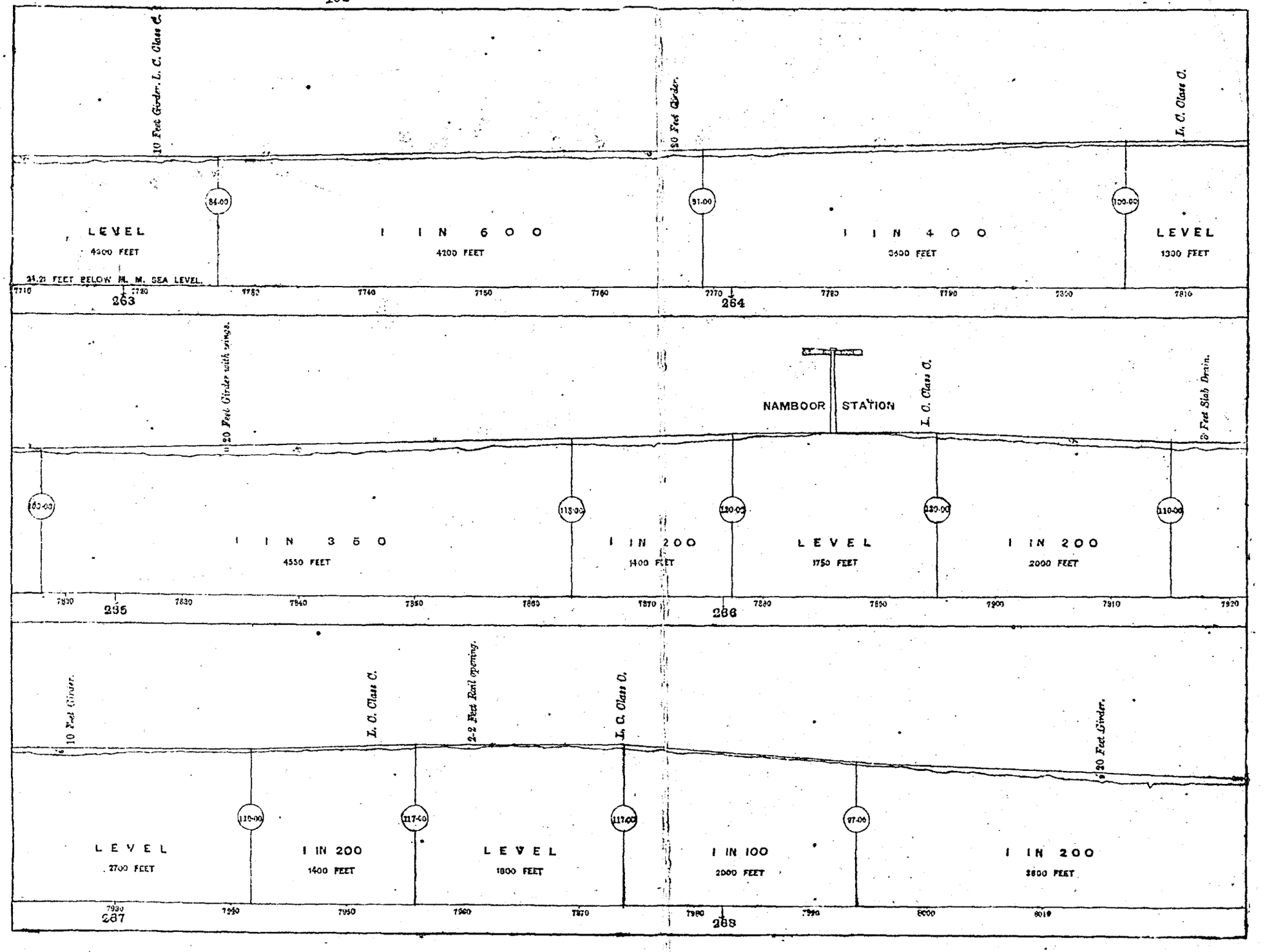

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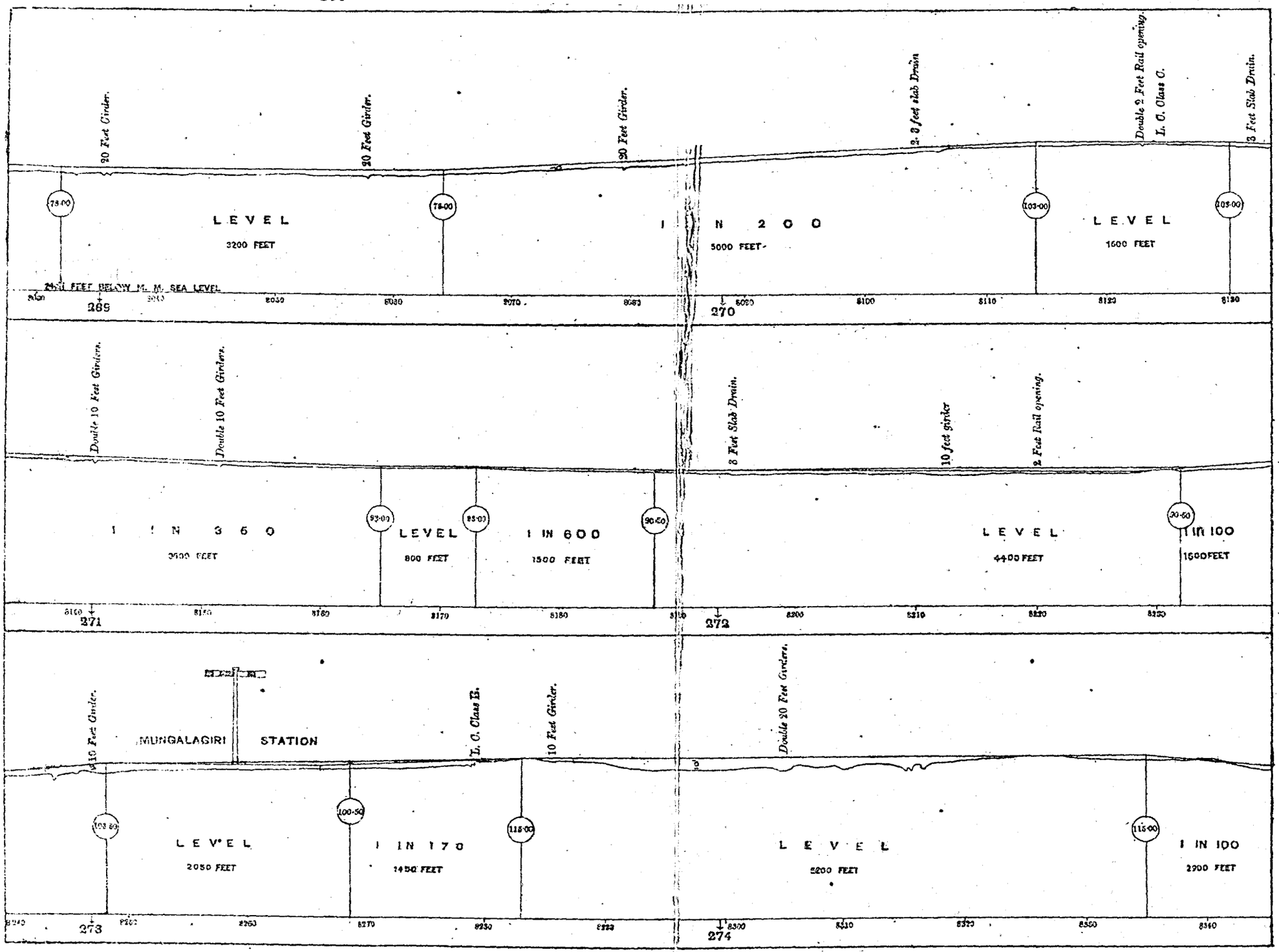

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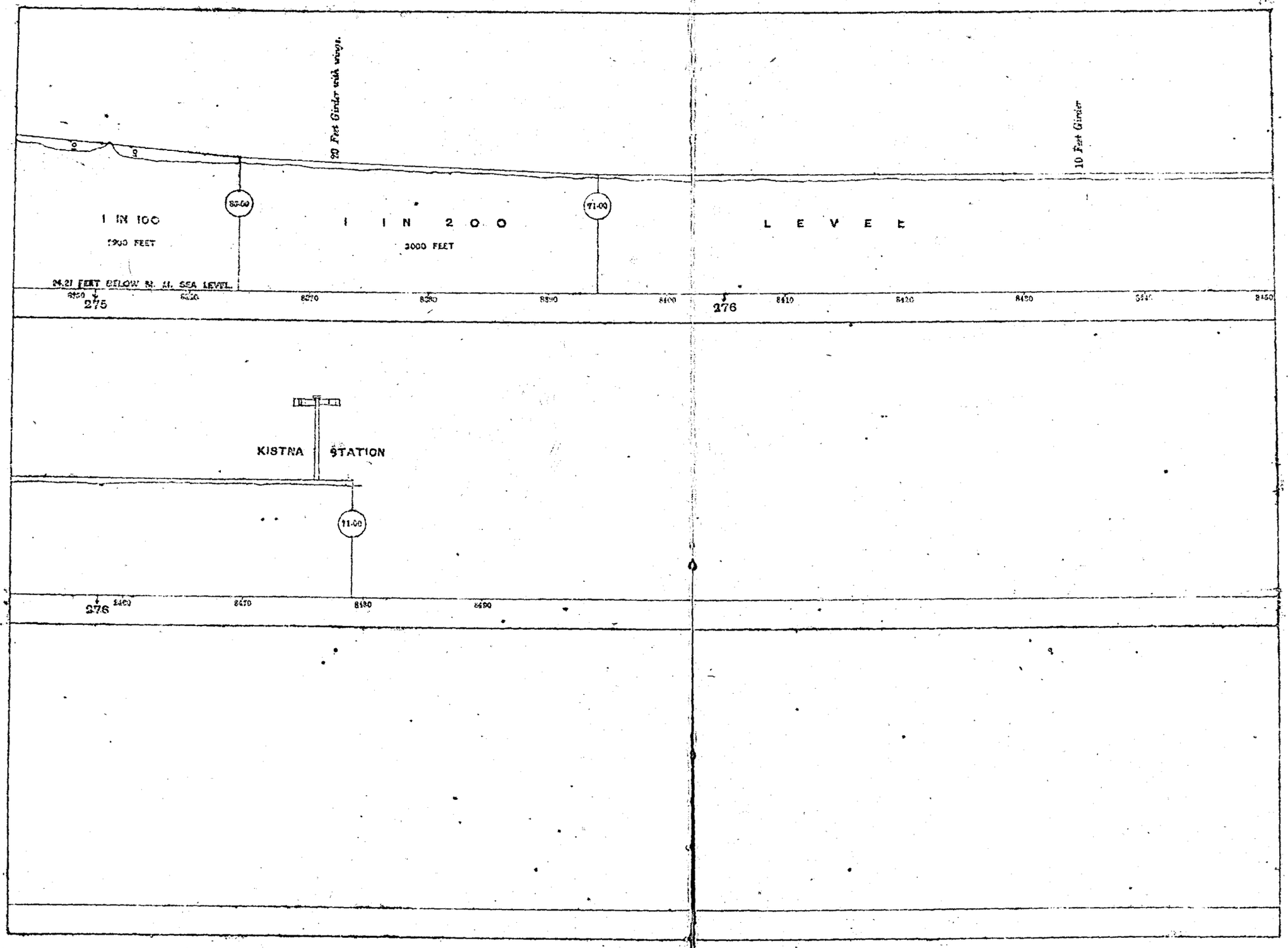

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S.M.R.

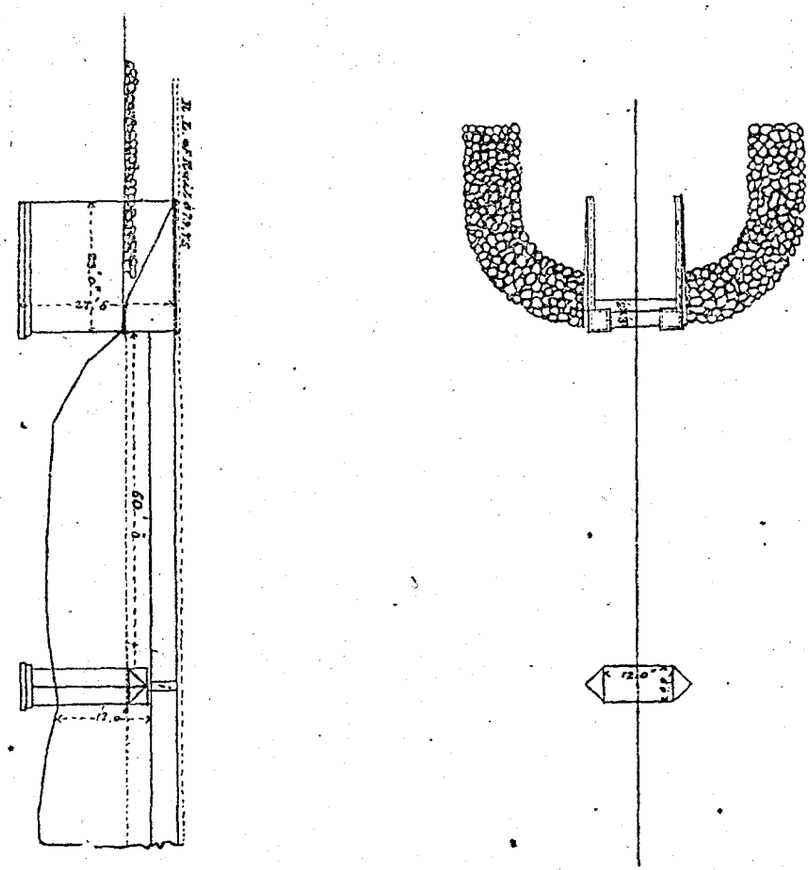
B.K. SECTION

KOONDAIR BRIDGE

AT MILE 89

(9 Spans of 60 feet)

SCALE, 20 FEET = 1 INCH



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List of important Waterways.

Name of river.	Position, mile.	Drainage area, square miles.	Rise of flood above low water.	Declivity of bed, feet per mile.	Maximum velocity in flood per second.	Openings proposed.				Character of foundation.	Height above river-bed.	Remarks.
						Number.	Clear span.	Flood area, feet.	Flood discharge, feet per second.			
			FEET.	FEET.								
Kondair ...	89	616·5	17	2·22	4	9	60	6,078	24,315	Rock.	26′	Girders.
Gundlakama ...	161¼	950	23	2·48	4·7	6	66½	4,788	26,254	Shale and rock.	...	Do.
Do. ...	201	2,000	29	4·65	...	11	60	16,000	136,000	Rock.	38′	Do.
Passapulair ...	206	108	13	13·32	...	8	40	3,946	29,595	Clay and rock.	17′	Do.
Colair	214	116	18	15·00	...	8	40	5,520	49,680	Rock.	21′	Do.

NOTE.—See working section.

STATIONS.

Station.	Class and Description. W = watering. A W = auxiliary water. E = engine. F = fuel.	Situation. Mileage. From Guntakal.	Situation. Mileage. Between station.	Situation. Curve or gradient.	Nature of soil.
Guntakal Junction.	1 W.E.F. ...	0	0	L. and S.	Deep black.
Maddikera ...	4	7¾	7¾	Curve, L. and R. 28½ chains.	Black.
Tuggali	4	16¾	9	Do. ...	Do.
Pendakalu ...	4 W.	27	10¼	L. and S.	Red.
Malliyala ...	...	36	9	Do. ...	Do.
Kurnool Road ...	3 W.F.	43	7	Do. ...	Black.
Malkapuram ...	4	51	8	Do. ...	Ordinary earth.
Rangapuram ...	4 W.F.	58¼	7¼	Curve L. and R. 19 chains	Red.
Betamcherla ...	4 A.W.	65¼	7	Curve, L. and R. 28½ chains.	Black.
Kondakapilli ...	4	72¼	7	1 in 100 and curve R. 9½ chains.	Rock.
Panem	4 W.	81	8¾	L. and S.	Black.
Nandyal	2 W.E.F. ...	90	9	1 in 1,000 straight.	Do.
Gazalapalli ...	4 W.	99¼	9¼	1 in 500 straight.	Do.
Watering Station ...	4 W.	106¾	7½	L. and S.	Rock.
Chellema ...	4	110½	3¾	L. and 400 feet. on curve of R. 6 chains.	Rocky.
Dhorabavi ...	4 W.	Position not yet determined.			Rock.
Digguvametta ...	4 W.	125½	15	L. and S.	Black.
Giddalur ...	4	132	6½	Do. ...	Do.
Samandapalli ...	4	142	10	Do. ...	Do.
Cumbum	3 W.	153½	11½	Do. ...	Do.
Tarlupaud	4	161¾	8¼	Curve, L. and R. 28½ chains.	Sandy.
Venkatapuram, will be "Markapur."	4 W.	169¼	7½	L. and S.	Black and red.
Gajjalakonda ...	4	178	8¾	Do. ...	Black.
Yerrapollium ...	2 W.E.F. ...	184½	6½	Do. ...	Do.
Kuriched	4	192	7½	Do. ...	Do.
Gundlakama ...	4	200	8	Do. ...	Do.
Vinukonda ...	4 W.	208	8	Do. ...	Do.
Savalyapuram ...	4	214¼	6¼	1 in 2,450′ straight.	Do.
Magalur	4 W.	221¼	7	L and S.	Do.
Narasarapet ...	4	231¼	10	Do. ...	Do.
Satalur	4 W.	239½	8¼	Do. ...	Do.
Phiranjipuram ...	4	247¾	8¼	Do. ...	Do.
Satnapalli ...	4	253½	5¾	Do. ...	Do.
Guntur	3 W.	260¾	7¼	Do. ...	Do.
Nambur	4	266	5¼	Do. ...	Do.
Mangalaghiri ...	4	273¼	7¼	Do. ...	Do.
Kistna Terminus ...	1 W.E.F. ...	276	2¾	Do. ...	Do.

NOTE.—1st-class stations are junctions and terminals.
2nd-class stations are engine changing not included in 1st class.
3rd class are stations having goods sheds not included in 1st and 2nd.
4th are all minor.

STATIONS—*cont.*

Station.	Buildings.			
	Passenger.		Goods.	
	Nature.	Size.	Nature.	Size.
Guntakal Junction.	Stone	419′ × 28′	One to be built.	
Maddikera ...	Stone and corrugated iron.	102′ × 39′	...	...
Tuggali		102′ × 39′	...	...
Pendakalu		102′ × 39′	...	...
Malliyala		102′ × 39′	...	...
Kurnool Road ...		102′ × 39′	Rails and corrugated iron.	80′ × 25′
Malkapuram ...		61′ × 20′	...	...
Rangapuram ...		61′ × 20′	...	...
Betamcherla ...		61′ × 20′	...	...
Kondakapilli ...		...	...	...
Panem		61′ × 20′	...	...
Nandyal	Stone	102′ × 44′	Stone ...	103′ × 33′
Gazalapalli ...	Stone and corrugated iron.	61′ × 20′	...	...
Watering Station ...	...	...	...	...
Chellema	Stone and corrugated iron.	61′ × 20′	...	...
Dhorabavi	...	...	...	...
Digguvametta ...	Stone and corrugated iron roofs over waiting sheds and verandahs.	61′ × 20′	...	...
Giddalur		61′ × 20′	...	...
Samandapalli ...		61′ × 20′	...	...
Cumbum		160′ × 39½′	Corrugated iron.	Not decided, probably 80′ × 30′
Tarlupaud		61′ × 20′	...	...
Venkatapuram, will be "Markapur."		61′ × 20′	...	...
Gajjalakonda ...		61′ × 20′	...	...
Yerrapollium ...		160′ × 39½′	Corrugated iron.	Not decided, probably 60′ × 30′
Kuriched		61′ × 20′	...	...
Gundlakama ...		61′ × 20′	...	...
Vinukonda ...		81′ × 20′	...	...
Savalyapuram ...		61′ × 20′	...	...
Magalur		61′ × 20′	...	...
Narasarapet ...		81′ × 20′	...	...
Satalur		61′ × 20′	...	...
Phiranjipuram ...		61′ × 20′	...	...
Satnapalli ...		61′ × 20′	...	...
Guntur		160′ × 39½′	Corrugated iron.	80′ × 30′
Nambur		61′ × 20′	...	...
Mangalaghiri ...		81′ × 20′	...	...
Kistna Terminus ...	Corrugated iron, temporary.	310′ × 49′	Corrugated iron.	100′ × 30′

NOTE.—The roofs of main buildings in all are terraced.

STATIONS—*cont.*

Station.	Platforms.			
	Passenger.		Goods.	
	Covered.	Uncovered.	Covered.	Uncovered.
Guntakal Junction	429′ × 45′ 164′ × 28′	581′ × 45′ 369′ × 28′	The transhipment platform is used.	
Maddikera	...	500′ × 30′	...	...
Tuggali	...	500′ × 30′	...	...
Pendakalu	...	500′ × 30′	...	...
Malliyala	...	500′ × 30′	...	...
Kurnool Road	...	500′ × 30′	...	...
Malkapuram	...	500′ × 30′	...	...
Rangapuram	...	500′ × 30′	...	...
Betamcherla	...	500′ × 30′	...	...
Kondakapilli	...	...	...	...
Panem	...	500′ × 30′	...	...
Nandyal	...	525′ × 120′ 430′ × 56′	...	325′ × 50′
Gazalapalli	...	500′ × 30′	...	...
Watering Station	...	...	...	...
Chellema	...	500′ × 10′	...	...
Dhorabavi	...	...	...	...
Digguvametta	...	500′ × 30′	...	...
Giddalur	...	500′ × 30′	...	...
Samandapalli	...	500′ × 30′	...	...
Cumbum	...	500′ × 30′	...	325′ × 50′
Tarlupaud	...	500′ × 30′	...	...
Venkatapuram, will be "Markapur."	...	500′ × 30′	...	...
Gajjalakonda	...	500′ × 30′	...	...
Yerrapollium	...	525′ × 120′ 430′ × 56′	...	325′ × 50′
Kuriched	...	500′ × 30′	...	...
Gundlakama	...	500′ × 30′	...	...
Vinukonda	...	500′ × 30′	...	...
Savalyapuram	...	500′ × 30′	...	...
Magalur	...	500 × 30′	...	...
Narasarapet	...	500′ × 30′	...	...
Satalur	...	500′ × 30′	...	...
Phiranjipuram	...	500′ × 30′	...	...
Satnapalli	...	500′ × 30′	...	...
Guntur	...	500′ × 30′	...	325′ × 50′
Nambur	...	500′ × 30′	...	...
Mangalaghiri	...	500′ × 30′	...	...
Kistna Terminus	...	690′ × 72′ 310′ × 23′	...	325′ × 50′

STATIONS—*cont.*

Station.	Water.							
	Wells.		Tanks.			Pumps.	Hydrants.	Water columns.
	No.	Nature.	Size.	Capacity, gallons.	Time to refill.			
Guntakal Junction.	1	40′ square steined 5 miles off.	77′6″ × 40′ × 5′	96,000	10 hours by gravitation.	Steam 2	4	4
Maddikera ...	1	Steined 20′ diameter.	15′ × 15′ × 5′	5,000	6 hours ...	...	...	1
Tuggali ...	...	...	...	...	...	...	...	...
Pendakalu ...	1	Steined 20′ diameter.	15′ × 15′ × 5′	5,000	6 hours...	1	...	2
Malliyala ...	1	Steined 20′ diameter, water bad.	15′ × 15′ × 5′	5,000	do. ...	...	...	1
Kurnool Road .	1	Steined 20′ diameter, water bad.	15′ × 15′ × 5′	5,000	do. ...	1	...	2
Malkapuram ...	...	...	...	...	...	...	...	...
Rangapuram ...	1	Steined 10′ diameter.	15′ × 15′ × 5′	5,000	6 hours...	1	...	2
Betamcherla ...	1	Steined 10′ diameter, water very scarce.	15′ × 15′ × 5′	5,000	do. ...	1	...	1
Kondakapilli ...	...	...	...	...	...	...	...	...
Panem ...	1 very good and plentiful.	Steined 20′ diameter.	15′ × 15′ × 5′	5,000	6 hours...	1	...	2
Nandyal ...	1	Steined, filled from canal.	25′ × 15′ × 5′	10,000	...	1 noria with 4-horse power engine.	2	1
Gazalapalli ...	2	Steined, 1 bad 20′ diameter, 1 good 8′ diameter.	15′ × 15′ × 5′	5,000	...	1	...	2
Watering Station.	...	River.	12′ × 12′ × 4′	3,600	...	1 steam.	...	1
Chellema ...	...	...	...	...	...	...	...	...
Dhorabavi ...	...	...	12′ × 12′ × 4′	3,600	...	...	...	1
Digguvametta .	1	Steined 20′ diameter.	16′ × 16′ × 4′	6,400	...	1	...	2
Giddalur ...	...	...	...	...	...	...	...	...
Samandapalli .	...	...	...	...	...	...	...	...
Cumbum ...	1	Steined 20′ diameter.	16′ × 16′ × 4′	6,400	...	1	..	2
Tarlupaud ..	...	...	...	...	...	...	...	...
Venkatapuram, will be "Markapur."	1	Steined 20′ diameter.	16′ × 16′ × 4′	6,400	...	1	...	2
Gajjalakonda ...	...	...	...	...	...	...	...	...
Yerrapollium .	1	Steined 20′ diameter.	24′ × 24′ × 4′	14,400	...	1 steam.	2	1
Kuriched ...	...	...	...	...	...	...	...	...
Gundlakama ...	1	Steined 20′ diameter.	16′ × 16′ × 4′	6,400	...	1	...	2
Vinukonda ...	...	...	...	...	...	...	...	...
Savalyapuram .	...	...	...	...	...	...	...	...
Magalur ...	1	Steined 20′ diameter.	16′ × 16′ × 4′	6,400	...	1	...	2
Narasarapet ...	...	...	...	...	...	...	...	...
Satalur ...	1	Steined 20′ diameter.	16′ × 16′ × 4′	6,400	...	1	...	2
Phiranjipuram .	...	...	...	...	...	...	...	...
Satnapalli ...	...	...	...	...	...	...	...	...
Guntur ...	1	Steined 20′ diameter.	16′ × 16′ × 4′	6,400	...	1	...	2
Nambur ...	...	...	...	...	...	...	...	...
Mangalaghiri ...	...	...	...	...	...	...	...	...
Kistna Terminus.	1	Steined 20′ diameter.	24′ × 24′ × 4′	14,400	...	1 steam.	2	4

STATIONS—*cont.*

Station.	Fuel.			Sidings.	Dead ends.	
	Stage.	Kind.	Where stored.	Length.	No.	Length.
Guntakal Junction ...	1	Wood ...	Guntakal ...	20,700′	...	Included in sidings.
Maddikera	...	...	...	1,700′	1	200′
Tuggali	...	...	...	1,700′	1	200′
Pendakalu	...	...	...	1,700′	1	200′
Malliyala	...	...	...	1,700′	1	200′
Kurnool Road ...	1	Wood ...	Kurnool ...	5,690′	1	200′
Malkapuram	...	...	...	1,700′	1	200′
Rangapuram	1	Wood ...	Rangapuram.	1,700′	1	200′
Betamcherla	...	...	...	1,700′	1	200′
Kondakapilli	...	...	...	1,700′	1	200′
Panem	...	...	...	1,700′	1	200′
Nandyal	1	Wood ...	Nandyal ...	12,000′	8	Included in sidings.
Gazalapalli	...	...	...	1,700′	1	200′
Watering Station ...	...	...	...	...	...	...
Chellema	...	...	...	1,700′	1	200′
Dhorabavi	...	...	...	...	...	...
Digguvametta ...	...	...	...	1,700′	1	200′
Giddalur	...	...	...	1,700′	1	200′
Samandapalli ...	...	...	...	1,700′	1	200′
Cumbum	1	Wood and coal.	Cumbum ...	10,500′	5	Included in sidings.
Tarlupaud	...	...	...	1,700′	1	200′
Venkatapuram, will be "Markapur."	...	...	...	1,700′	1	200′
Gajjalakonda ...	...	...	...	1,700′	1	200′
Yerrapollium ...	1	Wood and coal.	Yerrapollium.	15,600′	8	Included in sidings.
Kuriched	...	...	...	1,700′	1	200′
Gundlakama	...	...	...	1,700′	1	200′
Vinukonda	...	...	...	1,700′	1	200′
Savalyapuram ...	...	...	...	1,700′	1	200′
Magalur	...	...	...	1,700′	1	200′
Narasarapet	...	...	...	1,700′	1	200′
Satalur	...	...	...	1,700′	1	200′
Phiranjipuram ...	...	...	...	1,700′	1	200′
Satnapalli	...	...	...	1,700′	1	200′
Guntur	...	...	...	10,500′	3	Included in sidings.
Nambur	...	...	...	1,700′	1	200′
Mangalaghiri ...	...	...	...	1,700′	1	200′
Kistna Terminus ...	1	Coal ...	Kistna ...	18,400′	...	...

STATIONS—*cont.*

Station.	Cross-overs.	Turn-outs.	Signals.		Weigh-bridges.	Weighing-machines.
			Home.	Distant.		
Guntakal Junction ...	20	6	2	2	1	9
Maddikera	1	1	1	2	...	1
Tuggali	1	1	1	2	...	1
Pendakalu	1	1	1	2	...	1
Malliyala	1	1	1	2	...	1
Kurnool Road ...	not yet settled.	...	1	2	...	4
Malkapuram	1	1	1	2	...	1
Rangapuram	1	1	1	2	...	1
Betamcherla	1	1	1	2	...	1
Kondakapilli ...	1	1	1	2	...	1
Panem	1	1	1	2	...	1
Nandyal	8	8	1	2	1	4
Gazalapalli	1	1	1	2	...	1
Watering Station ...	...	...	...	...	...	...
Chellema	1	1	1	2	...	1
Dhorabavi	...	...	...	...	...	...
Digguvametta ...	1	1	1	2	...	1
Giddalur	1	1	1	2	...	1
Samandapalli ...	1	1	1	2	...	1
Cumbum	3	3	1	2	1	4
Tarlupaud	1	1	1	2	...	1
Venkatapuram, will be "Markapur."	1	1	1	2	...	1
Gajjalakonda ...	1	1	1	2	...	1
Yerrapollium ...	8	8	1	2	1	4
Kuriched	1	1	1	2	...	1
Gundlakama	1	1	1	2	...	1
Vinukonda	1	1	1	2	...	2
Savalyapuram ...	1	1	1	2	...	1
Magalur	1	1	1	2	...	1
Narasarapet	1	1	1	2	...	2
Satalur	1	1	1	2	...	1
Phiranjipuram ...	1	1	1	2	...	1
Satnapalli	1	1	1	2	...	1
Guntur	3	3	1	2	1	4
Nambur	1	1	1	2	...	1
Mangalaghiri ...	1	1	1	2	...	1
Kistna Terminus ...	20	6	1	2	1	9

STATIONS—*cont.*

Station.	Mechanical lifting power.	Turn-tables.	Ash-pits.	Carriage examining pits.	Station yard.
					Area.
Guntakal Junction.	10-ton crane	1	9	1	6,200′ × 2,500′
Maddikera	...	...	1	...	2,000′ × 400′
Tuggali	...	...	...	...	2,000′ × 400′
Pendakalu	...	...	1	...	2,000′ × 400′
Malliyala	...	...	1	...	2,000′ × 400′
Kurnool Road ...	...	...	2	...	2,000′ × 400′
Malkapuram ...	...	...	...	...	2,000′ × 400′
Rangapuram ...	...	...	1	...	2,000′ × 400′
Betamcherla ...	...	...	1	...	2,000′ × 400′
Kondakapilli ...	...	...	...	...	2,000′ × 400′
Panem	...	...	1	...	2,000′ × 400′
Nandyal	10-ton crane	1	4	1	2,700′ × 600′
Gazalapalli ...	...	...	1	...	2,000′ × 400′
Watering Station ...	...	...	1	...	...
Chellema	...	...	...	...	3,200′ × 2,350′
Dhorabavi	...	...	...	...	...
Digguvametta ...	...	...	2	...	2,000′ × 400′
Giddalur	...	...	...	...	2,000′ × 400′
Samandapalli ...	...	...	...	...	2,000′ × 400′
Cumbum	...	...	2	...	2,000′ × 600′
Tarlupand	...	...	...	...	2,000′ × 400′
Venkatapuram, will be "Markapur."	...	...	2	...	2,000′ × 400′
Gajjalakonda ...	...	...	...	...	2,000′ × 400′
Yerrapollium ...	...	1	3	...	2,000′ × 600′
Kuriched	...	...	...	...	2,000′ × 400′
Gundlakama ...	...	...	2	...	2,000′ × 400′
Vinukonda ...	...	...	...	...	2,000′ × 400′
Savalyapuram ...	...	...	...	...	2,000′ × 400′
Magalur	...	...	2	...	2,000′ × 400′
Narasarapet ...	...	...	...	...	2,000′ × 400′
Satalur	...	...	2	...	2,000′ × 400′
Phiranjipuram ...	...	...	...	...	2,000′ × 400′
Satnapalli	...	...	...	...	2,000′ × 400′
Guntur	...	...	2	...	2,000′ × 600′
Nambur	...	...	...	...	2,000′ × 400′
Mangalaghiri ...	...	...	...	...	2,000′ × 400′
Kistna Terminus ...	10-ton crane	1	5	...	7,000′ × 1,500′ (mean).

REMARKS.

GUNTAKAL JUNCTION.—The transhipment platform 600′ × 20 with covered portion 300′ × 12′. A storage reservoir 4 miles off, filled by water pumped up from well at 5th mile, keeps station and tanks supplied.

NANDYAL.—Present terminus, country round black plain, highly cultivated.

The Country.

With the exception of about the first 5 miles from Guntakal Junction, this section of the S. M. Railway runs for its entire length through the Kurnool district, Nandyal, the present terminus, being situated almost in the very centre of the district. The general aspect of the country, within an area of 7,027 square miles, or for a length of about 120 miles and a breadth of 70 miles, is that of parallel mountain ranges with spurs branching east and west and separated by valleys. Two important ranges, the Nallamalas and Erramalas, extend north and south through the centre of the district and divide the country into three well-defined portions, viz. —

The western, comprising the taluks of Pattikonda and Ramallakott.

The central or Kunder valley, comprising Nandikotkur, Nandyal, Koilkuntla and Sirvel taluks.

The eastern or Cumbum valley, with the taluks of Cumbum and Markapur.

The Erramalas extend northward from Yamavaram, in the Cuddapah district, to within 8 miles of Kurnool town, and are composed chiefly of low flat-topped quartzite or altered sandstone hills with scarped sides, the highest point being about 2,000 feet. The Nallamalas lie almost entirely in the Kurnool district, 70 miles of their length being in it. They extend northward beyond the Kistna river into the Nizam's dominions, and southward to the Penner river near Cuddapah, and are chiefly composed of quartzite on the western side and clay slate on the eastern flank. Their width is about 25 miles and their average height 2,000 feet with valleys on either side from 600 to 800 feet above the sea, but Mantikonda, Biramkonda, Gundlabrahmesvaram and Durgapukonda are all over 3,000 feet.

The western division, or that which the railway first enters after leaving Guntakal, forms the northern end of the eastern slope of the great Mysore plateau. The level of the country falls gradually from south to north, unlike the other portions, which generally slope from north to south, being at Kurnool about 900 feet above sea-level and at Pyapali, in the south, 1,750 feet. It is dotted over with bare rocky hills and occasional long ridges broken by streams and valleys, several of these valleys having been dammed in as tanks. In the part traversed by the Hindri, a tributary of the Tungabhadra, the country is flat and the soil black cotton, but south-east of this it becomes hilly with red and poor soil.

The central division, or Kunder valley, lying between the Erramalas on the west and the Nallamalas on the east, is from 600 to 800 feet above sea level. In the north it is crossed by the crest of the watershed of the Kistna and Penner rivers, about 1,000 feet above sea-level. From this height the country slopes south along the Kunder river till it passes into the valley of the Penner. It is an extensive flat open about 25 miles broad, dotted here and there with solitary hills, and

is covered with cotton soil over a stratum of slaty limestones and shales. During the rains and cold season it is one vast expanse of green cultivation, which the Madras Irrigation Canal, running right down the valley, waters on either side. In the hot months, however, when the canal is empty, this black cotton plain presents an arid and monotonous appearance. The edges of the valley are, however, green, being watered by the mountain springs, and the soil is red greyish and gravelly. At Panem there is a curious geological formation of shale.

The eastern division, or Cumbum valley, lies on the east of the Nallamalas and has an average breadth of 25 miles, being bounded on the east by the Viligonda hills, running parallel to the Nallamalas, a continuation of the Cuddapah range. This valley is traversed by low parallel off-shoot ridges of the Nallamalas, broken here and there by gorges by which the mountain streams flow. Several of these gaps have been closed in and formed into reservoirs, the chief one being the Cumbum tank about 15 square miles in extent. A few miles south of Cumbum the valley is crossed by the crest of the watershed between the Gundlakama and Sagiler rivers. With the exception of a strip of land on either side of the Gundlakama and some of the valleys between the minor hills, the ground from Cumbum for about 60 miles north is one vast tract of stony, gravelly red soil, impregnated with chander or saline earth, fit only for the cultivation of the smaller millets. In the south by Giddalur (on the railway now being constructed) the soil is rich black.

This section of country is watered by the following rivers, viz., the Tungabhadra and Kistna in the north, and the Handri, Kunder, Gundlakama and Sagiler, flowing across the district from north to south or south to north.

The two former are distant from the railway from 30 to 40 miles north and do not affect the communications by road or rail in any way; they have both further been described in previous sections.

The Handri River.

The Handri river rises at Maddikera (on the line of rail) in the Pattikonda taluk. Near its source it is known as the Jalavak. It receives at Laddagiri, in the Ramallakot taluk, an affluent from the Erramala hills, and falls into the Tungabhadra at Kurnool. Its rise and fall are very sudden. Its bed is of yellow sand and rock, and though occasionally not fordable, it is for several months of the year a thin stream.

The Kunder River.

The Kunder river rises on the western side of the Erramala hills, and taking a northerly course, for a short distance, winds round the Vandutla plateau into the Kunder valley, to which it gives its name, and flowing in a southern direction, with great rapidity, falls into the Penner near Kamalapuram. Its bed is in many places rocky, and excellent limestone is quarried in it for building purposes. It is not fordable for a few days in the rainy season, but on the main road

between Kurnool and Cumbum close to Nandyal there is an excellent bridge. The chief feeders of the Kunder are the Madduleru and Jurreru, on the west, and the Kali and Vakkaleru, on the east. When the Kunder and Madduleru are in flood, several of the villages lying between them are surrounded with water. The Jurreru flows for a considerable distance through the jaghire of Banganapalle and is utilized for irrigating the well known orchards and gardens of Banganapalle (close to the line).

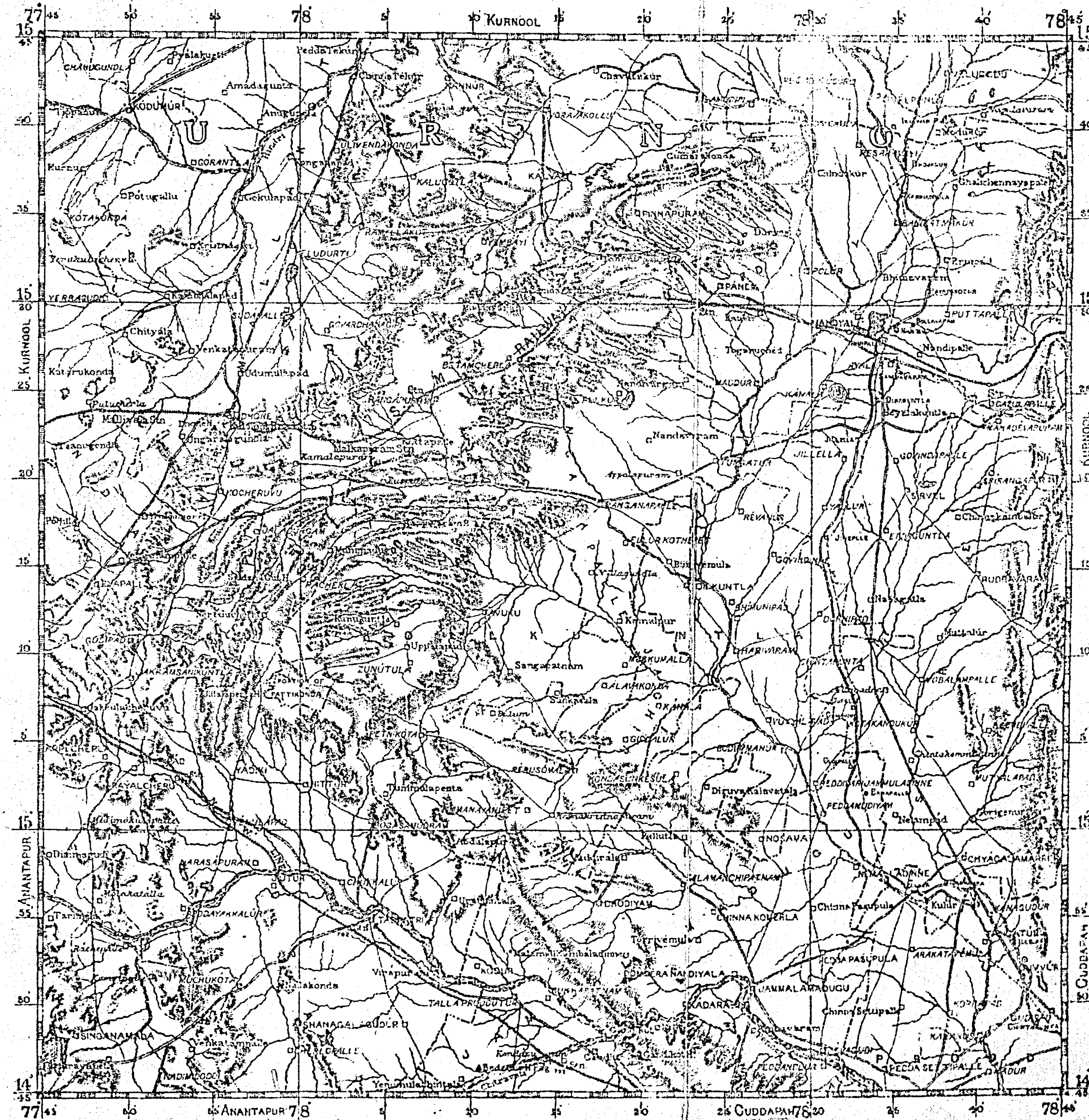
The Gundlakama River.

The Gundlakama river rises on the Nallamala hills near Gundlabrahmesvaram, and after receiving two mountain torrents, the Jampaleru and Enumaleru, enters the plains through the gorge of Cumbum, and winding round the town of Cumbum (on the line of rail now under construction) turns to the north, and after a tortuous course through Markapur of nearly 40 miles, leaves the district of Kurnool at Mummadivaram, 10 miles from Vinukonda, changes its course to the east and then to the south and finally falls into the sea near Motupalli, in Nellore district. Its minimum flow is 800 cubic feet per second and the fall of its bed from 3 to 4 feet per mile. The normal flood level rises 6 feet, while a full fresh is often 32 feet. Its bed is generally sandy, though in some places rocky. During the rains if unfordable it is crossed by rafts and floats. Its chief tributaries are the Tigaleru, Duvvaleru and Kandleru.

In the gap by Cumbum a dam of 57 feet high has been thrown up and a fine sheet of water, about 4 miles long by 4 broad, formed.

The Sagiler River.

The Sagiler river rises in the Nallamala hills and flows almost due south past Giddalur down the Sagiler valley into the Penner river. The soil along its banks and all down the valley is rich black. It is dammed in many places and its water used for irrigation.



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NELLORE
CUDDAPAH
ATMAKUR TK
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YEDAVALLI
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UYYALAVADA
GALLINAGARA
KALASAPAD
SENKHAVARAM
KATTERAGADDA
POGURANILLA
SITARAMPURAM
MALLEPALLE
PALUGURALLAPALLE
SOVREDDIPALLE
VANIPENTA
JANCHARLA
KATRAGUNTA
SIDDAVARAM
GOTLAGATTU
LINGAGUNTA
SARPALLE
GOPASAMUDRAM
KANUMANTUNIPAD
ANIGIRI
CHAKIRELA
HAUSUPURAM
PEDDA ALAVALAPAD
IMMADICHERUVU
CHERLOPALLE
GURUVAJIPETA
CHAMERASKHARAPURAM
KATTAKINDAPALLE
GUNTUR LINGANAPALEM
CHENCHUREDDIPALLE
PADUR
BOTLAGUDUR
MOGANCHERLA
DAMAMCHERLA
VARIGUNTAPAD
GOTTIGUNDALA
NARRAVADA
DUTTALUR
VINJAMUR
KONDAYAPALEM
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GANUGUNTA
CHERUVUPALLE
KAMASAMUDRAM
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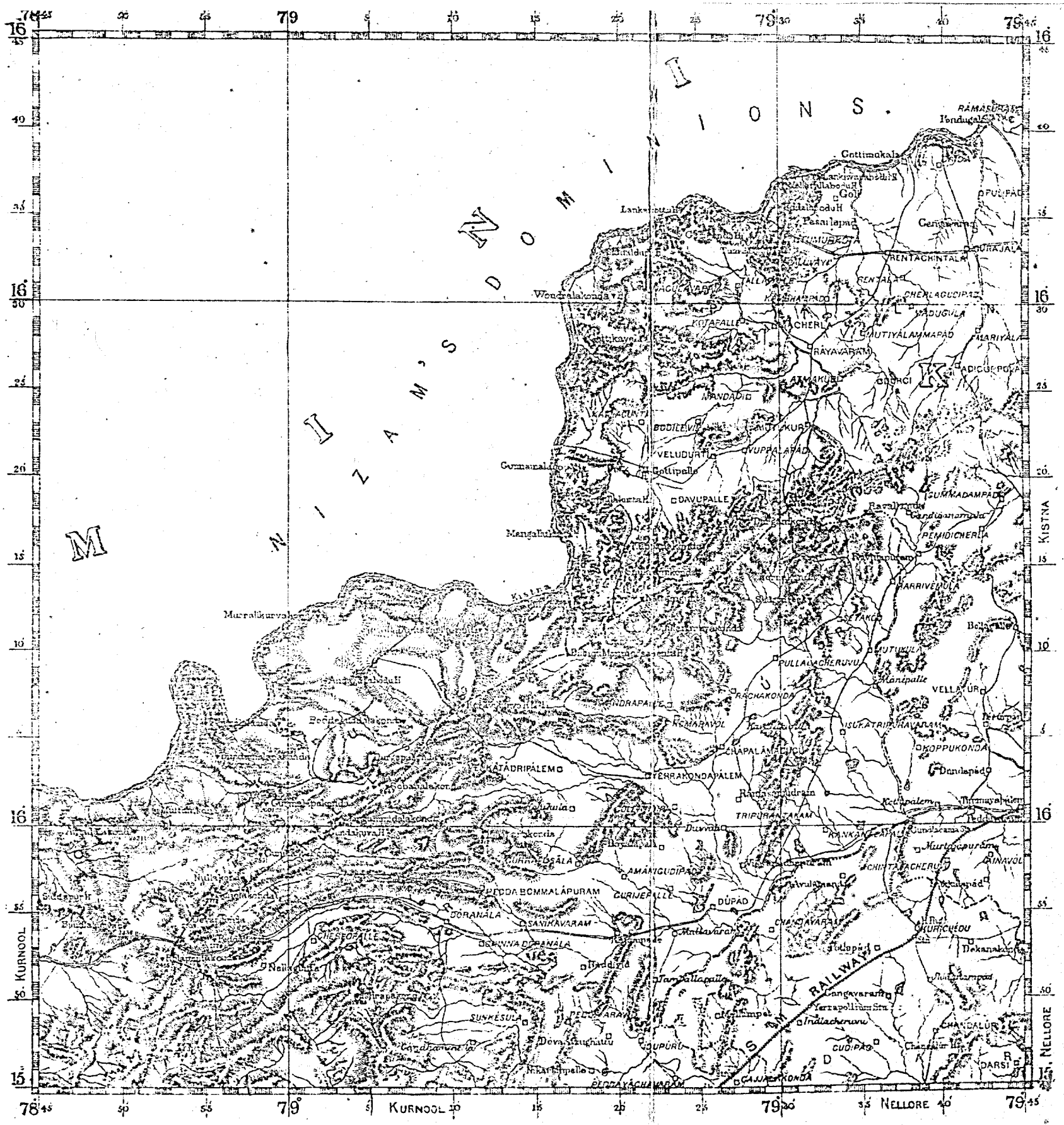

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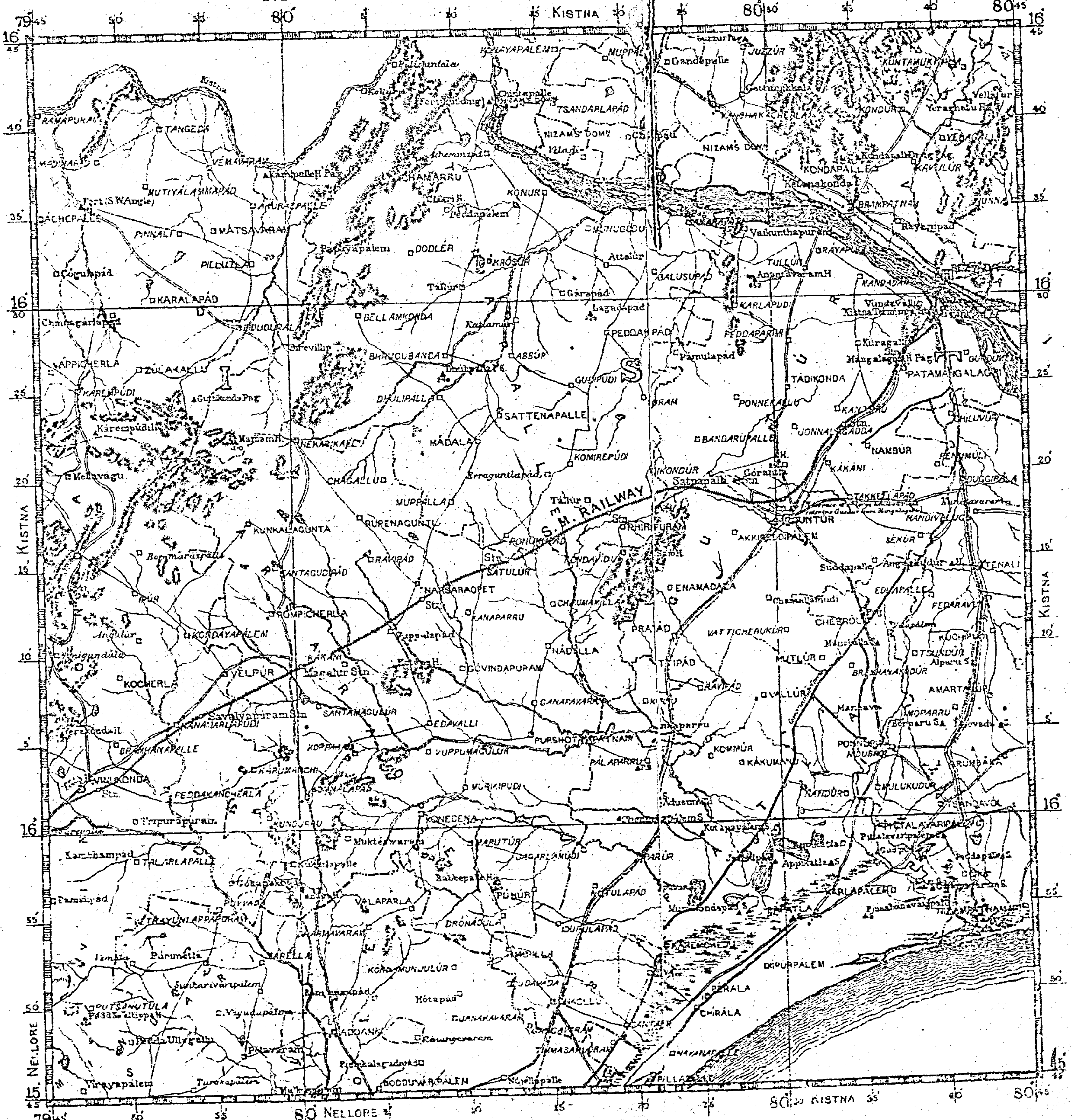

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ROADS.

The Main Road.

Guntakal-Nandyal and on.

The main and direct route between Guntakal and Nandyal follows the Bellary-Cumbum road *viâ* Gooty, Pyapali and Banganapalle over the Rampur ghât. It passes through *Guntakal* at 34 miles 5 furlongs from Bellary and runs east for 20 miles to *Gooty ;* thence for 11 miles 4 furlongs, in a northerly direction, it follows the Gooty-Kurnool road, a portion of the military trunk route from Hyderabad to Bangalore, as far as *Pyapali.*

From Pyapali it runs east over the Rampur ghât to *Banganapalle* and *Tilapur.* At Tilapur it cuts the Koilkuntla-Atmakur road (running from Koilkuntla, 21 miles south of Nandyal, to Atmakur on the Bellary-Guntoor road) and follows its course for about 10 miles to *Nandyal.*

From Gooty it is a gradual ascent, the Rampur ghât of half-a-mile in length and a gradient of from 1 in 12 to 1 in 16, being crossed just beyond Pyapali.

From Pyapali the road runs parallel with the line of rail, at a distance varying from 3 to 6 miles from it, as far as Tilapur, 48 miles 5 furlongs on.

From Tilapur it runs for the remaining 10 miles in a north-easterly direction to Nandyal.

It is a good road the whole way between Guntakal and Nandyal, being both bridged and metalled and passable at all times.

Beyond Tilapur in an easterly direction the Bellary-Cumbum road crosses the Nandikanama ghât of 17 miles and a maximum gradient of 1 in 18, and runs alongside of the line of rail to Cumbum and Guntoor, now under construction, as far as *Giddalur,* where the two meet and separating to a distance of about 3 or 4 miles apart run in parallel lines into Cumbum.

LATERAL COMMUNICATIONS.

The lateral communications on this section are very good, many roads running across the district from north to south, the principal ones being—

(*a*) The Bellary-Kurnool,
(*b*) The Kurnool-Anantapur, and
(*c*) The Kurnool-Cuddapah roads.

(*a*) The Bellary-Kurnool road is a portion of the main line from Bellary to Guntur and passes through Halharvi, Aspiri (where it cuts the Madras Railway) and Kodamur. Between Bellary and Kurnool it has a distance of 92 miles and is bridged and metalled all the way, except over the Hugri and Handri rivers, the former of which is crossed at Moka about 12 miles from Bellary, and the latter at Patakalmari and Kodamur, both by fords. Kodamur is an important weaving station 21 miles from Kurnool.

This road is largely used by timber carts from the Nallamala forests. The last 18 miles to Kurnool is over black cotton ground, the first portion being chiefly over red soil. It is passable for carts at all times and has a plentiful supply of water all along. It is kept in repair at an annual cost of Rs. 5,200.

A good road from Gooty to Aspiri connects the Bellary-Kurnool with the Anantapur-Kurnool road crossing the railway near Tuggalli station about 16 miles east of Guntakal.

(*b*) The Kurnool-Anantapur road passes through Gooty and is a portion of the main military route between Bangalore and Secunderabad, and is metalled and gravelled throughout

Starting from the south, in the Mysore country, it is bridged in all places; and although between Anantapur and Kurnool several streams are unbridged, they are all fordable, the Penner crossed just north of Garladinna occasionally giving trouble.

From Anantapur the road passes through Garladinna, Gooty (on the Madras Railway), Pyapali, Veldurti, Tekur and Kurnool, at which last the Handri is crossed by an excellent bridge of 19 arches of 45-feet span. There are bungalows and good water all along this road.

(*c*) The Kurnool-Cuddapah road starts from the Bellary-Secunderabad road at Kurnool and runs for 45 miles in a south-easterly direction to Nandyal, whence it continues due south for 78 miles to Cuddapah. This road is carried over the Erramallas by the Tammaragupalli pass, about 26 miles from Kurnool.

Between Nandyal and Cuddapah it runs parallel with and close to the Madras Irrigation Canal and passes through Yerraguntla, Chagalmari, Duvur and Razipet. At Chagalmari the Bhavanassi and Vakileru, small rivers, are crossed and at Duvur the Upu stream cuts the road. This road is metalled, and for the most part bridged throughout and is practicable at all seasons.

The Penner river, the only one of any size, runs past Cuddapah a few miles north of it. The Tammaragupalli ghât is a mile long and has a gradient of 1 in 15 to 1 in 30.

The above three roads are the main means of lateral communication in this section and by them all parts of the country can be reached.

POONA BRANCH—LONDA TO POONA.

THE LINE AND PERMANENT-WAY.

(*See "Working Section."*)

THE country near Londa is hilly, involving high banks and several deep cuttings with numerous curves and steep gradients. It is a rise the whole way to Belgaum, there being 16 miles, or nearly half the total length (33·14 miles), at a gradient of 1 in 100. The minimum curve is 1,000 feet radius.

From Belgaum the line descends for 40 miles to the Ingnoor nala, 5 miles beyond Gokak station, whence it runs uphill for 6 miles past Chikodi and then undulates for 37 miles down to Miraj, 84¾ miles from Belgaum. 29·87 miles, or more than a third of the distance between Belgaum and Miraj, is at a gradient of 1 in 100. The minimum curve is 1,000 feet radius, but there are only three short ones of this, and the majority are from 2,000 to 4,000 feet radius.

From Miraj to Koregaon, 76¼ miles, it is a slight rise over an undulating country, intersected by numerous halas, 16½ miles, or about ⅕th of the distance, being at a gradient of 1 in 100. The minimum radius of curve is 1,400 feet.

From Koregaon to Poona, 83½ miles, the line traverses a difficult country and winds amongst groups of hills and valleys. The greater portion is on high embankment or in deep cutting, and 46½ miles of the entire length of 83½ miles are on a gradient of 1 in 100, 18¾ miles only on the level. The sharpest curve in this portion is 600 feet radius. There are three short tunnels through solid rock at the 14th, 18¼, and 63¾ miles, 5 chains, 6 chains, and 5 chains long, respectively. The maximum height of bank is 93 feet and the deepest cutting 80 feet. The line is protected by wire and stone walls.

The permanent-way throughout is in accordance with the standard dimensions and consists of 41¼ lb. flat-footed Vignob's steel rails in lengths of 23′ 9″, 23′ 6″, 21′ and 18′ 2½″, which have been in use two years. They are fish-plated and spiked to "jungle teak" sleepers, 2,000 to the mile, between Londa and Belgaum; to "Kanara teak" between Belgaum and Gokak; and to steel between Gokak and Poona, except over the ghâts from miles 12 to 22 and 59 to 67, where Australian karra sleepers are used 9 to a rail. They are all laid transversely. Double spikes are given at joints and curves, and bearing plates are also provided at the latter. The banks are the full standard of 16′ and the cuttings have side-drains and ballast-walls.

The ballast all along the section is sand, gravel and broken stone. The teak sleepers are excellent, being from 10″ to 13″ wide and 6′ long. They are laid 2′ 8″ apart centre to centre.

The course of this branch may be briefly stated as being undulating and generally straight.

Large depôts of wood exist along the line between Londa and Belgaum, supplied by the Forest Department. English coal is used from Miraj to Poona. (See "Rolling Stock and Fuel.") The first 12 miles from Poona, old broad-gauge rails are used to support the telegraph wires (of which from Londa to Belgaum there are two, from Belgaum to Miraj three, and from Miraj to Poona two, all rented by Government to the S.M.R.); the remaining distance galvanised iron, 24 to mile, are erected.

The bridges are constructed in accordance with the types given, and are all solid structures. The majority are masonry arches affording passage over the waterways for any species of traffic. Two ghâts are crossed between Koregaon and Poona, the Salpa and Alundi. The station of Wathar, at the top of the Salpa ghât, is the changing station for the hill sanitarium of Mahableshwar. This branch having been constructed so much longer than the other portions of the S.M.R. is in better order throughout and the banks and cuttings throughly consolidated. It will form a portion of the new mail route from Poona to Bangalore.

The "Poona Branch" is of considerable importance from a military point as it brings the two garrisons of Poona and Belgaum into communication with each other, and is a portion (about half) of the direct route connecting them with Bangalore and the south. It also affords direct communication between the ports of Bombay, Marmugao and Karwar.

Though no less than five large rivers are crossed, viz., the Malprabha, Ghatprabha, Krishna, Yerla and Neera, the bridges over these afford good facilities for defence, and owing to the proximity throughout of the Poona-Harihar trunk road, in the event of any damage ensuing to them, communication could be at once re-established.

A short line of 30 miles is in course of construction between Miraj and Kolhapur and will be called the "Kolhapur State Railway." It is probable that this State line will be continued east to Bijapur, about 75 miles.

Between Belgaum and Koregaon this branch passes through the Southern Mahratta States, composed of eight "jagirs," under the superintendence of the Kolhapur Agency. These "jagirs" comprise Sangli, Miraj (senior and junior), Kurundwad (senior and junior), Jamkhandi, Mudhol, and Ramdurg, and are composed of numerous isolated patches of territory, of which some are on each side and others actually on the line of rail, whilst the sub-division of Lakshmeshvar, belonging to the State of Miraj, and Shirhatte, belonging to Sangli lie in the Dharwar district. Sangli and Miraj on the line are the capitals of their respective States, which belong to the Patwardhan family, the chief of which resides at Sangli.

At Kolhapur there is a Residency and a military cantonment. The town is the headquarters of the Political Agent for the Southern Mahrâtta States. It stands 1,790 feet above the sea and half-a-mile from the south bank of the Panchganga, and is 64 miles from the coast and nearly halfway between Belgaum and Satara. Its population is 38,599 and it covers an area of 358 acres. The land round is shallow moorum or crumbly trap over true trap. Two large lakes lie close to the town, the Rankala and Padmala, the former covering a space of

500 acres. The water-supply is very plentiful and the climate, except from March to June, is temperate and healthy.

Belgaum, 33·14 miles north, the fourth station from Londa Junction, is the headquarters of the Belgaum district and sub-division and the chief military station in the Karnatak. It is situated in 15° 52′ N. lat. and 74° 42′ S. long., 45 miles north-west of Dharwar, 70 miles from the coast, 110 miles south-west of Bijapur and about 200 miles south of Poona. It stands from 2,100 to 2,260 feet above the sea, from which in a straight line it is 50 miles distant. It has a population of 23,000, or 79 to the square acre, and occupies a site of about 289 acres. The town stands on one of the laterite hills which form the eastern slope of the watershed of the Markandeya river, flowing 3 miles north, and of its feeder the Belari, flowing 2 miles south of Belgaum. Its shape is that of an isoceles triangle, having the fort at the apex; the British artillery and infantry lines along the base about 1¼ miles long; and in the centre the town, cantonment, commissariat cattle lines, and bungalows. The native infantry lines are in the south-west corner. The country round is hilly and the soil crumbled laterite and black. The water-supply of Belgaum is drawn from wells cut in the laterite sub-soil—that from the five reservoirs is used for the fields, roads and cattle. The supply is plentiful and good throughout the year. The circular belt of hills round Belgaum condenses the clouds and increases the rainfall, causing luxuriant vegetation and rendering the climate more equable than that of most other places in Western India. The chief exports are of grain, rice, wheat, gram, millet, pulse, cloth, waistcloths and women's robes. The chief industry is cotton weaving and carpets, and copper vessels are also manufactured. There is a good market and supplies are plentiful. The station is well supplied with roads, gardens, a jail and public buildings.

Poona, the northern terminus of the Southern Mahratta Railway and one of its junctions with the G. I. P. broad-gauge line, lies in lat. 18° 30′ 41′ N. and long. 73° 55′ 21′ E., 1,850 feet above sea level, about 63 miles from the coast and 119 from Bombay. It is one of the largest and most important garrisons in the peninsula and is the head-quarters of a division and of the Bombay Army. From July to November it is the seat of the Government of Bombay. The city is situated on the right bank of the river Mutha along which it extends for about 2 miles inland. Including the suburbs it covers an area of over 4 miles and has a population of close on 100,000. Immediately below the town the Mutha joins the Mula, and the combined stream flows east into the Bhima. A large trade of every sort is carried on, particularly in silk and cotton fabrics, and in articles of brass, copper, iron and clay, besides the manufacture of gold and silver jewellery. The city has many large and handsome buildings including two colleges, a legislative council hall, the Sassoon hospital, several schools and other public offices.

The military cantonment of Kirkee lies north of the city, and for over 2 miles between the two are the residences of the principal European population. The climate of Poona is temperate and healthy, as even the heat of March, April and May is tempered by the sea-breezes.

Supplies of all kinds are plentiful, nearly every sort of European article being procurable in addition to native produce. Water is abundant, and in this respect Poona may be said to be particularly fortunate. The present terminus of the S. M. R. is only a temporary station, but a new one has been sanctioned and will be an enlargement of the G. I. P. arrangements, the broad and metre gauge lines running side by side (see plan). For description of country round Poona see page 41.

Working Section.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Poona—Mile 0 centre of platform.							
	0 to 1 Final plans and section under preparation.							
	Level ...	...	32	Cutting ...	2	0·67	Right...	9·07
1	...	...	...	Bank ...	18½	11·11	...	...
	...	...	...	Cutting ...	11½	7·18	...	...
	1 in 150 ...	U	18	Cutting ...	11½	4·24	...	...
	...	...	...	Bank ...	6½	5·08	Right...	15
2 } 3 }	1 in 100 ...	U	89	Bank ...	78	21·39	Right...	15
	...	...	...	...	...	...	Left ...	20
	...	...	...	Cutting ...	11	5·31	...	...
	Level ...	...	24	Bank ...	6½	1·56	...	...
	...	...	...	Cutting ...	17½	5·72	...	...
4	1 in 100 ...	D	22	Bank ...	22	17·44	...	...
5	Level ...	...	40	Bank ...	40	29·56	Left ...	30
	1 in 200 ...	U	28	Bank ...	4½	3·64	Left ...	30
	...	...	...	Cutting ...	2	0·15	...	...
	...	...	...	Bank ...	21½	12·35	...	...
	1 in 100 ...	U	20	Bank ...	7½	7·87	...	...
	...	...	...	Cutting ...	4	1·90	...	...
	...	...	...	Bank ...	5	1·90	...	...
6	...	...	...	Cutting ...	3½	1·11	...	...
	Level ...	...	61	Cutting ...	10½	4·35	...	...
	...	...	...	Bank ...	39	16·73	Left ...	30
7	...	...	...	Cutting ...	11½	13·50	Left ...	30
	1 in 100 ...	D	25	Cutting ...	11	2·16	...	...
	...	...	...	Bank ...	14	7·54	...	...
8	1 in 400 ...	D	20	Bank ...	20	7·60	Left ...	20
	...	...	...	...	...	...	Right...	20
	Level ...	...	14	Bank ...	14	22·80	...	...
	Dhabdhabi nala 3—20 feet arches			...	...	...	...	...
	1 in 200 ...	U	20	Bank ...	12	21·60	...	...
	...	...	...	Cutting ...	8	10·20	Left ...	30
	Level ...	...	10	Cutting ...	3	6·99	...	...
	...	...	...	Bank ...	7	12·97	...	...
9	1 in 30 ...	D	27	Bank ...	17½	8·01	...	...
	...	...	...	Cutting ...	2	3·24	...	...
	...	...	...	Bank ...	7½	11·52	...	...
	Level ...	...	9	Bank ..	9	19·75	...	...
	Jambar nala 3—20 feet arches			...	...	...	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	1 in 400 ...	U	24	Bank ...	14	18·09	...	...
10	...	...	...	Cutting ...	10	16·29	...	...
	Level ...	...	26	Bank ...	26	21·41	...	...
	Phursangi station		...	...	...	...	...	...
11	1 in 100 ...	U	237	Bank ...	60	34·31	Right...	10
	...	...	..	...	...	...	Right...	10
	...	...	...	...	...	...	Left ...	10
	...	...	...	Cutting ...	3	4·33	Left ...	10
	...	...	...	Bank ...	2½	21·25	...	...
	...	...	...	Cutting ...	7	18·21	...	...
	...	...	...	Bank ...	5	27·18	Right...	10
12	...	...	...	Cutting ...	6	18·31	Right...	10
	...	...	...	Bank ...	4	8·07	Left ...	7
	...	...	...	Cutting ...	2	23·74	Left ...	7
	...	...	...	Bank ...	1	6·94	Left ...	7
	...	...	...	Cutting ...	1	12·26	Left ...	7
	...	...	...	Bank ...	14	45·97	Left ...	7
	...	...	...	...	...	...	Right..	6
	...	...	...	Cutting ...	13	64·73	Right...	6
	...	...	...	...	...	...	Right...	7
	...	...	...	Bank ...	2	2·31	...	...
	...	...	...	Cutting ...	2	6·28	...	...
13	...	...	...	Bank ...	10	18·01	Right...	6
	...	...	...	Cutting ...	2	8·69	Right ..	6
	...	...	...	Bank ...	8	40·90	Right...	6
	...	...	...	...	...	...	Left ...	7
	...	...	...	Cutting ...	2	7·40	Left ...	7
	...	...	...	Bank ...	1	8·88	Left ...	7
	...	...	...	Cutting ...	7	28·68	Left ...	7
	...	...	...	Bank ...	6	20·36	...	...
	...	...	...	Cutting ...	9	38·05	Right...	10
	...	...	...	Bank ...	4	48·08	...	...
	...	...	...	Cutting ...	8	35·97	Right...	7
	...	...	...	Bank ...	1	15·16	Right...	7
14	...	...	...	Cutting ...	24	89·08	Right...	7
	...	...	...	...	...	...	Right...	8
	Tunnel No. 1—5 chains.			...	...	...	...	...
	...	...	...	Bank ...	3	7·52	...	...
	...	...	...	Cutting ...	2	4·52	...	...
	...	...	...	Bank ..	7	19·65	Left ...	10
	...	...	...	Cutting ...	12	12·93	Left ...	10
	...	...	...	...	...	...	Left ...	10
	...	...	...	Bank ...	4	16·63	...	...
	...	...	...	Cutting ...	2	1·36	Right...	10
15	...	...	...	Bank ...	2½	7·29	Right...	10
	Level ...	...	9	Cutting ...	5	6·60	Right...	10
	...	...	...	Bank ...	4	3·06	...	...
	Alandi station.	...	...	...	...	...	...	...
	1 in 100 ...	U	119	Bank ...	7	15·64	Left ...	10
	...	...	...	Cutting ...	3	4·68	Left ...	10
	...	...	...	Bank ...	14	26·61	Left ...	10
	...	...	...	...	...	...	Left ...	10
	...	...	...	Cutting ...	5	14·74	Left ...	10
16	...	...	...	Bank ...	17	24·40	Left ...	10

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	...	...	...	Right...	8
	...	...	...	Cutting ...	7	22·93	Right...	8
	...	...	...	...	...	...	Left ...	7
	...	...	...	Bank ...	13½	46·32	Left ...	7
	...	...	...	...	...	...	Right...	7
	...	...	...	Cutting ...	8	38·43	Right ..	7
	...	...	...	Bank ...	12	67·22	Left ...	8
	...	...	...	...	...	...	Right...	7
	...	...	...	...	...	...	Right...	7
	...	...	...	Cutting ...	6	48·12	Left ...	7
17	...	...	...	Bank ...	10	68·99	Left ...	7
	...	...	...	Cutting ...	5	58·51	Right...	8
	...	...	...	Bank ...	4	29·93	Right...	8
	...	...	...	Cutting ...	5	58·04	Right...	8
	...	..	...	Bank ...	2½	55·26	Left ...	8
	Level ...	...	10	Bank ...	2	6·30	Left ...	8
	...	...	...	Cutting ...	7	64·98	Left ...	8
	...	...	...	Bank ...	1	39·63	Left ...	8
	1 in 100 ...	U	142	Bank ...	8	84·23	...	...
18	...	...	...	Cutting ...	14	61·65	Right...	7
	...	...	...	Bank ...	3	17·70	Left ...	8
	...	...	...	Cutting ...	2	26·95	Left ...	8
	...	...	...	Bank ...	3	51·46	Left ...	8
	...	...	...	Cutting ...	2	11·01	Right...	7
	...	...	...	Bank ...	1	25·68	...	...
	...	...	...	Cutting ...	10	126·05	...	...
	Tunnel No. 2—6 chains.			...	...	...	...	...
	...	...	...	Bank ...	8	76·74	Left ...	7
	...	...	...	Cutting ...	3	10·29	Left ...	7
	...	...	...	Bank ...	7	60·22	Right...	6·5
	...	...	...	Cutting ...	9	34·75	Right...	6·5
19	...	...	...	Bank ...	6	22·96	Right...	6·5
	...	...	...	Cutting ...	7	31·12	Left ...	7
	...	...	...	Bank ...	11	89·94	Left ...	7
	...	...	...	Cutting ...	5	65·55	Left ...	7
	...	...	...	Bank ...	2	34·95	Left ...	8
	...	...	...	Cutting ...	1	6·60	Left ...	8
	...	...	...	Bank ...	5	51·48	Left ...	8
	...	...	...	Cutting ...	4	32·60	Right...	8
	...	...	...	Bank ...	1	12·17	Right...	8
	...	...	...	Cutting ...	7	32·10	Right...	8
	...	...	...	Bank ...	4	63·61	Left ...	8
20	...	...	...	Cutting ...	5	37·35	Left ...	8
	...	...	...	Bank ...	3	42·03	...	...
	...	...	...	Cutting ...	11	63·58	Right...	7
	Level ...	...	7	Bank ...	1	2·28	Left ...	8
	...	...	...	Cutting ...	3½	34·06	Left ...	8
	...	...	...	Bank ...	1	15·63	Left ...	8
	...	...	...	Cutting ...	1½	13·85	Left ...	3
	1 in 100 ...	U	86	Bank ...	3	30·02	Left ...	8
	...	...	...	Cutting ...	8	45·21	Right...	7
	...	...	...	Bank ...	3	46·69	Left ...	8
	...	...	...	Cutting ...	2	10·31	Left ...	8
	...	...	...	Bank ...	1	20·28	Left ...	8

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	10	64·89	Right...	8
	...	...	...	Bank ...	2	7·36	Left ...	8
	...	...	...	Cutting ...	1	0·29	Left ...	8
21	...	...	...	Bank ...	1	1·94	Left ...	8
	...	...	...	Cutting ...	9	23·77	Right...	7
	...	...	...	Bank ...	1	7·17	Left ...	7
	...	...	...	Cutting ...	4	15·55	Left ...	7
	...	...	...	Bank ...	3	5·67	...	...
	...	...	...	Cutting ...	7	42·76	...	...
	...	...	...	Bank ...	3	10·50	Left ...	10
	...	...	...	Cutting ...	4	32·44	Left ...	10
	...	...	...	Bank ...	8	16·96	...	...
	...	...	...	Cutting ...	4	20·33	Right...	9
	...	...	...	Bank ...	3	20·63	Right...	9
22	...	...	...	Cutting ...	9	38·14	...	...
	Level ...	...	11	Cutting ...	11	16·55	Right...	15
	1 in 100 ...	...	70	Cutting ...	6	5·23	...	...
	...	...	...	Bank ...	14	4·74	...	...
	...	...	...	Cutting ...	7	6·26	...	...
23	...	...	...	Bank ...	43	16·98	Right...	20
24	Level ...	...	72	Bank ...	34	18·97	...	...
	...	...	...	Cutting ...	8½	4·81	...	...
	...	...	...	Bank ...	4	5·65	...	...
	...	...	...	Cutting ...	6½	4·94	...	...
	Rajewadi station.		...	...	...	...	...	...
	...	...	...	Bank ...	17	20·68	...	...
	...	...	...	Cutting ...	2	6·62	...	...
25	1 in 200 ...	U	40	Cutting ...	10	127·7	...	...
	...	...	...	Bank ...	5	9·18	...	...
	...	...	...	Cutting ...	5	9·23	...	...
	...	...	...	Bank ...	18	17·85	Right...	30
	...	...	...	...	...	...	Right...	12
	...	...	...	Cutting ...	2	20·51	Right..	12
	Level ...	...	5	Cutting ...	5	49·48	...	...
	1 in 100 ...	D	74	Cutting ...	7	7·15	Left ...	15
26	...	...	...	Bank ...	4	2	Left ...	15
	...	...	...	Cutting ...	8	2·53	...	...
27	...	...	...	Bank ...	48	27·90	Left ...	20
	...	...	...	Cutting ...	7	13·80	...	...
	1 in 171 ...	D	36	Cutting ...	8	13·69	...	...
	...	...	...	Bank ...	3	1·53	...	...
	...	...	...	Cutting ...	5	2·74	Right...	20
	...	...	...	Bank ...	20	26·41	Right...	20
28	1 in 300 ...	D	30	Bank ...	30	20·57	...	...
	1 in 100 ...	D	40	Cutting ...	23	6·56	...	...
29	...	..	...	Bank ...	17	15·37	Left ...	30
	Level ...	...	4	Bank ...	4	49·42	...	...
	Kurra river 8—30 arches.			...	...	...	...	...
	1 in 100 ...	D	20	Bank ...	20	31·99	Left ...	30
30	Level ...	....	173·85	Bank ...	53	22·74	Left ...	30
31	...	...	...	Cutting ...	17	8·70	Left ...	30
	...	...	...	Bank ...	14·85	6·98	...	...
	...	...	...	Cutting ...	11	4·78	...	...
	...	...	...	Bank ...	11	8·57	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	6	2·64	...	...
	Jejoori station.	...	...	...	...	...	...	...
32	...	...	...	Bank ...	36	15·03	...	...
	...	...	...	Cutting ...	10	5·04	Right...	16
33	...	...	...	Bank ...	15	5·33	...	...
	1 in 100 ...	U	64	Bank ...	54	16·81	Right...	20
	...	...	...	...	...	...	Left ...	12
34	...	...	...	Cutting ...	10	3·03	Right...	30
	1 in 240 ...	U	32	Bank ...	18	16·85	...	...
	...	...	...	Cutting ...	7	2·40	...	...
	...	...	...	Bank ...	6	2·49	...	...
	...	...	...	Cutting ...	1	2·44	...	...
	Level ...	...	21	Cutting ...	8	5·01	...	...
35	...	...	...	Bank ...	9	1·92	Right...	10
	...	...	...	Cutting ...	4	1·71	Right ..	10
	1 in 100 ...	D	180	Cutting ...	4	1·39	Right...	10
	...	...	...	Bank ...	7	21·84	Right...	10
	...	...	...	Cutting ...	7	9·99	Left ...	12
	...	...	...	Bank ...	4	16·06	...	...
	...	...	...	Cutting ...	10	24·65	Left ...	7
	...	...	...	Bank ...	10	11·32	Right...	7
	...	...	...	...	...	...	Right...	7
36	...	...	...	Cutting ...	11½	24·19	Left ...	7
	...	...	...	Bank ...	26	14·79	Left ...	10
	...	...	...	...	...	...	Right...	10
	...	...	...	Cutting ...	8	16·46	Left ...	10
	...	...	...	Bank ...	4	14·54	Right...	10
	...	...	...	...	...	...	Right...	10
37	...	...	...	Cutting ...	5	8·31	...	...
	...	...	...	Bank ...	6	13·68	...	...
	...	...	...	Cutting ...	10	32·57	Right...	10
	...	...	...	Bank ...	3	6·22	Right...	10
	...	...	...	Cutting ...	4	5·19	Right..	10
	...	...	...	Bank ...	...	...	Right...	10
	...	...	...	Bank ...	21½	15·79	Right...	10
38	...	...	...	Cutting ...	12	8·27	Right...	10
	...	...	...	Bank ...	9	6·10	Left ...	20
	...	...	...	Cutting ...	9	12·81	Left ...	6
	...	...	...	Bank ...	9	6·83	Right...	6
	Level ...	...	7	Cutting ...	7	4·08	Right...	6
	1 in 100 ...	D	128	...	...	18·28	Left ...	20
39	...	...	...	Bank ...	28	...	Left ...	8
	...	...	...	Cutting ...	4	17·68	Right...	10
	...	...	...	Bank ...	10½	12·46	...	...
	...	...	...	Cutting ...	1	16·10	...	...
	...	...	...	Bank ...	6	10·25	Left ...	8
	...	...	...	Cutting ...	2	7·05	Right...	8
40	...	...	...	Bank ...	51	17·06	Right...	8
	...	...	...	...	...	...	Right...	10
	...	...	...	...	...	...	Left ...	10
	...	...	...	Cutting ...	12½	8·39	Left ...	8
	...	...	...	Bank ...	5	5·43	Left ...	8
41	...	...	...	Cutting ...	3	8·65	...	...
	...	...	...	Bank ...	5	5·	Left ...	14

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Level ...	...	23	Bank ...	17	6·97	...	...
	...	...	...	Cutting ...	5	3·32	...	...
	...	...	...	Bank ...	1	1·42	...	...
	Walhe station.	...	...	...	...	...	...	...
	1 in 100 ...	D	93	Bank ...	15	12·58	Right...	8
42	...	...	...	Cutting ...	11	11·91	Left ...	20
	...	..	...	Bank ...	13	10·42	...	...
	...	...	...	Cutting ...	21	10·89	Right...	20
43	...	...	...	Bank ...	26	20·07	Left ...	20
	...	...	...	Cutting ...	2	9·87	...	...
	...	...	...	Bank ...	5	7·04	...	...
	Level ...	...	34	Bank ...	17	7·10	...	...
	...	...	...	Cutting ...	7	18·69	Left ...	12
44	...	...	...	Bank ...	10	11·22	...	...
	1 in 100 ...	D	107·45	Bank ...	3	5·24	...	...
	...	...	...	Cutting ...	28	18·35	Right...	12
45	...	...	...	Bank ...	40	9·57	Left ...	12
	...	...	...	Cutting ...	9	1·75	Right...	20
46	...	...	...	Bank ...	27·45	8·76	Left ...	20
	Level ...	...	8·55	Bank ...	8·55	20·34	...	...
	1 in 100 ...	D	14·45	Bank ...	14·45	17·21	Right...	30
	Level ...	...	26·55	Bank ...	19·55	4·69	...	...
47	...	...	...	Cutting ...	7	12·89	Left ...	30
	1 in 150 ...	D	36	Bank ...	25	6·16	...	...
	...	...	...	Cutting ...	11	4·21	...	...
	Level ...	...	6	Cutting ...	6	3·15	Right...	20
	...	...	...	...	...	...	Right...	20
48	1 in 200 ...	U	20	Bank ...	20	25·03	...	...
	Level ...	...	20	Bank ...	20	47	...	...
	Neera river 12—50 arches.			Bank ...	...	...	...	...
49	1 in 100 ...	U	25	Bank ...	25	5·32	Right...	20
	1 in 160 ...	U	24	Bank ...	24	8·15	...	...
	Level ...	...	11·45	Bank ...	11·45	6·09	...	...
50	1 in 180 ...	U	41·44	Bank ...	35·44	8·69	...	...
	...	...	...	Cutting ...	6	7·01	Left ...	20
	1 in 100 ...	U	13·68	Cutting ...	13·68	3·47	...	...
51	1 in 600 ...	U	42	Bank ...	42	6·66	Right...	15
52	1 in 100 ...	U	39	Bank ...	29	6·25	...	...
	...	...	...	Cutting ...	6	1·21	Right...	30
	...	...	...	Bank ...	4	2·16	...	...
	Level ...	...	25	Bank ...	9	2·60	...	...
	...	...	...	Cutting ...	9	2·10	...	...
	Lonand station.		...	...	...	...	...	...
	...	...	...	Bank ...	6	1·73	...	...
53	1 in 125 ...	...	66	Bank ...	21	5·53	Left ...	30
	...	...	...	Cutting ...	13	10·34	...	...
	...	...	...	Bank ...	27½	13·03	Left ...	20
	...	...	...	Cutting ...	4½	5·04	...	...
54	Level ...	...	11	Bank ...	11	36·33	...	...
	Suthar river 3—40 arches			...	...	...	...	...
55	1 in 100 ...	U	134	Bank ...	47	12·04	Right...	30
	...	...	...	Cutting ...	14	3·50	Left ...	30
	...	...	...	Bank ...	8	2·81	...	...
	...	...	...	Cutting ...	12	2·02	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Bank ...	13	2·41	...	...
56	...	...	...	Cutting ...	26	4·98	Right...	30
	...	...	...	Bank ...	7	1·73	...	...
	...	...	...	Cutting ...	4	0·37	...	...
	...	...	...	Bank ...	3	2·41	...	...
57	1 in 250 ...	U	23	Bank ...	23	6·28	...	...
58	1 in 100 ...	U	48	Bank ...	48	12·67	Left ...	20
	...	...	...	...	...	...	Left ...	8
	Level ...	...	16	Bank ...	9	7·75	...	8
	...	...	...	Cutting ...	4	2·50	...	...
	...	...	...	Bank ...	3	2·08	...	...
	Salpi station.	...	...	...	...	...	...	...
	1 in 100 ...	U	118	Bank ...	5	4	...	...
	...	...	...	Cutting ...	4	2	...	...
	...	...	...	Bank ...	11	10·25	Left ...	8
	...	...	...	Cutting ...	3	6·15	Left ...	8
59	...	...	...	Bank ...	8	28·56	...	...
	...	...	...	Cutting ...	9	16	Right...	8
	...	...	...	Bank ...	3	16·50	Left ...	16
	...	...	...	Cutting ...	6·32	31·55	Left ...	16
	...	...	...	Cutting ...	1·68	31·55	Right...	8
	...	...	...	Bank ...	1	6	Right...	8
	...	...	...	Cutting ...	2	18·58	Right...	8
	...	...	...	Bank ...	1½	4	Right...	8
	...	...	...	Cutting ...	1½	3·50	Right...	8
	...	...	...	Bank ...	3	5·25	Right...	8
	...	...	...	Cutting ...	5	7	...	...
	...	...	...	Bank ...	2	6	Left ...	7
	...	...	...	Cutting ...	5	14	Left ...	7
	...	...	...	Bank ...	6	17	Right...	16
	...	...	...	Cutting ...	2	8	Right...	16
	...	...	...	Bank ...	1½	16	Right...	16
	...	...	...	Cutting ...	2½	17	...	...
60	...	...	...	Bank ...	5	21	...	...
	...	...	...	Cutting ...	2½	18	...	...
	...	...	...	Bank ...	2	11·85	Left ...	7
	...	...	...	Cutting ...	6½	15·45	Left ...	7
	...	...	...	Bank ...	5	16·10	Right...	6
	...	...	...	Cutting ...	9	8·50	Right...	6
	...	...	...	Bank ...	1	6·40	Right...	10
	...	...	...	Cutting ...	3	4	Right...	10
	Level ...	...	4	Cutting ...	2	2·3	Right...	10
	...	...	...	Bank ...	2	5·8	...	...
61	1 in 100 ...	U	66	Bank ...	14	22·20	Left ...	7
	...	...	...	...	...	...	Left ...	7
	...	...	...	Cutting ...	3	8·48	Left ...	7
	...	...	...	Bank ...	5	13·30	Left ...	7
	...	...	...	Cutting ...	3	11	...	...
	...	...	...	Bank ...	3	4·15	Right...	7
	...	...	...	Cutting ...	2	3·85	Right...	7
	...	...	...	Bank ...	5	11	Right...	7
	...	...	...	...	...	...	Left ...	14
	...	...	...	Cutting ...	5	30·90	Left ...	14
	...	...	...	Bank ...	5	10	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	2	2	...	...
	...	...	...	Bank ...	11	37	Right...	10
	...	...	...	Cutting ...	8	65·8	Right...	14
62	Level ...	...	6	Bank ...	6	46·6	Right...	14
	1 in 100 ...	U	24	Bank ...	4	30	Right...	14
	...	...	...	Cutting ...	3	25·10	Right...	14
	...	...	...	Bank ...	7	12	Right...	10
	...	...	...	Cutting ...	6	30·8	Left ...	6·25
	...	...	...	Bank ...	4	43·25	...	...
	Level ...	...	14	Bank ...	2	28·45	...	...
	...	...	...	Cutting ...	3	25	...	...
	...	...	...	Bank ...	2	4·55	...	...
	...	...	...	Cutting ...	6	78·54	Right...	36
	...	...	...	Bank ...	4	49·10	Left ...	13
	1 in 100 ...	U	133	Bank ...	6	53·10	Left ...	13
63	...	...	...	Cutting ...	2	6	Left ...	13
	...	...	...	Bank ...	9	20	Left ...	13
	...	...	...	Cutting ...	2	7·89	Left ...	13
	...	...	...	Bank ...	14	35·18	Left ...	8
	...	...	...	...	...	...	Right...	7
	...	...	...	Cutting ...	3	30·8	Right...	7
	...	...	...	Bank ...	7	42·03	...	...
	...	...	...	Cutting ...	5	26·28	Left ...	7
	...	...	...	Bank ...	2	16·10	Left ...	7
	...	...	...	Cutting ...	1	7	Left ...	7
	...	...	...	Bank ...	1	18·08	...	...
	...	...	...	Cutting ...	10	20	Right...	7
	Tunnel No. 3—5 chains.			...	...	...	...	...
	...	...	...	Bank ...	2	17	...	...
	...	...	...	Cutting ...	3	36·08	...	...
	...	...	...	Bank ...	4	14·25	...	...
	...	...	...	Cutting ...	3·32	49·85	...	...
64	...	...	...	Cutting ...	8·68	49·85	Right...	8
	...	...	...	Bank ...	3	54·88	...	...
	...	...	...	Cutting ...	4	27·54	Right...	7
	...	...	...	Bank ...	1	21·40	Right...	7
	...	...	...	Cutting ...	5	23	Right..	7
	...	...	...	Bank ...	2	25	Left ...	7
	...	...	...	Cutting ...	4	26·08	Left ...	7
	...	...	...	Bank ...	1	7·31	Left ...	7
	...	...	...	Cutting ...	6	35·04	Left ...	7
	...	...	...	Bank ...	2	6·07	...	...
65	...	...	...	Cutting ...	4	14·50	Left ...	12
	...	...	...	Bank ...	4	9·10	Left ...	12
	...	...	...	Cutting ...	6	19·32	Left ...	10
	...	...	...	Bank ...	5	18·17	...	...
	...	...	...	Cutting ...	3	15	...	...
	Level ...	...	22	Cutting ...	7	20·05	...	...
	...	...	...	Bank ...	2	4	Right...	20
	...	...	...	Cutting ...	3	6	Right...	20
	...	...	...	Bank ...	10	15·85	Right...	20
	...	...	...	...	...	...	Left ...	13
66	1 in 100 ...	U	110·63	Bank ...	23	16	Left ...	13
	...	...	...	...	...	...	Left ...	8

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	2	4·17	Left ...	8
	...	...	...	Bank ...	5	31·25	...	...
	...	...	...	Cutting ...	3	15·10	Left ...	72
	...	...	...	Bank ...	3	12	Left ...	72
	...	...	...	Cutting ...	3	25·08	...	...
	...	...	...	Bank ...	2	20	...	...
	...	...	...	Cutting ...	5	18·52	Right...	10
	...	...	...	Bank ...	2	10	Right...	10
	...	...	...	Cutting ...	5	18	Right...	10
	...	...	...	Bank ...	3	36·53	Right...	7
	...	...	...	Cutting ...	8	15	Right...	7
	...	...	...	Bank ...	2	36·92	...	...
67	...	...	...	Cutting ...	4	6	...	...
	...	...	...	Bank ...	4	7·20	Left ...	7
	...	...	...	Cutting ...	3	11	Left ...	7
	...	...	...	Bank ...	2	36·55	Left ...	7
	...	...	...	Cutting ...	4	10	Left ...	7
	...	...	...	Bank ...	1	3	...	...
	...	...	...	Cutting ...	1	4·08	...	...
	...	...	...	Bank ...	4	15·10	Right..	20
	...	...	...	Cutting ...	21·63	34	Right ..	20
	...	...	...	...	...	...	Right...	20
	...	...	...	...	...	...	Left ...	20
68	Level ...	...	14	Cutting ...	8	7·08	Left ...	20
	...	...	...	Bank ...	6	6	Left ...	20
	1 in 100 ...	D	11	Bank ...	2	5·10	...	...
	...	...	...	Cutting ...	9	6	...	...
	Level ...	...	22	Bank ...	12	5·50	...	...
	...	...	...	Cutting ...	8	4·62	Left ...	15
	...	...	...	Bank ...	2	4	Left ...	15
	Walar station.	...	...	...	...	...	...	...
69	1 in 100 ...	D	84	Bank ...	18	25·11	Left ...	15
	...	..	...	Cutting ...	3½	10	...	...
	...	...	...	Cutting ...	6½	10	...	...
	...	...	...	Bank ...	21	14·15	Right...	27
70	...	...	...	Cutting ...	22	7·10	Left ...	30
	...	...	...	Bank ...	13	32·55	...	...
	Level ...	...	32	Bank ...	20	42·62	...	...
	Talkheree nala, 3—30 arches.				...	...	...	...
	...	...	...	Cutting ...	12	18·85	Right...	20
71	1 in 100 ...	D	51	Cutting ...	6	12·11	Right...	20
	...	...	...	Bank ...	24	15	...	...
	...	...	...	Cutting ...	4	2	...	...
	...	...	...	Bank ...	17	18·11	...	...
	Level ...	...	9	Bank ...	...	...	...	...
72	Bichkool nala, 1—100 girder.				9	35·95	...	...
	1 in 200 ...	D	87	Bank ...	8	11·56	Left ...	30
	...	...	...	Cutting ...	11	2·06	Left ...	30
	...	...	...	Bank ...	4	3·10	Left ...	30
	...	...	...	Cutting ...	9	4	Left ...	30
73	...	...	...	Bank ...	25	7·20	Left ...	12
	...	...	...	Cutting ...	7	7·45	...	...
	...	...	...	Bank ...	23	14	Right...	30
	Level ...	...	73	Bank ...	13	19·50	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
74	...	...	...	Cutting ...	5½	3·75	...	...
	...	...	...	Bank ...	9½	12	...	...
	...	...	...	Cutting ...	11½	2	...	...
	...	...	...	Bank ...	26	13·55	...	...
75	...	...	...	Cutting ...	7½	6·24	...	...
	1 in 180 ...	D	17	Cutting ...	1	2·75	...	...
	...	...	...	Bank ...	17	11·50	Right...	30
	1 in 100 ...	D	57	Cutting ...	16	10·08	...	...
	...	...	...	Bank ...	10	12	...	...
76	...	...	...	Cutting ..	13	2	Left ...	30
	...	...	...	Bank ...	18	15	Left ...	30
	1 in 145 ...	D	41	Bank ...	12	17·10	...	...
77	...	...	...	Cutting ...	21	4	Left ...	15
	...	...	...	Bank ...	4	14	Left ...	30
	...	...	...	Cutting ...	2	2	Left ...	30
	...	...	...	Bank ...	2	3·52	Left ...	30
	Level ...	...	43	Bank ...	13	11	Left ...	30
	...	...	...	Cutting ...	12	6·10	...	...
78	...	...	...	Bank ...	18	15	...	...
	Satara Road station.			...	...	...	...	...
	1 in 120 ...	D	52	Cutting ...	7	1·55	Left ...	30
79	...	...	...	Bank ...	45	19	Left ...	30
	...	...	...	...	...	...	Left ...	10
	1 in 450 ...	D	32	Bank ...	6	7·10	...	...
	...	...	...	Cutting ...	3	2·40	...	...
	...	...	...	Bank ...	5	3	...	...
	...	...	...	Cutting ...	2	1·58	...	...
	...	...	...	Bank ...	16	8	Right...	30
80	1 in 122 ...	D	105	Bank ...	19	8	Right...	30
	...	...	...	Cutting ...	9	4	...	...
	...	...	...	Bank ...	30	5·80	Right...	30
81	...	...	...	Cutting ...	18	5·51	Right...	20
	...	...	...	Bank ...	39	6	...	...
	1 in 300 ...	D	23	Cutting ...	12	3·75	...	...
82	...	...	...	Bank ...	5	2·10	...	...
	...	...	...	Cutting ...	2	2	...	...
	...	...	...	Bank ...	4	5	Left ...	15
	1 in 100 ...	D	9	Bank ...	1	2	Left ...	15
	...	...	...	Cutting ...	3	1·50	Left ...	15
	...	...	...	Bank ...	5	3	Left ...	15
	1 in 120 ...	D	24	Cutting ...	24	6·5	Left ...	15
	Level ...	...	6	Bank ...	6	25	...	...
	Wagna river 7—30 feet arches			...	...	...	...	...
83	1 in 100 ...	U	10	Cutting ...	8	10	...	...
	...	...	...	Bank ...	2	5	...	...
	Level ...	...	8	Bank ...	2	5	...	...
	...	...	...	Cutting ...	6	5	Right...	15
	1 in 120 ...	D	13·46	Bank ...	13·46	17·21	...	...
	Level ...	...	32·53	Bank ...	1	5·75	...	...
	...	...	...	Cutting ...	12	5·46	...	...
	...	...	...	Bank ...	17	7·50	...	...
84	...	...	...	Cutting ...	2·53	1·85	...	...
	Koregaon station.		...	...	...	...	...	...
	1 in 200 ...	D	6	Bank ...	6	4·20	...	...

Working Section.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Level ...	...	30	Bank ...	30	24·50	...	...
	Koregaon nala 4—30 feet arches			...	...	...	...	...
	1 in 200 ...	U	13·50	Bank ...	6	11·43	...	...
	...	..	...	Cutting ...	7·50	12·50	...	...
85	Level ...	...	5·50	Cutting ...	5·50	9·40	...	...
	1 in 133·3 ...	D	25	Cutting ...	5	3·50	...	...
	...	...	...	Bank ...	20	25	...	...
	Level ...	...	35	Bank ...	20	13·25	...	...
86	...	...	...	Cutting ...	5½	4·35	...	...
	...	...	...	Bank ...	9½	9·17	...	...
	1 in 100 ...	D	52	Bank ...	3½	9·17	...	...
	...	...	...	Cutting ...	12	16·82	Left ...	19·10
87	...	...	...	Bank ...	36½	28	...	...
	1 in 150 ...	D	39	Bank ...	39	14·50	...	...
88	Level ...	...	21	Bank ...	21	68	...	...
	Choundi nala 6—34 arches			...	...	...	...	...
	Dhoghi nala 6—30 arches			...	...	...	...	...
	1 in 600 ...	U	18	Bank ...	11½	13·25	...	...
	...	...	...	Cutting ...	6½	8·87	Right...	19·10
	Level ...	...	7	Cutting ...	7	8·87	Right...	19·10
	1 in 300 ...	D	24	Cutting ...	3	1·16	Right...	19·10
89	...	...	...	Bank ...	13	14	...	...
	...	...	...	Cutting ...	8	0·94	...	...
	1 in 100 ...	D	28	Cutting ...	4	1	...	...
	...	...	...	Bank ...	24	9·09	...	...
	Level ...	...	5	Bank ...	5	20	...	...
90	1 in 200 ...	U	14	Bank ...	14	20	...	...
	Level ...	...	22·73	Bank ...	14	10·99	...	...
	...	...	...	Cutting ...	8·73	3·72	...	...
	Rahimatpur station.			...	...	...	...	...
	1 in 120 ...	U	39·60	Cutting ...	7	3·72	...	...
91	...	...	...	Bank ...	29	18	...	...
	...	...	...	Cutting ...	3·60	18·67	...	...
	Level ...	...	6	Cutting ...	6	12·86	...	...
	1 in 100 ...	D	28	Cutting ...	2	3·63	...	...
	...	...	...	Bank ...	26	22	...	...
92	Level ...	...	17	Bank ...	8	5·14	...	...
	...	...	...	Cutting ...	9	7	...	...
	1 in 100 ...	D	20	Cutting ...	8	0·14	...	...
	...	...	...	Bank ...	12	18·30	...	...
93	Level ...	...	21	Bank ...	21	49·50	...	...
	Rahimatpur nala 4—30 arches.			...	...	...	...	...
	1 in 100 ...	D	40	Bank ...	5	2·56	...	...
	...	...	...	Cutting ...	19	6	Left ...	28·65
	...	...	...	Bank ...	13	28	Left ...	28·65
	...	...	...	Cutting ...	3	4·12	Right...	28·65
	...	...	...	...	...	...	Right...	28·65
94	Level ...	...	12	Cutting ...	7	4·12	Right...	28·65
	...	...	...	Bank ...	5	27·61	...	...
	1 in 300 ...	U	15	Bank ...	7	12·24	...	...
	...	...	...	Cutting ...	8	8·04	...	...
	Level ...	...	5	Cutting ...	5	7·85	...	...
	1 in 300 ...	D	18	Cutting ...	9½	6·66	...	...
	...	...	...	Bank ...	8½	27·18	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Level ...	...	6	Bank ...	6	44	...	...
	Borgaon nala 3—30 arches			...	...	...	...	...
95	1 in 400 ...	U	52	Bank ...	52	34	...	...
96, 97 & 98	Level ...	...	112·84	Bank ...	112·84	36·40	Right...	28·65
	Sukira nalah 3—30 arches			...	...	...	...	...
	Targaon station.			...	...	...	...	...
	1 in 100 ...	U	76	Bank ...	76	33·30	Right...	28·65
	...	...	...	...	...	...	Left ...	14·33
99	...	...	...	...	...	...	Right...	14·38
	Level ...	...	13	Bank ...	1	3·19	...	...
	...	...	...	Cutting ...	12	12·40	...	...
100	1 in 200 ...	D	40	Bank ...	28	27	...	...
	...	..	...	Cutting ...	12	20·71	...	...
	1 in 100 ...	D	40	Cutting ...	8½	27	Left ...	14·38
101	...	...	...	Bank ...	31½	39·10	Left ...	14·38
	Level ...	...	10	Bank ...	4	8·11	...	...
	...	...	...	Cutting ...	6	2	...	...
102	1 in 100 ...	D	42	Bank ...	42	49·50	...	...
	Bunebrah nala 3—30 arches			...	...	...	...	...
	Level ...	...	11	Bank ...	11	15·50	Left ...	23·65
	1 in 200 ...	U	34	Bank ...	15½	15·75	Left ...	28·65
	...	...	...	Cutting ...	10½	8·82	...	...
103	...	...	...	Bank ...	8	17·10	...	...
	1 in 100 ...	U	20	Bank ...	20	8·58	...	...
	Level ...	...	17	Cutting ...	7½	3·24	...	...
	...	...	...	Bank ...	9½	7·94	...	...
	1 in 133·3 ...	...	40	Bank ...	3	4·14	...	...
104	...	...	...	Cutting ...	8	2·63	Left ...	57·30
	...	...	...	Bank ...	15	18	Left ...	57·30
	...	...	...	Cutting ...	6	1·20	...	...
	...	...	...	Bank ...	8	3·12	...	...
	Level ...	...	6	Bank ...	6	12·47	...	...
	1 in 133·3 ...	U	16	Bank ...	16	23·25	Right..	19·10
105	Level ...	...	24	Bank ...	3	6·13	...	...
	...	...	...	Cutting ...	12	8	...	...
	...	...	...	Bank ..	8	4·55	...	...
	Musoor station.	...	...	...	...	...	...	...
	1 in 100 ...	D	70	Bank ...	3	4·55	...	...
106	...	...	...	Cutting ...	43	7·87	...	...
	...	...	...	Bank ...	24	47	Left ...	19·10
	Musoor nala 5—30 arches.			...	...	...	...	...
107	Level ...	...	18	Bank ...	18	18·64	Right...	57·30
	1 in 133·3 ...	U	17·33	Bank ...	17·33	3·66	Right...	57·30
	Level ...	...	8·67	Cutting ...	8·67	6·27	...	...
	1 in 150 ...	D	15	Cutting ...	7	5·96	...	...
	...	...	...	Bank ...	8	9·11	...	...
108	Level ...	...	10	Bank ...	10	9·80	...	...
	1 in 300 ...	U	24	Bank ...	15	7·24	...	...
	...	...	...	Cutting ...	9	7	...	...
	Level ...	..	5	Cutting ...	5	2·78	Left ...	14·33
	1 in 300 ...	D	9	Cutting ...	4½	5·17	Left ...	14·33
	...	...	...	Bank ..	4½	8·08	Left ...	14·33
109	1 in 100 ...	D	30	Bank ...	30	17·50	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves.	
							Direction.	Radius.
MILE.								
110	Level ...	...	49	Bank ...	49	16·14	...	...
111	1 in 300 ...	U	69	Bank ...	47	10	Right...	19·10
	...	...	...	Cutting ...	7	6	...	...
	...	U	...	Bank ...	15	11	...	...
112	Level ...	...	61	Bank ...	61	27	...	...
	1 in 400 ...	...	24	Bank ...	6	2·35	...	...
	...	...	...	Cutting ...	6	6	...	...
113	...	...	...	Bank ...	12	5	...	...
	Level ...	...	39	Cutting ...	5	4	...	...
	...	...	...	Bank ...	34	8·09	...	...
	Karad station.	...	...	...	...	...	...	...
114	1 in 100 ...	D	31	Bank ...	31	30	...	...
	1 in 150 ...	D	21	Bank ...	21	11·71	...	...
115	1 in 100 ...	D	17	Bank ...	17	11·71	...	...
	Level ...	...	37	Bank ...	32	19	Right...	28·65
	...	...	...	Cutting ...	5	2·13	Right...	28·65
116	1 in 100 ...	D	11	Cutting ...	5	2·13	Right...	28·65
	...	...	...	Bank ...	6	10·55	...	...
	Level ...	...	11	Bank ...	11	26	...	...
	1 in 125 ...	U	25	Bank ...	2	6·49	...	...
	...	...	...	Cutting ...	21	5	Right...	28·65
	...	...	...	Bank ...	2	6·51	...	...
117	Level ...	...	14	Bank ...	14	11	...	...
	1 in 200 ...	U	34	Bank ...	34	17	...	...
118	1 in 400 ...	U	44	Bank ...	44	10	...	...
	Level ...	...	13	Bank ...	13	8·25	...	...
119	1 in 300 ...	U	18	Bank ...	18	12	...	...
	...	...	33	Bank ...	33	15	Right...	26·65
120	Level ...	...	30	Bank ...	30	17	...	...
	1 in 200 ...	D	14	Bank ...	14	10	...	...
121	1 in 150 ...	D	36	Bank ...	36	19·30	...	...
	Level ...	...	62	Bank ...	30	15	...	...
	...	...	...	Cutting ...	7	6	...	...
	Shenoli station.	...	...	...	...	...	Left ...	14·33
122	...	...	...	Bank ...	25	14·66	...	...
	1 in 300 ...	U	12	Bank ...	12	17	...	...
	Level ...	...	5	Bank ...	5	15	...	...
123 & 124	1 in 100 ...	U	75	Bank ...	75	30	...	...
	Level ...	...	11	Cutting ...	7½	15·50	Left ...	19·10
	...	...	...	Bank ...	1	11	Left ...	19·10
	...	...	...	Cutting ...	2½	9·50	Left ...	19·10
	1 in 100 ...	D	17	Cutting ...	3½	6	Left ...	19·10
125	...	...	...	Bank ...	33½	21·52	Left ...	19·10
	Level ...	...	37	Bank ...	17	23·40	...	...
126	1 in 100 ...	D	60	Bank ...	60	20·80	...	...
127	Level ...	...	33	Bank ...	33	15·50	...	...
	1 in 400 ...	D	48	Bank ...	36	15·75	...	...
128	...	...	...	Bank ...	12	9·85	...	...
	1 in 100 ...	D	32	Bank ...	32	5·50	...	...
129	Level ...	...	49	Bank ...	94	20·60	...	...
	1 in 200 ...	U	12	Bank ...	12	10·80	...	...
	Level ...	...	8	Bank ...	4½	9·50	...	...
	...	...	...	Cutting ...	2	3·40	...	...
130	...	...	...	Bank ...	1½	3	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves.	
							Direction.	Radius.
MILE.								
	1 in 200 ...	D	12	Bank ...	12	11·25	...	...
	Level ...	...	22	Bank ...	22	11	...	...
	Takari station.	...	...	...	...	...	...	...
	1 in 200 ...	U	18	Bank ...	18	32·50	...	...
131	Level ...	....	51	Cutting ...	8	3·75	...	...
	...	...	...	Bank ...	43	22	Right...	28·65
132	1 in 200 ...	D	20	Bank ...	20	14	Right...	28·65
	Level	...	59	Bank ...	24	11·50	...	...
133	...	...	...	Bank ...	35	18·40	...	...
	Kundul nala 3—30 arches.			...	...	...	...	...
	1 in 100 ...	U	28	Bank ...	17	10	...	...
	...	...	...	Cutting ...	9½	2	...	...
	...	...	...	Bank ...	1½	5	...	...
134	Level ...	...	18	Bank ...	7	6	...	...
	...	...	...	Cutting ...	9	5·10	...	...
	...	...	...	Bank ...	2	3·50	...	...
	1 in 200 ...	D	26	Bank ...	26	16·80	...	...
	Level	...	9	Bank ...	9	17·30	...	...
135	1 in 300 ...	D	9	Bank ...	9	16	...	...
	Level	...	33	Bank ...	17	12	...	...
	...	...	...	Cutting ...	8	1·50	...	...
	...	...	...	Bank ...	8	3	...	...
	Kundai Road station.			...	...	...	...	...
136	1 in 100 ...	D	23	Bank ...	23	7	...	...
	1 in 200 ...	D	34	Bank ...	34	13	...	...
137	1 in 500 ...	D	25	Bank ...	25	10·6	Left ...	28·65
	Level	...	19	Bank ...	19	17·8	...	...
138	1 in 300 ...	U	18	Bank ...	17	15·80	...	...
	...	...	...	Cutting ...	1	3·50	...	...
	Level	...	11	Cutting ...	11	13·90	...	...
	1 in 150 ...	D	15	Cutting ...	1	3·40	...	...
	...	...	...	Bank ...	14	6	...	...
139, 140 & 141	Level ...	...	133	Bank ...	133	14·86	...	...
142	1 in 100 ...	D	60	Bank ...	60	15·57	...	...
	Level	...	15	Bank ...	15	6·30	...	...
	1 in 100 ...	U	30	Bank ...	8	7·95	...	...
143	...	...	...	Bank ...	20½	7·40	Right...	28·65
	...	...	...	Cutting ...	1½	3	...	...
	Level	...	12	Cutting ...	10	10·50	...	...
	...	...	...	Bank ...	2	4	...	...
	1 in 100 ...	U	25	Bank ...	25	25	...	...
	Level	...	22	Bank ...	5½	3·10	...	...
144	...	...	...	Cutting ...	16½	3·7	...	...
	Ashta Road station.			...	...	...	...	...
	1 in 175 ...	D	35	Bank ...	35	9·85	...	...
145	1 in 400 ...	D	60	Bank ...	60	11·95	Left ...	28·65
146	Level	...	49	Bank ...	49	3·80	Left ...	28·65
	1 in 200 ...	D	24	Bank ...	8	17·45	...	...
147	...	...	...	Cutting ...	8	3·90	Right...	19·10
	...	...	...	Bank ...	8	7	Right...	19·10
	Level	...	14	Bank ...	11½	36	...	...
	Yerla river 10—60 feet girder.				...	...	...	...
	...	...	...	Cutting ...	2½	5	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	1 in 200 ...	U	12	Cutting ...	8	4	...	...
	...	...	...	Bank ...	4	2·55	...	...
148	Level	...	26,11 6	Bank ...	26,11,6	5·81	...	...
149	1 in 1,000 ...	D	55	Bank ...	46	6·21	...	...
	...	...	...	Cutting ..	9	1·45	...	...
150	Level	...	114	Bank ...	73½	18·64	Right...	57·30
	Nagaum nala 6—40 feet girder.				...	...	...	...
	...	...	...	Cutting ...	6½	0·44	Right...	57·30
151	...	...	...	Bank ...	34	26·24	Right...	57·30
	Bissoor nala 6—40 feet girder.				...	...	...	...
	1 in 250 ...	U	15	Bank ...	15	6·16	Left ...	57·30
	Level	...	5	Bank ...	5	1·77	Left ...	57·30
152	1 in 250 ...	D	30	Bank ...	21	4·27	Left ...	57·30
	...	...	...	Cutting ...	7	2·94	Left ...	57·30
	...	...	...	Bank ...	2	9·3	...	...
	Level	...	14	Bank ...	14	10·61	...	...
153	1 in 400 ...	U	22	Bank ...	22	14·16	...	...
	Level ...	...	7	Bank ...	7	18·87	...	...
	Budgaum nala 4—40 feet girder.				...	...	...	...
	1 in 200 ...	U	23	Bank ...	18	16·62	...	...
	Level ...	...	18	Bank ...	14	7	...	...
	Sangli station.	...	...	...	...	...	...	...
154	...	...	...	Cutting ...	9	7·40	...	...
	1 in 100 ...	U	22	Cutting ...	21	17·49	Left ...	57·30
	...	...	...	Bank ...	1	2·13	...	...
	1 in 250 ...	U	30	Bank ...	19	8·31	...	...
155	...	...	...	Cutting ...	11	7·14	...	...
	Level ...	...	44·23	Cutting ...	11·23	9·08	Right...	28·65
	...	...	...	Bank ...	9	10·54	...	...
	...	...	...	Cutting ...	18	11·38	...	...
	...	...	...	Bank ...	4	5·41	...	...
	...	...	...	Cutting ...	2	2·09	...	...
156	1 in 150 ...	D	19·50	Bank ...	19·50	19·30	...	...
	Burtali nala 3—20 arches.			...	...	...	...	...
	Level ...	...	6·50	Bank ...	6·50	9·68	...	...
	1 in 150 ...	U	21	Bank ...	17	8·29	...	...
	...	...	...	Cutting ...	4	4·85	...	...
	Level ...	...	18	Cutting ...	6	4·78	...	...
157	...	...	...	Bank ...	10	4·92	...	...
	...	...	...	Cutting ...	2	2·06	...	...
	1 in 200 ...	D	26	Cutting ...	11½	4·87	...	...
	...	...	...	Bank ...	14½	14·21	...	...
	Level ...	...	16	Bank ...	16	6·53	...	...
158	1 in 400 ...	U	10	Bank ...	2	1·92	...	...
	...	...	...	Cutting ...	8	5·68	...	...
	Level ...	...	8·50	Cutting ...	1	0·88	...	...
	...	...	...	Bank ...	7·50	5·68	...	...
159	1 in 100 ...	D	40·50	Bank ...	40·50	12·83	...	...
	1 in 400 ...	D	11	Bank ...	11	12·53	...	...
	Mulli nala 2—40 girder.			...	...	...	...	...
	1 in 150 ...	D	9·38	Bank ...		6·29	Right...	28·64
	...	...	...	Cutting ...	2·38	2·20	Right...	28·64
	Level ...	...	26·62	Bank ...	26·62	6·33	Right...	28·65
	...	...	...	...	...	...	Left ...	33·05

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Miraj station.	...	...	...	...	...	...	...
160	1 in 200 ...	D	18	Bank ...	18	5·05	Left ..	33·05
161	Level ...	...	54·85	Bank ...	53·74	25·55	Left ...	33·05
	Miraj nala 5—30 arches.			...	...	...	...	...
	...	...	...	Cutting ...	1·11	0·65	...	...
	1 in 200 ...	U	40	Cutting ...	13	3·63	Right...	28·65
	...	...	...	Bank ...	27	10·93	Right...	28·65
162	Level ...	...	24	Bank ...	23	27·80	...	...
	Waddi nala 6—30 arches.			...	...	...	...	...
	...	...	...	Cutting ...	1	1·43	...	...
	1 in 100 ...	U	11	Cutting ...	11	6·09	...	...
	Level ...	...	38	Cutting ...	6	4·63	...	...
163	...	...	...	Bank ...	32	18·45	...	...
	1 in 300 ...	U	21	Bank ...	21	19·23	...	...
164	Level ...	...	21·25	Bank ...	21·25	7·05	...	...
	Berag nala 5—30 feet arches.				...	...	...	...
	1 in 125 ...	U	13·75	Bank ...	13·75	3·34	...	...
	Level ...	...	12	Bank ...	5	2·48	...	...
	...	...	...	Cutting ...	7	5·49	...	...
165	1 in 500 ...	D	15	Bank ...	15	11·53	...	...
	Level ...	...	6	Bank ...	4	3·33	...	...
	...	...	...	Cutting ...	2	3·26	...	...
	1 in 150 ...	U	18	Cutting ...	1	1·71	...	...
	...	...	...	Bank ...	17	7·39	Left ...	28·65
166	1 in 100 ...	U	52	Bank ...	28	19·77	...	...
	...	...	...	Cutting ...	24	9·93	Right...	28·65
	Level ...	...	9·52·50	Cutting ...	9·52·50	3·54	Right...	28·65
	1 in 125 ...	D	23	Cutting ...	1	0·36	...	...
	...	...	...	Bank ...	22	13·32	...	...
167	1 in 500 ...	D	15	Bank ...	7	6·41	...	...
	...	...	...	Cutting ...	8	6·14	...	...
	Level ...	...	20	Cutting ...	1½	0·73	...	...
	...	...	...	Bank ...	18½	9·29	...	...
	Narwad nala 1—20 feet arch			...	...	...	...	...
168	1 in 100 ...	U	30	Bank ...	10½	7·36	...	...
	...	...	...	Cutting ...	13	5·59	...	...
	...	...	...	Bank ...	6½	10·68	...	...
	1 in 1,000 ...	U	26·50	Bank ...	25	16·49	...	...
	...	...	...	Cutting ...	1·50	0·27	...	...
	1 in 200 ...	U	49·50	Cutting ...	11·50	...	...	...
169	...	...	...	Bank ...	14	...	...	...
	...	...	...	Cutting ...	6	...	...	...
	...	...	...	Bank ...	8½	...	...	...
	...	...	...	Cutting ...	2½	...	...	...
	...	...	...	Bank ...	6	...	...	...
	...	...	...	Cutting ...	1	...	Left ...	28·65
	Level ...	...	34	Cutting ...	12	9·44	Left ...	28·65
170	...	...	...	Bank ...	16	6·04	...	...
	...	...	...	Cutting ...	6	6·70	...	...
	Shedbal station	...	...	...	...	...	...	...
	1 in 100 ...	D	34	Cutting ...	3½	2·60	...	...
	...	...	...	Bank ...	30½	5·63	...	...
	Shedbal nala 6—10 feet arches			...	...	...	...	...
171	Level ...	...	52	Bank ...	14	10·21	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	2	0·37	...	...
	...	...	...	Bank ...	36	8·97	...	...
172	1 in 200 ...	D	28	Bank ...	3½	2·75	...	...
	...	...	...	Cutting ...	20½	7·45	...	...
	...	...	...	Bank ...	4	2·98	...	...
	1 in 1,000 ...	D	13·33	Bank ...	12	6·09	...	...
	...	...	...	Cutting ...	1·33	2·17	...	...
173	1 in 400 ...	D	42·67	Cutting ...	12·67	8·78	Left ...	28·65
	...	...	...	Bank ...	27	20·31	...	...
	...	...	...	Cutting ...	3	14·74	...	...
	1 in 100 ...	D	87	Cutting ...	17	24·61	Right...	14·33
	...	...	...	Bank ...	2	1·07	Right...	14·33
	...	...	...	Cutting ...	1	0·85	Right...	14·33
	...	...	...	Bank ...	3	2·79	Right...	14·33
174	...	...	...	Cutting ...	1	0·51	...	...
	...	...	...	Bank ...	5	1·68	...	...
	...	...	...	Cutting ...	13	4·91	Left ...	16·22
	...	...	...	Bank ...	14	26·36	Left ...	16·22
	...	...	...	Cutting ...	3½	4·08	...	...
	...	...	...	Bank ...	4½	15·58	...	...
	...	...	...	Cutting ...	7½	8·23	...	...
175	...	...	...	Bank ...	10½	18·12	...	...
	Level ...	...	7	Bank ...	7	33·94	Right...	57·30
	Ugar nala 4—30 arches ...			...	...	...	...	...
	1 in 125 ...	U	33·75	Bank ...	4½	28·62	Right...	57·30
	...	...	...	Cutting ...	11	13·46	Right...	57·30
	...	...	...	Bank ...	15½	17·70	Right...	57·30
	...	...	...	Cutting ...	2·75	2·40	Right...	57·30
	Level ...	...	2·70	Cutting ...	2·70	6·57	...	...
176	1 in 125 ...	D	58·75	Cutting ...	25	13·57	...	...
177	...	...	...	Bank ...	33·75	12·26	...	...
178 } 179 }	Level ...	...	126·30	Bank ...	126·30	80·00	Left ...	28·65
	Kirshna river 14—150 girder			...	...	...	...	...
	1 in 100 ...	U	17	Bank ...	16	14·62	Right...	19·10
	...	...	...	Cutting ...	1	0·15	Right...	19·10
180	Level ...	...	24	Cutting ...	6½	1·17	Right...	19·10
	...	...	...	Bank ...	12	4·21	...	...
	...	...	...	Cutting ...	5½	7·91	...	...
	Kudchi station.	...	...	...	...	...	...	...
	1 in 200 ...	U	18	Cutting ...	18	12·75	...	...
	Level ...	...	3·60	Cutting ...	3·60	4·00	...	...
	1 in 100 ...	D	10·40	Cutting ...	9·40	8·35	...	...
	...	...	...	Bank ...	1	0·71	...	...
181	Level ...	...	11	Bank ...	11	19·18	...	...
	1 in 100 ...	U	40	Bank ...	13	18·43	...	...
	...	...	...	Cutting ...	17	12·62	...	...
	...	...	...	Bank ...	3	2·32	...	...
	...	...	...	Cutting ...	6	2·66	...	...
	...	...	...	Bank ...	1	1·03	...	...
182	Level ...	...	38	Bank ...	32	8·62	...	...
	...	...	...	Cutting ...	1	0·47	...	...
	...	...	...	Bank ...	3	1·53	...	...
	...	...	...	Cutting ...	2	2·44	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	1 in 200 ...	U	17	Cutting ...	3½	2·50	...	...
	...	...	...	Bank ...	7½	3·20	...	...
183	...	...	...	Cutting ...	6	5·34	...	...
	Level ...	...	12	Cutting ...	5	2·70	...	...
	...	...	...	Bank ...	7	5·34	Right...	28·65
	1 in 400 ...	D	26	Bank ...	11	7·70	Right...	28·65
	...	...	...	Cutting ...	5	3·91	...	...
	...	...	...	Bank ...	1	6·73	...	...
	...	...	...	Cutting ...	7	6·31	...	...
	...	...	...	Bank ...	2	4·89	...	...
	Level ...	...	35	Bank ...	3½	5·33	...	...
	...	...	...	Cutting ...	4½	2·53	...	...
184	...	...	...	Bank ...	18	12·48	...	...
	...	...	...	Cutting ...	5	3·57	...	...
	...	...	...	Bank ...	4	5·59	...	...
	1 in 125 ...	U	18	Bank ...	5	3·86	...	...
	...	...	...	Cutting ...	1	0·18	...	...
	...	...	...	Bank ...	11	3·57	...	...
	...	...	...	Cutting ...	1	0·44	...	...
	Level ...	...	7	Cutting ...	6	3·51	Right...	28·65
	...	...	...	Bank ...	1	3·01	Right...	28·65
	1 in 100 ...	D	32	Bank ...	4	3·31	...	...
	...	...	...	Cutting ...	2	1·02	...	...
	...	...	...	Bank ...	5	5·94	...	...
185	...	...	...	Cutting ...	4½	5·27	...	...
	...	...	...	Bank ...	1½	3·45	...	...
	...	...	...	Cutting ...	2	2·02	...	...
	...	...	...	Bank ...	13	11·21	...	...
	Level ...	...	37	Bank ...	20	16·39	...	...
	...	...	...	Cutting ...	7	6·81	...	...
186	...	...	...	Bank ...	8	2·39	Right...	28·65
	...	...	...	Cutting ...	2	2·66	Right...	28·65
	1 in 100 ...	D	16	Cutting ...	16	9·56	Right...	28·65
	Level ...	...	38	Cutting ...	3	3·85	...	...
	Chinchli nala No. 1, 3—30 arches.				...	...	...	...
187	...	...	...	Bank ...	35	30·41	...	...
	Chinchli nala No. 2, 6—30 arches.				...	...	...	...
	1 in 250 ...	U	35	Bank ...	35	10·40	Left ...	28·65
188	1 in 100 ...	U	84	Bank ...	49	14·17	...	...
	...	...	...	Cutting ...	35	6·86	...	...
	1 in 150 ...	U	65	Cutting ...	12	5·81	...	...
	...	...	...	Bank ...	19	11·51	Right...	28·65
189	...	...	...	Cutting ...	8	10·15	...	...
	...	...	...	Bank ...	16	7·68	Right...	28·65
	...	...	...	Cutting ...	10	6·24	Right...	28·65
	Level ...	...	30·04	Cutting ...	10	4·3	...	...
	Nagral station.	...	...	...	...	...	...	...
191	...	...	...	Bank ...	20·4	2·43	Left ...	1368·50
	1 in 200 ...	...	10·96	Bank ...	10·96	9·54	Left ...	1386·50
192	1 in 100 ...	U	120·19	Bank ...	64½	32·78	Left ...	1386·50
	...	...	...	...	...	...	Right...	2865
	...	...	...	...	...	...	Left ...	5729·65
	Nagral nala 3—40 arches.			...	...	...	...	...
	...	...	...	Cutting ...	3½	3·92	Left ...	5729·65

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.	...	...	...	Bank ...	6	7·22	Left ...	5729·65
	...	...	...	Cutting ...	2½	3·36	...	...
193	...	...	...	Bank ...	17½	11·40	...	...
	...	...	...	Cutting ...	22·19	7·20	Right...	5729·65
	...	...	...	Bank ...	4	2·17	...	...
	Level ...	...	7	Bank ...	5	1·63	...	...
	...	...	...	Cutting ...	2	0·67	...	...
194	1 in 100 ...	U	86	Bank ...	34½	16·90	...	...
	...	...	...	Cutting ...	30	12·95	...	...
	...	...	...	Bank ...	1	0·86	...	...
195	...	...	...	Cutting ...	7	4·45	...	...
	...	..	...	Bank ...	12	9·02	Left ...	3437·90
	...	...	...	Cutting ...	1½	0·34	Left ...	3437·90
	Level ...	...	19·42	Bank ...	8	8·84	Left ...	3437·90
	...	...	...	Cutting ...	4	6·56	Left ...	3437·90
	...	...	...	Bank ...	4½	11·92	Left ...	3437·90
	...	...	...	Cutting ...	1½	2·03	Left ...	3437·90
	...	...	.	Bank ...	1·42	6·66	Left ...	3437·90
	1 in 200 ...	U	40·58	Bank ...	10·58	18·23	Left ...	3437·90
	...	...	...	Cutting ...	9	18·11	Left ...	3437·90
	...	...	...	Bank ...	7	14·39	Right ...	1910
	...	...	...	Cutting ...	4	11·41	Right ...	1910
	...	...	...	Bank ...	1	2·93	Right ...	1910
	...	...	...	Cutting ...	5	9·34	Right ...	1910
	...	...	...	Bank ...	4	12·48	Right ...	1910
	1 in 100 ...	U	33·71	Bank ...	8	13·56	Right ...	1910
	...	...	...	Cutting ...	3·11	5·41	Right ...	1910
197	...	...	...	Bank ...	20	20·96	...	...
	...	...	...	Cutting ...	2	10·36	...	...
	Level ...	...	6	Cutting ...	6	15·65	...	...
	1 in 100 ...	D	20	Bank ...	1	1·56	...	...
	...	...	...	Cutting ...	4	2·07	...	...
	...	...	...	Bank ...	15	12·68	Left ...	2865
	Level ...	...	12	Bank ...	12	15·38	Left ...	2165
198	1 in 150 ...	U	18	Bank ...	16½	11·22	...	...
	...	...	...	Cutting ...	1¼	2·85	...	...
	Level ...	...	6	Cutting ...	6	14·21	Left ...	4523·45
	1 in 150 ...	D	36	Bank ...	16	11·47	Left ...	4523·45
	...	...	...	Cutting ...	20	22·54	Left ...	4523·45
	1 in 200 ...	...	10	Bank ...	3	8·22	...	...
	...	...	...	Cutting ...	3	4·68	...	...
	...	...	...	Bank ...	4	20·11	...	...
	Level ...	...	24	Bank ...	4	17·25	...	...
	Chikodi Road station.			...	...	...	...	...
	...	...	...	Cutting ...	15	9·15	...	...
	...	...	...	Bank ...	3	5·20	...	...
	...	...	...	Cutting ...	2	3·82	Right ...	2865
	1 in 100 ...	D	186	Cutting ...	18	12·21	Right ...	2865
	...	...	...	...	...	...	Left ...	2865
190 & 200	...	...	...	Bank ...	44	16·65	Right ..	2865
	....	...	...	Cutting ...	3	0·35	Right ...	2865
201, 202 and 203	...	...	...	Bank ...	139	19·18	Right. Left. Left.	2865 5571·55 5571·55

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
204	Level ...	...	45·25	Bank ...	45·25	31·61	Right. Left.	1910 5729·05
	Ingnoor nala 11—3 arches.			...	...	...	...	...
	1 in 125 ...	U	38·75	Bank ...	11·15	7·61	Left ...	5729·65
	...	...	...	Cutting ...	16	8·17	Left ...	5729·65
	...	...	...	Bank ...	6	3·26	...	...
	...	...	...	Cutting ...	5	3·6	...	...
	Left ...	...	5·50	Cutting ...	4	3·24	...	...
	...	...	...	Bank ...	1·50	1·13	...	...
205	1 in 150 ...	...	25·50	Bank ...	8·50	5·42	...	...
	...	...	...	Cutting ...	8	4·79	...	...
	...	...	...	Bank ...	9	13·25	...	...
	Level ...	...	11	Bank ...	11	18·50	...	...
	1 in 100 ...	U	37·31	Bank ...	21	12·88	...	...
206	...	...	...	Cutting ...	16·31	13·6	Left ...	2865
	Level ...	...	4·69	Cutting ...	4·69	8·95	Left ...	2865
	1 in 100 ...	D	29·31	Cutting ...	6·31	7·24	Left ...	2865
	...	...	...	Bank ...	23	9·32	Left ...	2865
207	Level ...	...	38	Bank ...	38	8·91	...	...
208	1 in 100 ...	U	43	Bank ...	25	8·64	...	...
	...	...	...	Cutting ...	2	2·81	...	...
	...	...	...	Bank ...	5	12·33	...	...
	...	...	...	Cutting ...	11	15·69	...	...
	Level ...	...	40	Cutting ...	4	8·23	...	...
	...	...	...	Bank ...	15	11·89	Right...	5729·65
	...	...	...	Cutting ..	2	0·52	Right...	5729·65
	...	...	...	Bank ...	5	1·49	Right...	5729·65
209	...	...	...	Cutting ...	14	3·43	Right...	5729·65
	Gokak Road station.			...	...	...	...	...
	1 in 100 ...	D	25·50	Bank ...	25·50	5·45	...	...
210	Level ...	...	138·50	Bank ...	25·50	25·02	Right...	28·64
	...	...	...	Cutting ...	10	1·58	Right...	28·64
	...	...	...	Bank ...	10	6·40	Right...	28·64
	...	...	...	Cutting ...	6	4·82	Right...	28·64
	...	...	...	Bank ...	56	48·72	Right...	28·64
	...	...	...	...	...	...	Left ...	20
	Ghatprabha river 45 spans 40′ girders.				...	...	...	...
211	...	...	...	Cutting ...	29	12·17	Left ...	20
212	...	...	...	Bank ...	2	3·20	...	...
	1 in 100 ...	U	96	Bank ...	72	22·37	Right...	10
	...	...	...	...	...	...	Right...	30
	...	...	...	Cutting ...	6	4·68	...	...
	...	...	...	Bank ...	8	3·49	Left ...	40
	...	...	...	Cutting ...	10	14·05	Left ...	40
	Level ...	...	6	Cutting ...	5	6·15	...	...
	...	...	...	Bank ...	1	0·30	...	...
	1 in 100 ...	D	17	Bank ...	17	4·94	Right...	50
	Level ...	...	51	Bank ...	32	12·36	...	...
	...	...	...	Cutting ...	29	6·16	Left ...	20
	1 in 100 ...	U	58	Bank ...	34	13·46	Right...	20
	...	...	...	Cutting ...	3	1·32	...	...
	...	...	...	Bank ...	10	6·23	Left ...	24
	...	...	...	Cutting ...	11	11·88	Left ...	24
	Level ...	...	6	Cutting ...	5	5·59	Left ...	24

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Bank ...	1	3·46	Left ...	24
	1 in 100 ...	D	50	Bank ...	29	12·44	Right ..	10
	...	...	...	Cutting ...	3	4·62	Left ...	10
	...	...	...	Bank ...	18	7·60	Left ...	10
	...	...	...	...	...	...	Right...	20
	Level ...	...	22	Bank ...	8	6·18	Right...	20
	...	...	...	Cutting ...	4	4·18	Left ...	40
	...	...	...	Bank ...	7	7·43	Left ...	40
	...	...	...	Cutting ...	3	3·12	Left ...	40
	1 in 120 ...	D	15	Bank ...	15	8·15	Left ...	40
	Level ...	...	10	Bank ...	10	11·20	...	...
219	1 in 100 ...	U	97	Bank ...	34	24·49	...	...
	...	...	...	Cutting ...	8	4·22	...	...
220	...	...	...	Bank ...	38	24·04	...	...
	...	...	...	Cutting ...	17	9·89	...	...
	Level ...	...	12	Cutting ...	12	9·13	Right...	28·65
	1 in 100 ...	D	30	Bank ...	4	2·05	...	...
	...	...	...	Cutting ...	3	1·95	...	...
221	...	...	...	Bank ...	23	19·67	...	...
	Level ...	...	25	Bank ...	7	8·39	...	...
	...	...	...	Cutting ...	3	5·08	Left ...	28·65
	...	...	...	Bank ...	1	3·32	Left ...	28·65
	...	...	...	Cutting ...	13	8·40	Left ...	28·65
	...	...	...	Bank ...	1	3·57	...	...
	1 in 200 ...	U	20	Cutting ...	14	13·66	...	...
222	...	...	...	Bank ...	1	1·19	...	...
	...	...	...	Cutting ...	5	3·35	...	...
	Level ...	...	68	Bank ...	68	16·66	Left ...	28·65
223	Padshapur station.	...	...	...	...	...	...	...
	1 in 250 ...	U	20	Bank ...	20	17·55	...	...
	Level ...	...	6	Bank ...	6	40·88	...	...
	Marikandi river 5—60 feet girder.				...	...	...	...
	1 in 100 ...	U	22	Bank ...	7	5·89	...	...
	...	...	...	Cutting ...	1	0·18	...	...
224	...	...	...	Bank ...	14	3·52	...	...
225	1 in 200 ...	U	50	Bank ...	50	3·95	...	...
	Level ...	...	8	Bank ...	8	5·02	Left ...	28·65
	1 in 200 ...	D	6	Bank ...	4	1·63	Left ...	28·65
	...	...	...	Cutting ...	2	0·85	Left ...	28·65
	1 in 150 ...	D	12	Bank ...	12	2·41	Right...	28·65
	Level ...	...	10	Bank ...	10	8·70	Right...	28·65
226	1 in 300 ...	D	27	Bank ...	27	9·68	Right...	28·65
	Level ...	...	17	Bank ...	17	11·78	...	...
227	1 in 250 ...	U	20	Bank ...	20	5·38	Right ..	28·65
	1 in 100 ...	U	10	Bank ...	10	8·96	...	...
	Level ...	...	7	Bank ...	7	33·05	...	...
	Balari bridge No. I, 8—30 feet arches.				...	...	...	...
	1 in 200 ...	D	12	Bank ...	12	21·83	...	...
	Level ...	...	20	Bank ...	7	4·23	Left ...	10
	...	...	...	Cutting ...	10	4·98	Left ...	10
	...	...	...	Bank ...	3	9·61	...	...
228	1 in 100 ...	U	25	Bank ...	25	12·58	...	...
229 & 230	1 in 200 ...	U	100	Bank ...	81	7·60	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	1	0·70	...	...
	...	...	...	Bank ...	18	2·30	...	...
	1 in 100 ...	U	27	Cutting ...	1	0·44	...	...
	...	...	...	Bank ...	26	7·93	Right...	28·65
231	Level ...	...	7	Bank ...	7	19·72	...	...
	1 in 100 ...	U	96	Bank ...	53	15·40	...	...
232	...	...	...	Cutting ...	5	1·64	Right...	19·10
	...	...	...	Bank ...	1	0·04	Right...	19·10
	...	...	...	Cutting ...	1	0·19	Right...	19·10
	...	...	...	Bank ...	13	2·20	Right...	19·10
	...	...	...	Cutting ...	23	22·52	...	...
	Level ...	...	7	Cutting ...	7	14·67	Left ...	28·65
	1 in 100 ...	D	39	Cutting ...	2	2·13	Left ...	28·65
233	...	...	...	Bank ...	22	8·81	Left ...	28·65
	...	...	...	Cutting ...	3	0·72	Left ...	10
	...	...	...	Bank ...	2	4·38	Left ...	10
	...	...	...	Cutting ...	2	1·65	Left ...	10
	...	...	...	Bank ...	8	24·07	Left ...	10
	...	...	...	...	...	...	Right...	10
	Level ...	...	23	Cutting ...	1	1·13	...	...
	...	...	...	Bank ...	15	33·98	Right...	10
	Balari nala 7—30 feet arches.				...	...	...	...
234	...	...	...	Cutting ...	6	17·06	Right...	28·65
	...	...	...	Bank ...	1	0·62	Right...	28·65
	1 in 300 ...	D	9	Bank ...	9	10·47	Right...	28·65
	Level ...	...	12	Bank ...	12	10·47	Right...	28·65
	1 in 100 ...	U	15	Bank ...	15	14·80	...	...
235	Level ...	...	24	Bank ...	24	6·40	...	...
	Sulelbhavi station.	...	...	...	...	...	...	...
	1 in 155·55 ...	U	14	Bank ...	14	7·06	...	...
236 & 237	Level ...	...	99	Bank ...	99	10·24	...	...
	1 in 400 ...	U	20	Bank ...	20	6·34	...	...
	Level ...	...	11	Bank ...	11	8·54	...	...
238	1 in 200 ...	D	28	Bank ...	28	6·80	...	...
239	Level ...	...	36	Bank ...	36	7·60	...	...
	1 in 400 ...	D	8	Bank ...	8	7·94	Left ...	20
	Level ...	...	20	Bank ...	20	9·10	Left ...	20
	1 in 300 ...	U	12	Bank ...	12	9·59	...	...
240	Level ...	...	16	Bank ...	16	9·72	...	...
	1 in 300 ...	U	6	Bank ...	6	5·18	...	...
241	Level ...	...	40	Bank ...	40	4·93	...	...
	1 in 150 ...	U	15	Bank ...	15	8·80	...	...
	Level ...	...	6	Bank ...	6	5·80	...	...
242	1 in 300 ...	U	36	Bank ...	36	5·92	...	...
243	1 in 755·55 ...	U	68	Bank ...	68	...	Left ...	20
	...	...	...	...	...	11·76	Right ...	20
	1 in 260 ...	U	26	Bank ...	17	8·97	Right ...	20
	...	...	...	...	...	...	Right ...	50
	...	...	...	Cutting ...	1	2·17	Right ...	50
	...	...	...	Bank ...	8	3·04	Right ...	15
244	Level ...	...	15	Bank ...	15	5·98	...	...
	1 in 100 ...	U	10	Bank ...	10	9·53	Level ...	15
	Level ...	...	22	Bank ...	22	6·66	Level ...	15

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	Belgaum station.		...	...	...	...	...	...
	1 in 320·44 ...	U	29	Bank ...	3½	3·72	...	...
	...	...	...	Cutting ...	1½	3·95	...	...
245	...	...	...	Bank ...	24	8·27	Left ...	40
	1 in 100 ...	U	42	Bank ...	12	8·34	Left ...	50
	...	...	...	Cutting ...	18	7·23	Left ...	50
246	...	...	...	Bank ...	12	3·95	...	...
	Level ...	...	6	Bank ...	2	2·87	Left ...	28·65
	...	..	...	Cutting ...	1	0·79	Left ...	28·35
	...	...	...	Bank ...	1	2·49	Left ...	28·65
	...	...	...	Cutting ...	2	1·75	Left ...	28·65
247	1 in 100 ...	D	74	Bank ...	74	16·67	Right ...	28·65
248	Level ...	...	30	Bank ...	30	7·56	...	...
249-250	1 in 400 ...	D	36	Bank ...	36	5·47	...	...
	Level ...	...	61	Bank ...	61	16·29	...	...
	1 in 300 ...	D	42	Bank ...	27	15·73	Right ...	28·65
	...	...	...	Cutting ...	15	5·80	Left ...	28·65
	Level ...	...	41	Cutting ...	4	4·96	Left ...	28·65
251	...	...	...	Bank ...	12	8·05	...	...
	...	...	...	Cutting ...	16	3·70	...	...
	...	...	...	Bank ...	9	16·18	...	...
	Pesur station.	...	...	...	...	...	...	...
	1 in 100 ...	U	13·65	Bank ...	11	16·91	...	...
	...	...	...	Cutting ...	2·65	5·9	Left ...	30
252	Level ...	...	6·33	Cutting ...	6·33	19·01	Left ...	30
	1 in 100 ...	D	15	Cutting ...	12	20·67	Left ...	30
	...	...	...	Bank ...	3	9·72	...	...
	Level ...	...	6	Bank ...	6	23·49	Right ...	15
	1 in 100 ...	U	13	Bank ...	11	22·90	Right ...	15
	...	...	...	Cutting ...	2	7·61	Left ...	10
	Level ...	...	3	Cutting ...	1	2·75	Left ...	10
	...	...	...	Bank ...	1	2·54	Left ...	10
	...	...	...	Cutting ...	1	4·31	Left ...	10
	1 in 100 ...	D	31	Cutting ...	1	2·01	Left ...	10
	...	...	...	Bank ...	1	5·36	Left ...	10
	...	...	...	Cutting ...	9	27·30	Left ...	10
253	...	...	...	Bank ...	20	25·62	...	...
	Level ...	...	11	Bank ...	11	22·98	Left ...	10
	1 in 100 ...	U	6	Bank ...	6	17·92	...	...
	...	...	8	Bank ...	4	9·43	Right ...	20
	...	...	...	Cutting ...	4	12·07	Right ...	20
	1 in 100 ...	D	117	Cutting ...	1	1·84	Right ...	20
	...	...	...	Bank ...	7	5·43	Left ...	30
254	...	...	...	Cutting ...	12	14·81	...	...
	...	...	...	Bank ...	1	2·03	...	...
	...	...	...	Cutting ...	1	1·47	...	...
	...	...	...	Bank ...	12	28·46	Right ...	10
	...	...	...	Cutting ...	10	14·82	Right ...	10
	...	...	...	Bank ...	9	8·20	...	...
255	...	...	...	Cutting ...	10	14·61	Left ...	28·65
	...	...	...	Bank ...	11	27·27	...	...
	...	...	...	Cutting ...	5	5·94	...	...
	...	...	...	Bank ...	11	22·81	...	...
	...	...	...	Cutting ...	7	10·08	Left ...	28·65

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Bank ...	16	33·06	...	...
256	...	...	...	Cutting ...	4	11·11	Right...	955
	Level ...	...	9	Cutting ...	8	10·33	Right...	955
	...	...	...	Bank ...	1	3·37	...	...
	1 in 100 ...	D	71	Bank ...	10	17·86	...	...
	...	...	...	Cutting ...	13	19·11	Right...	28·65
257	...	...	...	Bank ...	47	28·06	Right...	28·65
	...	...	...	...	...	...	Left ...	10
	...	...	...	Cutting ...	1	4·08	Right...	10
	1 in 200 ...	D	14	Cutting ...	8	7·67	Right...	10
	...	...	...	Bank ...	6	12·25	Left ...	20
258	Level ...	...	16	Bank ...	16	16·10	...	...
	1 in 100 ...	.	33	Bank ...	33	17·92	Left ...	30
	Level ...	...	4	Bank ...	4	22·24	...	...
259	1 in 100 ...	U	30	Bank ...	27	10·64	...	...
	...	...	...	Cutting ...	3	8·25	Left ...	20
	Level ...	...	3	Cutting ...	3	10·72	...	...
	1 in 100 ...	D	50	Cutting ...	5	8·58	Right...	10
	...	...	...	Bank ...	14	22·68	..	...
	...	...	...	Cutting ...	9	10·28	Left ...	10
260	...	...	...	Bank ...	14	14·03	...	...
	...	...	...	Cutting ...	6	2·54	Left ...	10
	...	...	...	Bank ...	2	9·54	Left ...	10
	Level ...	...	20	Bank ...	5	16·35	Left ...	10
		...	...	Cutting ...	7	1·75	...	...
		...	...	Bank ...	8	14·75	Right...	20
	Khanapur station.		...	...	...	...	...	...
261	1 in 400 ...	U	21	Bank ...	21	32·01	Left ...	10
	Level ...	...	27·50	Bank ...	26	43·14	Right...	10
	1—100 feet and 3—40 girders, 5—20 arches.					...	Right...	15
	Malprabha river.		...	...	...	...	...	...
	...	...	...	Cutting ...	1·50	4·27	Right...	15
262	1 in 100 ...	U	16·50	Cutting ..	16·54	17·38	Right..	15
	Level ...	...	5	Cutting ...	5	26·71	...	...
	1 in 100 ...	D	10	Cutting ...	7	19·61	Left ...	10
	...	...	...	Bank ...	3	16·15	Left ...	10
	Level ...	...	39·76	Bank ...	7	23·17	Left ...	10
	...	...	...	Cutting ...	8	15·54	..	...
263	...	...	...	Bank ...	24·76	21·30	Left ...	30
	1 in 100 ...	U	5	Bank ...	5	6·86	...	...
	Level ...	...	5	Cutting ...	5	4·75	...	...
	1 in 500 ...	D	45	Cutting ...	2	4·70	...	...
	...	...	...	Bank ...	14	15·85	Left ...	20
	...	...	...	Cutting ...	11	8·46	Right...	10
	...	...	...	...	...	...	Right...	10
264	...	...	...	Bank ...	18	20·27	...	...
	1 in 200 ...	U	32	Bank ...	14	10·56	Right...	20
	...	...	...	Cutting ...	13	9·72	Left ...	40
	...	..	...	Bank ...	5	13·47	...	...
	1 in 100 ...	U	26	Bank ...	11	...	...	...
265	...	...	...	Cutting ...	15	...	Left ...	20
	Level ...	...	5	Cutting ...	5	16·42	Left ...	20
	1 in 250 ...	D	17·50	Cutting ...	2	3·09	...	...
	...	...	...	Bank ...	13	31·84	...	...

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
MILE.								
	...	...	...	Cutting ...	2·50	4·42	...	...
	1 in 100 ...	D	20	Cutting ...	14·50	8·65	Left ...	20
266	...	...	...	Bank ...	5·50	4·43	Left ...	20
	Level ...	...	9·50	Bank ...	9·50	22·07	...	...
	1 in 200 ...	U	32	Bank ...	15	9·50	...	...
	...	...	...	Cutting ...	4	0·89	...	...
	...	...	...	Bank ...	5	10·00	...	...
	...	...	...	Cutting ...	8	4·99	Right...	20
	Level ...	...	3	Bank ...	3	4·26	Right...	20
267	1 in 200 ...	D	20	Bank ...	20	17·50	...	...
	Level ...	...	3	Bank ...	3	16·70	...	...
	1 in 100 ...	U	17	Bank ...	3	8·48	...	...
	...	...	...	Cutting ...	14	10·52	Right...	10
268	Level ...	...	40	Bank ...	21	11·96	Right...	10
	...	...	...	Cutting ...	3	0·95	...	...
	...	...	...	Bank ...	16	24·56	...	...
	Gunji station.	...	...	...	...	...	...	...
	1 in 100 ...	U	25	Bank ...	17	23·86	Left ...	28·65
	...	...	...	Cutting ...	8	5·41	...	...
	Level ...	...	5	Bank ...	3	3·03	...	...
	...	...	...	Cutting ...	2	9·83	...	...
269	1 in 100 ...	D	20	Cutting ...	11	12·40	...	...
	...	...	...	Bank ...	9	23·01	...	...
	Level ...	...	5	Bank ...	5	15·31	Right...	28·65
	1 in 150 ...	U	48	Cutting ...	9	6·67	Right...	28·65
	...	...	...	...	...	...	Right...	20
	...	...	...	Bank ...	8	16·61	Right...	20
	...	...	...	...	...	...	Right...	10
	...	...	...	Cutting ...	8	7·17	Right...	10
270	...	...	...	Bank ...	23	14·69	...	...
271	1 in 100 ...	U	37	Cutting ...	37	30·73	Right...	20
	...	...	...	...	...	...	Left ...	10
	...	...	...	...	...	...	Left ...	10
	...	...	...	...	...	...	Left ...	10
	...	...	...	...	...	...	Left ...	10
	Level ...	...	20	Cutting ...	5	23·29	...	...
	...	...	...	Bank ...	15	25·42	Right...	12
	...	...	...	...	...	...	Left ...	30
	1 in 100 ...	D	70	Bank ...	1	1·88	...	...
	...	...	...	Cutting ...	3	3·70	...	...
272	...	...	...	Bank ...	34	31·89	Right...	20
	...	...	...	...	...	...	Right...	10
	...	...	...	Cutting ...	7	3·87	...	...
	...	...	...	Bank ...	25	28·47	Right...	10
273	Level ...	...	15	Bank ...	15	29·04	Right...	10
	1 in 100 ...	D	27	Bank ...	3	4·20	Left ...	10
	...	...	...	Cutting ...	19	13·12	Left ...	10
	...	...	...	Bank ...	5	37·77	Left ...	10
	...	...	...	...	...	...	Left ...	10
	...	...	...	...	...	...	Right...	20
	Level ...	...	8	Bank ...	8	23·23	Right...	20
	...	...	...	...	...	...	Left ...	15
	1 in 100 ...	U	10	Cutting ...	2	0·73	Left ...	15
	...	...	...	Bank ...	8	17·60	Left ...	15

Working Section—cont.

Poona.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
274	Level ...	...	10	Cutting ...	10	5·17	Left ...	14·32
	...	...	...	...	...	...	Left ...	14·32
	...	...	...	...	...	...	Left ...	20
	1 in 300 ...	D	51	Bank ...	35	10·88	Left ...	15
275	...	...	...	Cutting ...	6	3·31	Left ...	15
	...	...	...	Bank ...	10	38·01	Left ...	15
	...	...	...	...	...	...	Right...	20
	1 in 100 ...	D	68	Bank ..	1	0·39	Right...	20
	...	...	...	Cutting ...	6½	11·28	Right...	20
	...	...	...	Bank ..	7	37·0	...	...
	...	...	...	Cutting ...	2	3·3	...	...
	...	...	...	Bank ...	6	35·50	...	...
	...	...	...	Cutting ...	12	20·25	...	...
276	...	...	...	Bank ...	22½	33	Right...	20
	...	...	...	...	...	...	Right...	10
	...	...	...	Cutting ...	11	27·18	Right...	10
	Level ...	...	8	Cutting ...	4	5·25	Right...	10
	...	...	...	Bank ...	4	12·55	Right...	10

BRIDGES.

Mile.	Name.	Openings.	Description.	Rise of flood-water above low-water level, feet.	Maximum velocity in flood per second, feet.	Flood area of openings, feet.	Height of underside of girders or soffit of arch.		Remarks.
							Above flood-level.	Above river-bed.	
1½	...	Londa station.		...	...	...	...	...	
1½	...	18′ long.	Arches. ...	...	...	...	...	...	
...	...	70′ „	„	...	...	...	...	...	
2	...	55′ „	„ ...	...	...	...	...	...	
2¼	...	55′ „	„ ...	...	...	...	...	...	
2½	...	53′ „	„ ...	...	...	...	...	...	
2¾	...	23′ „	„ ...	...	...	...	...	...	
4	...	147′ „	„ ...	...	...	...	...	...	
4¾	...	18′ „	„ ...	...	...	...	...	...	
5½	...	28′ „	„ ...	...	...	...	...	...	
6½	...	72′ „	„ ...	...	...	...	...	...	
7½	...	64′ „	„ ...	...	...	...	...	...	
8	...	51′ „	„ ...	...	...	...	...	...	
8¼	...	42′ „	„ ...	...	...	...	...	...	
8½	...	78′ „	„ ...	...	...	...	...	...	
9½	...	18′ „	„ ...	...	...	...	...	...	
10½	...	110′ „	„ ...	...	...	...	...	...	
11	...	114′ „	„ ...	...	...	...	...	...	
11½	...	119′ „	„ ...	...	...	...	...	...	
13	...	85′ „	„ ...	...	...	...	...	...	
13¼	...	25′ 6″ „	„ ...	...	...	...	...	...	
13½	...	95′ „	„ ...	...	...	...	...	...	
13¾	...	68′ „	„ ...	...	...	...	...	...	
14	...	39′ „	„ ...	...	...	...	...	...	
14½	...	93′ „	„ ...	...	...	...	...	...	
15	...	40′ „	„ ...	...	...	...	...	...	
15¼	...	72′ „	„ ...	...	...	...	...	...	

16¼	Malprabha river.	3—40′ 1—100′ 5—20′	Plate girders. Warren girder. Arches ...	29′	5·74′	10,814	15′	48′ 9″	The Malprabha bridge, a handsome structure with a total length of 416′, built on a foundation of decomposed granite on north bank and rock on south bank. The piers supporting the girders are 12′ 6″ × 6′ 6″ at top and 15′ 6″ bottom; those supporting the arches 16′ × 4′ at top and 18′ and 6′ at bottom. The two main piers supporting the 100′ girder in the centre of bridge are 21′ × 9′ at top by 24′ × 12′ at base. The centre span has a lattice superstructure. A massive abutment is at each end 33′ × 12′.
16½	...	183′ long.	„ ...	...	...	...	...	...	
17¼	...	25′ 6″ „	„ ...	...	...	...	...	...	
17¾	...	69′ „	„ ...	...	...	...	...	...	
18¼	...	90′ „	„ ...	...	...	...	...	...	
19	...	145′ „	„ ...	...	...	...	...	...	
19½	...	37′ „	„ ...	...	...	...	...	...	
20	...	37′ „	„ ...	...	...	...	...	...	
20¼	...	77′ „	„ ...	...	...	...	...	...	
20½	...	39′ „	„ ...	...	...	...	...	...	
20¾	...	45′ „	„ ...	...	...	...	...	...	
21	...	30′ „	„ ...	...	...	...	...	...	
22	...	62′ „	„ ...	...	...	...	...	...	
23¼	...	18′ „	„ ...	...	...	...	...	...	
23¾	...	42′ „	„ ...	...	...	...	...	...	
24¼	...	20′ „	„ ...	...	...	...	...	...	
...	...	59′ „	„ ...	...	...	...	...	...	
24¾	...	22′ „	„ ...	...	...	...	...	...	
...	...	153′ „	„ ...	...	...	...	...	...	
...	...	43′ „	„ ...	...	...	...	...	...	
25¼	...	31′ „	„ ...	...	...	...	...	...	
25¾	...	59′ „	„ ...	...	...	...	...	...	
26½	...	30′ „	„ ...	...	...	...	...	...	
27¼	...	56′ „	„ ...	...	...	...	...	...	
28	...	39′ „	„ ...	...	...	...	...	...	
28½	...	61′ „	„ ...	...	...	...	...	...	
29½	...	20′ „	„ ...	...	...	...	...	...	
...	...	61′ „	„ ...	...	...	...	...	...	
23	...	48′ „	„ ...	...	...	...	...	...	
...	...	27′ „	„ ...	...	...	...	...	...	
...	...	10′ „	Girder ...	...	...	...	...	...	
32½	...	27′ „	„ ...	...	...	...	...	...	
33	...	Belgaum station.		...	...	...	...	...	
33	...	1—20′	Girder ...	...	...	...	...	...	

BRIDGES—*cont.*

Mile.	Name.	Openings.	Description.	Rise of flood-water above low-water level, feet.	Maximum velocity in flood per second, feet.	Flood area of openings, feet.	Height of under side of girders or soffit of arch.		Remarks.
							Above flood level.	Above river bed.	
35½	...	1—20′	Girder ...	...	...	...	...	...	
43¾	Bellary nala (2).	7—30′	Arches ...	15′	12·24′	4,000	14·90	32·33	Foundation rock, masonry, sandstone and coursed rubble in lime mortar.
46¾	...	1—20′	Arch ...	...	...	...	...		
	...	3—30′	Arches ...	...	...	...	...		
49¼	...	1—20′	Arch ...	...	...	...	...		
50⅝	Bellary nala (1).	8—30′	Arches ...	15·50′	5·30′	5,200	19·25	32·75	Foundation rock, masonry, sandstone and coursed rubble in lime mortar.
54	Markandi ...	5—60′	Girders ...	20′	11·60′	4,540	9·31	34·31	Foundation rock, masonry, sandstone and coursed rubble in lime mortar. The space between rails is covered in with zinc sheeting.
54⅜	...	2—20′	Arches ...	...	...	...	...	...	
55¾	...	2—20′	„ ...	...	...	...	...	...	
56½	Bugarnal ...	2—40′	Girders ...	11·16′	11·90′	1,926·25′	5·96′	16·33	Foundation rock, masonry, sandstone and coursed rubble in lime mortar. The space between rails is covered in with zinc sheeting.
58	...	1—20′	Arch ...	...	...	...	...	...	
59⅔	...	2—20′	„ ...	...	...	...	...	...	
65⅓	...	22— 0′	„ ...	...	...	...	..	...	
66⅓	Ghatprabha river	45—40′	Girders ...	26′	8′	28,498′	9·66′	39·96′	Foundation rock, masonry, sandstone and coursed rubble in lime mortar. The space between rails is covered in with zinc sheeting.
67¼	...	12— 0′	Arch ...	...	...	...	...	...	
67⅜	...	14— 0′	Girder ...	...	...	...	...	...	
71¾	...	13— 0′	Arch ...	...	...	...	...	...	
72	...	12— 0′	„ ...	...	...	...	...	...	
73¼	Ingnoor ...	113— 0′	Arches ...	16·43′	14·12′	7,161·5′	11·96′	28′	Foundation hard moorum, masonry "trap" and coursed rubble in lime mortar.
85¾	Nagral ...	2—30′	„ ...	4·91′	12·32′	976·71′	18·35′	27′	Foundation rock, masonry, "trap" and coursed rubble in lime mortar.

90¾	Chinchaly No. 1.	3— 30′	Arches ...	11·31′	13·35	2,069·2	8·47′	21·65′	Chinchaly nalas, ditto, only foundation is hard moorum.
91	Chinchaly No. 2.	6— 30′	„ ...	13·75	13′	4,484′	8·47′	21·65′	
95½	...	1— 20′	Arch ...	...	...	...	...	...	
98¼	Krishna river ...	14—150′	Girders ...	66·03	3·29′	93,832	8·67′	78·87′	Krishna bridge—This is the largest and most important on this branch. The truss is the simple triangulated with roadway between girders. The rails are laid on longitudinal teak baulks resting on channel iron girders between the cross girders. The timber is bolted down to the channel irons and the rails are spiked down to the baulks in the usual manner. The baulks on each span are quite separate. Corrugated sheeting is laid over the whole of the roadway to take ballast for a *cart* track when necessary. The south approach bank is 36′ high of moorum, and the north 26′ high.
102¼	Ugar	4— 30′	Arches ...	8·40′	12·77′	1,800′	18·13′	32′	
103	...	1— 20′	„ ...	...	...	...	...	...	
106½	Shedbal nala ...	6— 40′	„ ...	2·56′	12′	395′	3·53′	7·50′	
109	...	1— 30′	„ ...	...	...	...	...	...	
109¾	...	1— 40′	Girder ...	...	...	...	...	...	
110½	Narwad ...	1— 20′	Arch ...	...	...	...	...	...	
112	...	1— 20′	„ ...	...	...	...	...	...	
113½	Berag	5— 30′	„ ...	10·90′	13·35′	3,096	13·25	23·55	
114	...	1— 30′	„ ...	...	...	...	...	...	Ugar, Shedbal, Narward and Berag bridges—all on a foundation of rock, masonry "trap" and coursed rubble in lime.
115¼	Waddi	6— 30′	„ ...	11′	13·53′	4,349	13·83	25·30	Foundation hard moorum, masonry "trap" and coursed rubble in lime.
116½	Miraj	5— 30′	„ ...	14′	10·91′	2,700	6·25	21·90′	Foundation rock, masonry "trap" and coursed rubble in lime.
	Miraj station ...	...	„ ...	...	...	...	...	...	
118¼	Mulli	2— 40′	Girder ...	...	...	...	...	...	
120	...	1— 20′	Arch ...	...	...	...	...	...	
120⅛	...	2— 20′	„ ...	...	...	...	...	...	
121¼	Burtali ...	3— 20′	„ ...	...	...	...	...	...	
124¼	Budgaon ...	4— 40′	Girder ...	7′	7′	3,675	11·15	19·75	Foundation hard moorum, masonry "trap" and coursed rubble in lime.
124¾	...	1— 30′	Arch ...	...	...	...	...	...	
126½	Bissur	6— 40′	Girder ...	18·74′	6′	4,849′	10·08′	24·20′	Foundation rock, masonry "trap" and coursed rubble in lime.
127½	Nagaon ...	6— 40′	„ ...	14·7′	6′	4,320′	11′	22·40	

BRIDGES—*cont.*

Mile.	Name.	Openings.	Description.	Rise of flood-water above low water level, feet.	Maximum velocity in flood per second, feet.	Flood area of openings, feet.	Height of underside of girders or soffit of arch.		Remarks.
							Above flood-level.	Above river-bed.	
130	Yerla river ...	10—60′	Girders ...	19·25′	12·6′	11,315	8′	32′	Foundation hard moorum. The Yerla river bridge is one of the largest on this branch. The roadway is carried on plate girders strongly braced together and further strengthened by deck plates. The girders rest on wrought-iron plates bedded on ashar blocks. The transverse sleepers are fixed 1′ 6″ apart to the upper flanges of the girders by hook bolts every alternate sleeper carrying the footpath.
132½	...	2—20′	Arch ...	...	...	...	...	...	
125¼	...	1—20′	Girder ...	...	...	...	...	..	
135½	...	3—20′	„ ...	...	...	...	...	...	
	...	1—20′	„ ...	...	...	...	...	...	
140	...	2—30′	Arch ...	...	...	...	...	...	
140¾	...	3—20′	„ ...	...	...	...	....	...	
142½	...	2—30′	„ ...	...	...	...	...	...	
144¼	Kundal ...	3—30′	„ ...	...	...	...	...	...	
146¼	...	1—30′	„ ...	...	...	...	...	...	
149¾	...	2—20′	„ ...	...	...	...	...	...	
154⅜	...	1—20′	„ ...	...	...	...	...	...	
154¾	...	2—20′	„ ...	...	...	...	...	...	
156¼	Shenoli ...	1—20′	„ ...	...	...	...	...	...	
156¾	...	1—20′	„ ...	...	...	...	...	...	
157¾	...	2—20′	„ ...	...	...	...	...	...	
160¼	...	1—30′	„ ..	...	...	...	...	...	
161¼	...	1—30′	„ ...	...	...	...	...	...	
162	...	1—30′	„ ...	...	...	...	...	...	
163½	Karad ...	1—30′	„ ...	...	...	...	...	...	
165	...	2—30′	„ ...	...	...	...	...	...	
165½	...	2—30′	„ ...	...	...	...	..	...	
167¾	...	1—20′	„ ...	...	...	...	...	...	
170½	...	2—30′	„ ...	...	...	...	...	...	
170¾	Musoor ...	5—30′	Arches ...	10′	17·5	4,508′	20′	30′	Foundation moorum, masonry, coursed rubble in lime.
172¾	...	1—20′	„ ...	...	...	...	...	...	
173¾	...	1—20′	„ ...	...	...	...	...	...	

175½	Bunchrah ...	3—30′	„ ...	...	...	...	...	...	
177½	...	1—20′	„ ...	...	...	...	...	...	
179¼	...	1—30′	„ ...	...	...	...	...	...	
180	...	1—20′	„ ...	...	...	...	...	...	
180½	...	1—30′	„ ...	...	...	...	...	...	
181	Sukira ...	3—30′	„ ...	...	...	...	...	...	
182	...	1—20′	„ ...	...	...	...	...	...	
182½	Borgaon ...	3—30′	„ ...	...	...	...	...	...	
183¾	...	1—30′	Arch ...	...	...	...	...	...	
184¾	Rahimatpur ...	4—30′	„ ...	11′	18·62′	3,900′	20′	32′	Foundation rock, masonry, stone and coursed rubble in lime.
187½	...	2—20′	„ ...	...	...	...	...	...	
188¾	Dughi ...	6—30′	„ ...	14′	27·6′	7,857′	46′	60′	Foundation rock do. do.
	Choundi ...	6—30′	„ ...	12′	7·0′	8,400′	40′	52′	Foundation do. do. do.
190½	...	1—20′	„ ...	...	...	...	...	...	
193¼	...	2—20′	„ ...	...	...	...	...	...	
193½	Koregaon ...	4—30′	„ ...	10′	19·68′	1,837′	5′	15′	Foundation do. do. do.
194⅜	...	1—20′	„ ...	...	...	...	...	...	
194¾	Wagna ...	7—30′	„ ...	10′	19′	3,188′	10′	21′	Foundation do. do. do.
199⅙	Satara ...	1—20′	„ ...	...	...	...	...	...	
199¾	...	1—20′	„ ...	...	...	...	...	...	
200½	...	1—20′	„ ...	...	...	...	...	...	
204	...	1—20′	„ ...	...	...	...	...	...	
204¼	...	2—20	„ ...	...	...	...	...	...	
205¼	Bichkool ...	1-100′	Wrought-iron truss girder.	6′	17′	3,575′	11·50′	36·50′	Foundation kunker clay.
207¼	Talkhereo ...	3—30′	Arches ...	9′	12′	2,871′	27′	39′	Foundation rock.
208¼	...	1—20′	„ ...	...	...	...	...	...	
208¾	...	1—20′	„ ...	...	...	...	...	...	
215¾	...	1—20′	„ ...	...	...	...	...	...	
216¼	...	1—20′	„ ...	...	...	...	...	...	
223½	Surtha ...	3—30′	„ ...	7′	10′	2,407′	18′	34·50′	Foundation rock.
229⅙	Neera river ...	12—50′	Arches ...	27·50	12·27′	19,444′	15′	47′	Do.
231⅜	...	1—40′	Girder ...	...	...	...	...	...	
231½	...	1—20′	Arch ...	...	...	...	...	...	
234⅜	...	2—20′	„ ...	...	...	...	...	...	
236¼	...	1—20′	Girder ...	...	...	...	...	...	
243¼	...	1—20′	Arch ...	...	..	...	...	...	
243¾	...	1—20′	„ ...	...	...	...	...	...	

BRIDGES—*cont.*

Mile.	Name.	Openings.	Description.	Rise of flood-water above low-water level, feet.	Maximum velocity in flood per second, feet.	Flood area of openings, feet.	Height of underside of girders or soffit of arch.		Remarks.
							Above flood-level.	Above river-bed.	
244½	...	1—20′	Girder ...	...	...	...	...	...	
	...	1—20′	„ ...	...	...	...	...	...	
246¼	...	1—20′	„ ..	...	...	...	...	...	
247¼	...	1—20′	„ ...	...	...	...	...	...	
248¼	Kurra river ...	8—30′	Arches ..	19·50′	11′	9,180′	25′	46′	Foundation rock.
252¾	...	1—20′	„ ...	...	...	...	...	...	
253¾	...	2—20′	„ ...	...	...	...	...	...	
264½	...	1—20′	„ ...	...	...	...	...	...	
	...	1—20′	„ ...	...	...	...	...	...	
266¾	...	1—20′	„ ...	...	...	...	...	...	
268	Jambar ...	3—20′	„ ...	...	...	...	...	...	
269½	Dhabohabi ...	3—20′	„ ...	...	...	...	...	...	
270¾	...	1—20′	„ ...	...	...	...	...	...	
272	...	1—20′	„ ...	...	...	...	...	...	
272¾	...	1—40′	„ ...	...	...	...	...	...	
274¾	...	1—20′	„ ...	...	...	...	...	...	
275½	...	1—40′	Girder ...	...	...	...	...	...	
276¾	...	1—20′	Arch ...	...	...	...	...	...	

NOTE.—All the bridges on the Poona Branch are built in accordance with the types given. The stone depends upon the locality, being either sandstone or "trap." Lime mortar has been used throughout.

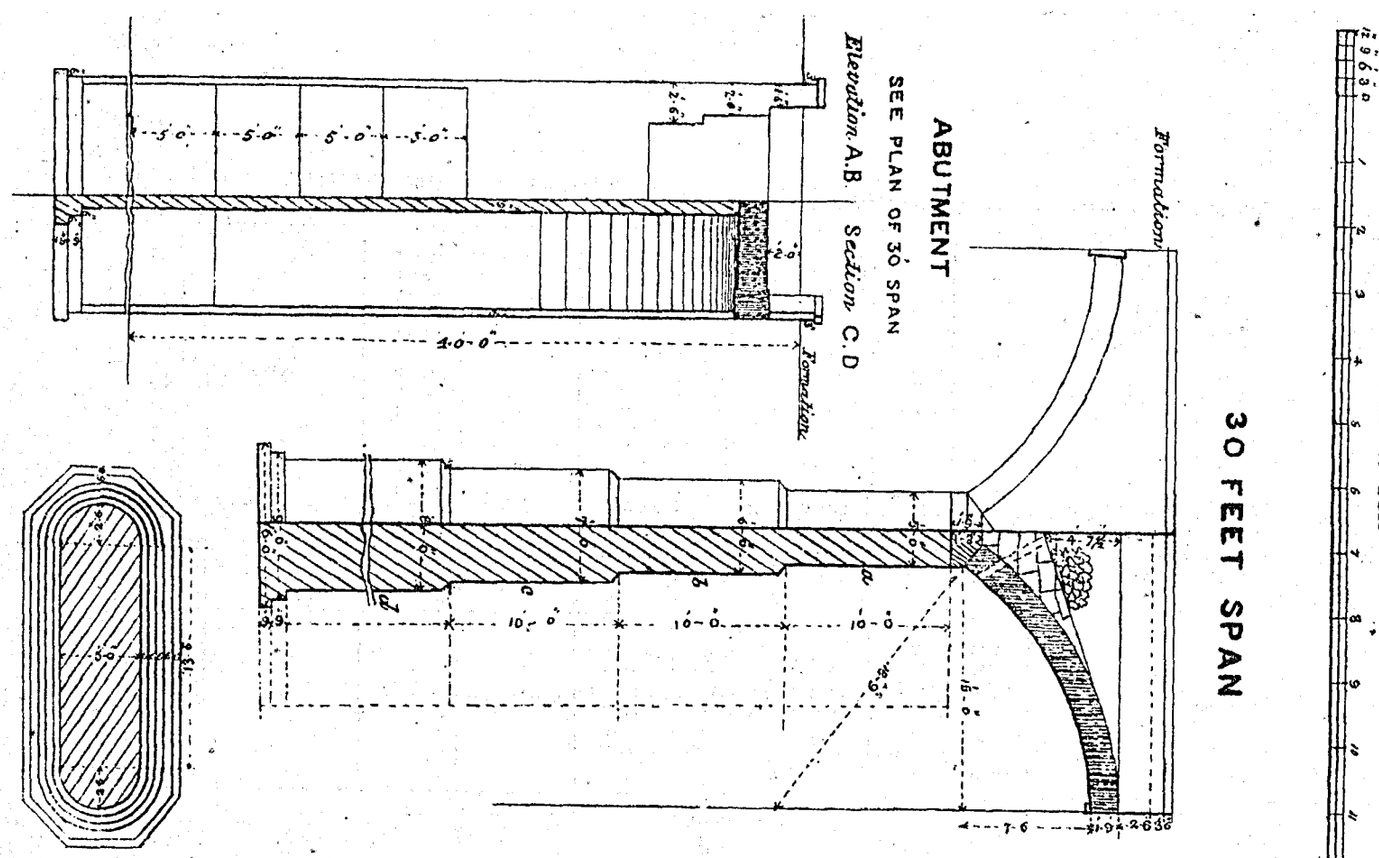
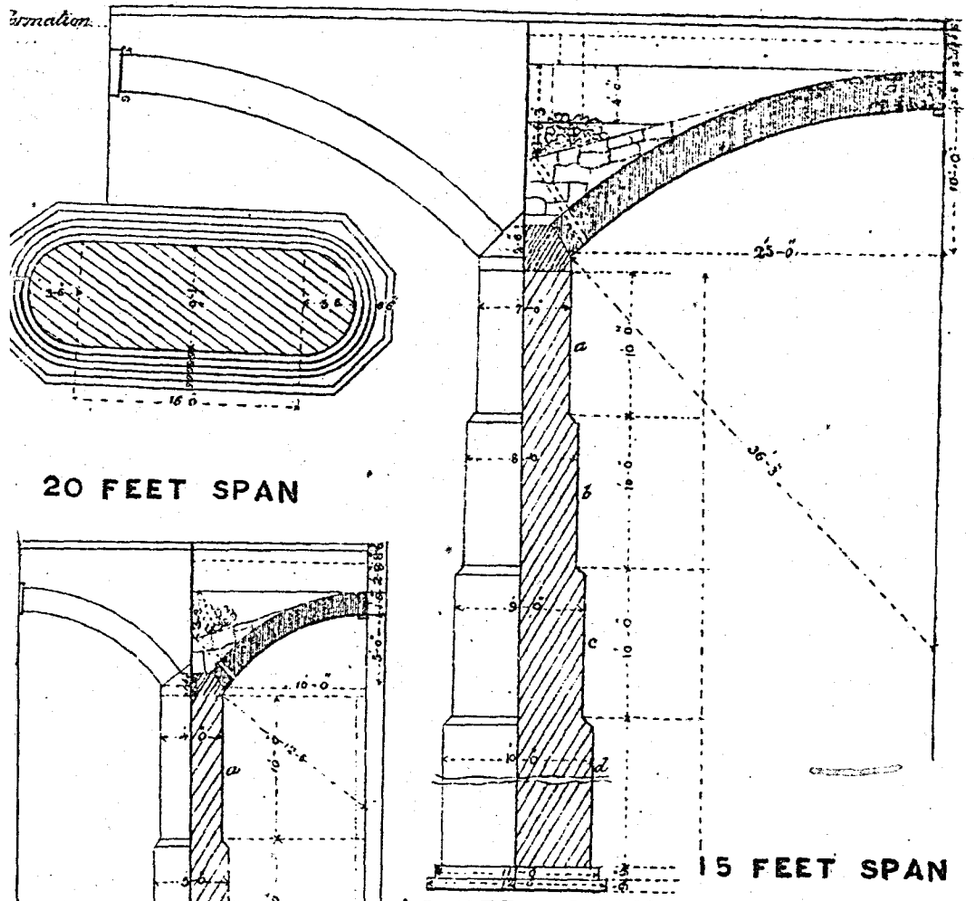
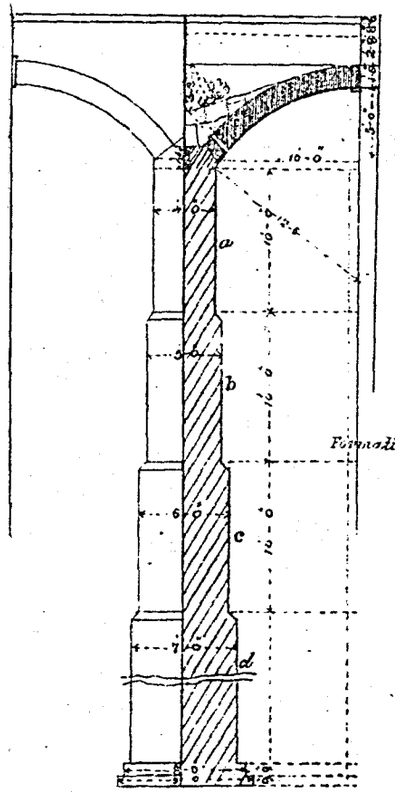


Photo-Zincographed in Central Survey Office, Madras.

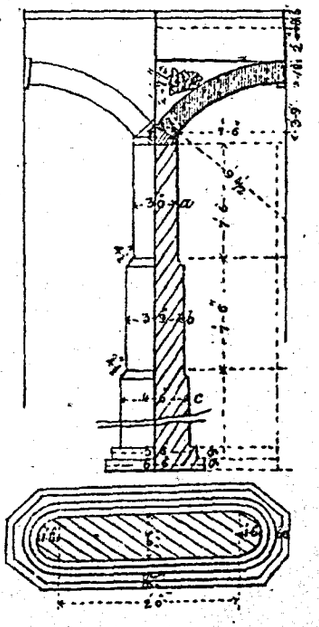
50 FEET SPAN



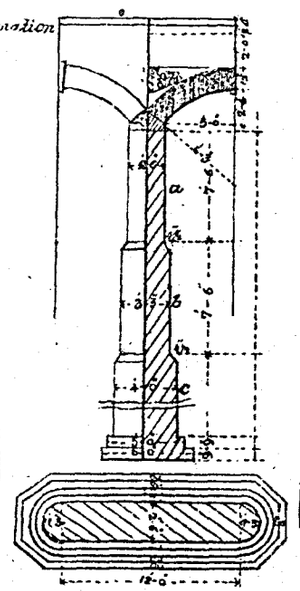
20 FEET SPAN



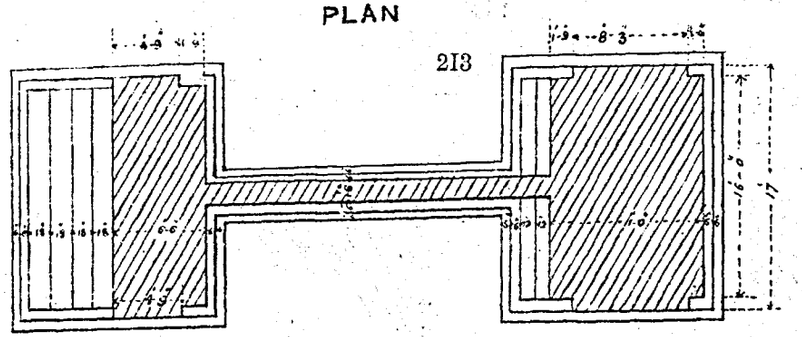
15 FEET SPAN



10 FEET SPAN

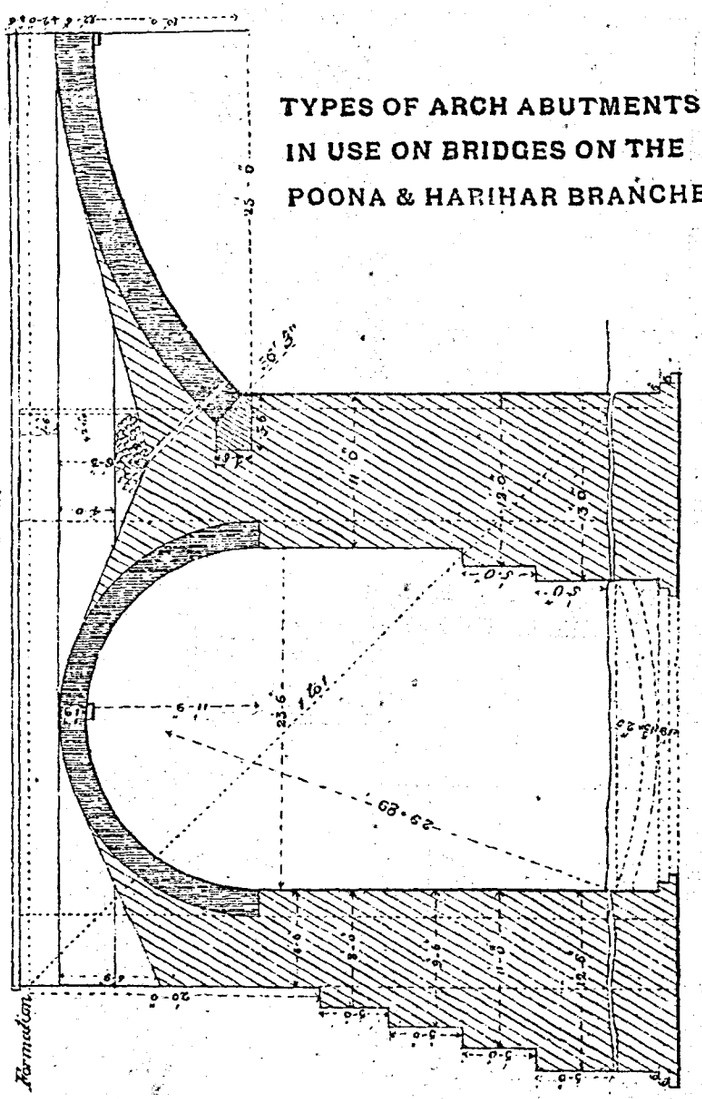


PLAN

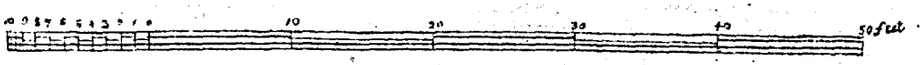


TYPES OF ARCH ABUTMENTS
IN USE ON BRIDGES ON THE
POONA & HARIHAR BRANCHES S.M.R.

50 FEET SPAN
40 BANK



Scale of 12 feet to an Inch



30 FEET SPAN

40 BANK

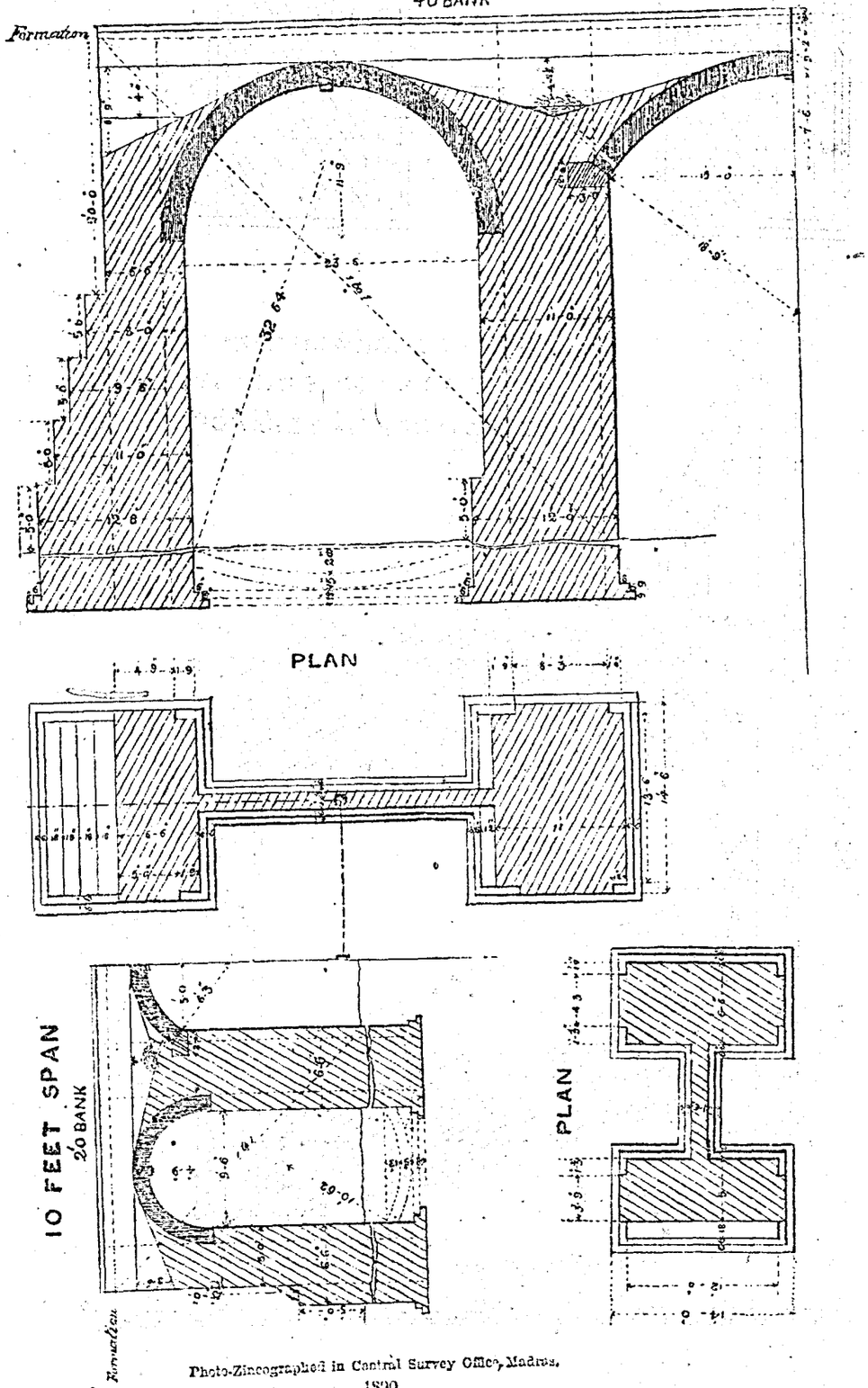


Photo-Zincographed in Central Survey Office, Madras.
1890

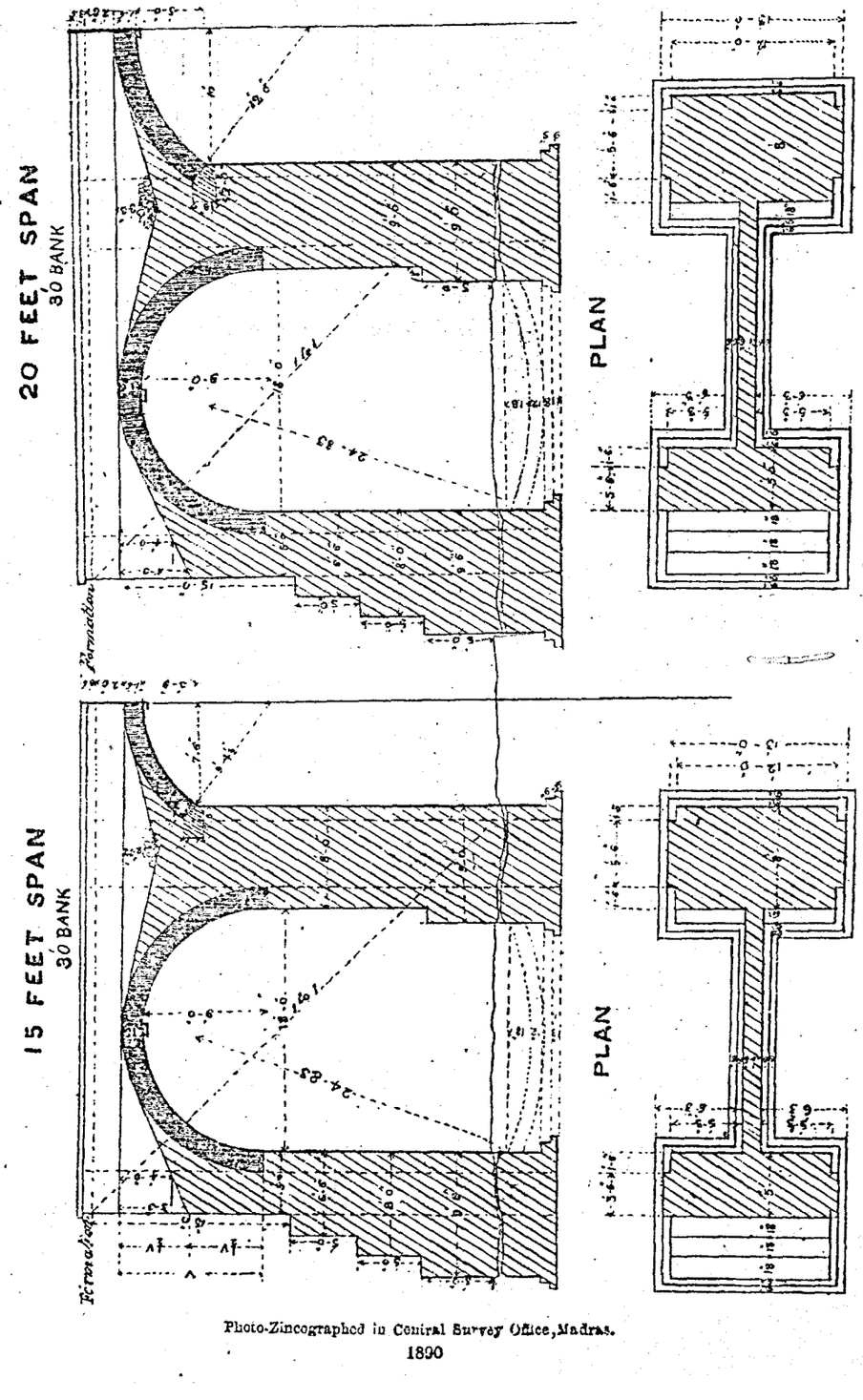
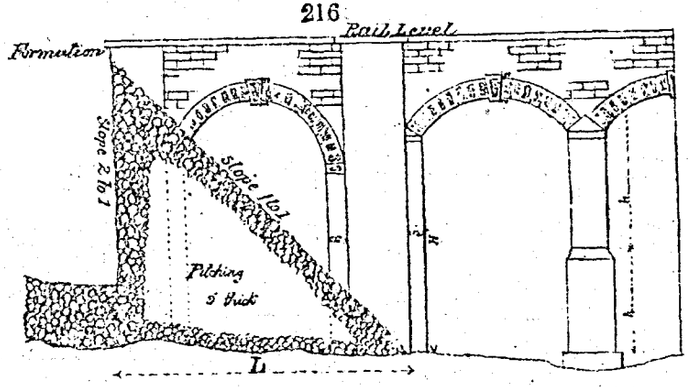


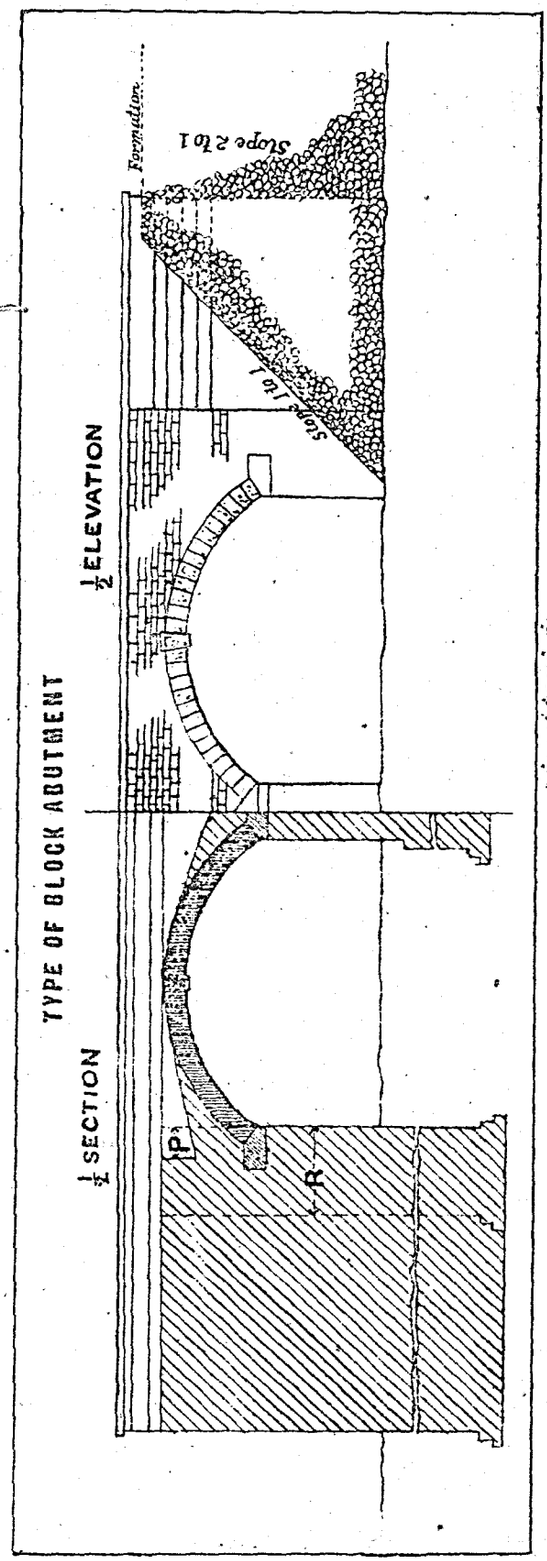
Photo-Zincographed in Central Survey Office, Madras.
1890

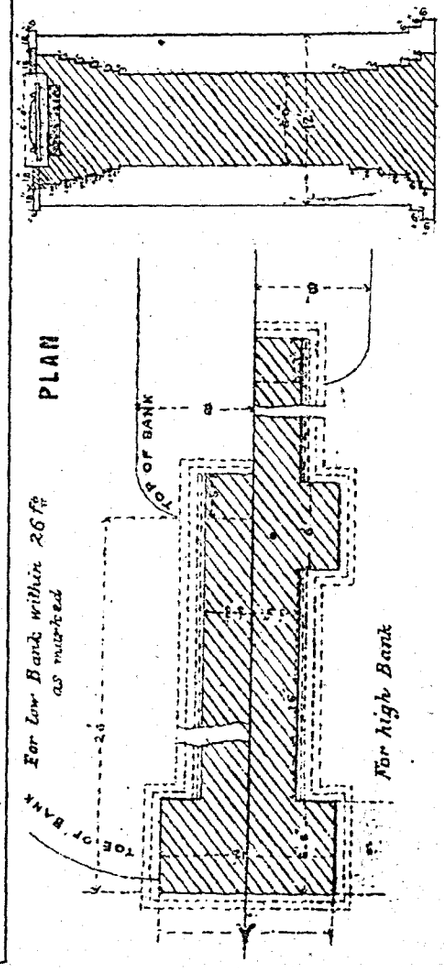


Note x-l

For spans of 15 feet and under h-7-6

— do — 20 feet and over h-10-6





STATIONS.

Name of station.	Class and description; if watering, engine, fuel.	Situation.			Nature of soil.
		Mileage.		On what curve or gradient.	
		From Poona.	Between stations.		
Poona Junction ...	1st W.E.F. ...	0	0	...	...
Phursangi	4th W. ...	10¼	10¼	L. and S.	Red.
Alandi	4th ...	15	4¾	½ on curve L and 1,000	Do.
Ragewadi	4th W. ...	24¼	9¼	L. and S.	Do.
Jejuri	4th A.W. ...	31¾	7½	Do.	Do.
Walhe	4th W. ...	41¼	9½	Do.	Do.
Lonand	4th ...	52½	11¼	Do.	Do.
Salpa	4th W. ...	58	5½	Do.	Do.
Wathar	4th W. ...	68¼	10¼	Do.	Do.
Satara Road ...	4th ...	77½	9¼	Do.	Red and black.
Koregaon	2nd W.F.E. ...	83½	6	Do.	Black.
Rahimatpur ...	4th ...	90¼	6¾	Do.	Black and moorum.
Targaon	4th A.W. ...	97	6¾	Do.	Black.
Masur	4th ...	105	8	Do.	Moorum.
Karad	4th W. ...	113½	8½	Do.	Black.
Shenoli	4th ...	121¾	8¼	curve L and 1433′	Rock and moorum.
Takari	4th ...	130¼	8½	L. and S.	Black and moorum.
Kundal Road ...	4th W. ...	135¼	5	Do.	Black.
Ashta Road ...	4th ...	143¾	8½	Do.	Black and moorum.
Sangli	4th ...	153½	9¾	Do.	Black.
Miraj	2nd W.F.E. ...	159½	6	...	Do.
Shedbal	4th ...	170	10½	L. and S.	Do.
Kudchi	4th W. ...	180	10	Do.	Black and moorum.
Raibag	4th ...	190¾	10¾	Do.	Black.
Chikodi Road ...	4th W. ...	199½	8¾	curve of L and 2865′	Rock.
Gokal Road ...	3rd ...	208¾	9¼	curve of L and 5729·65′	Red.
Pachapur	4th W. ...	222¼	13½	L. and S.	Black.
Sulebhavi	4th ...	235	12¾	Do.	Do.
Belgaum	2nd W.F.E. ...	244½	9½	Do.	Red.
Desur	4th ...	251¼	6¾	Do.	Do.
Khanapur	4th A.W.F. ...	260½	9¼	Do.	Do.
Gunji	4th ...	268	7½	Do.	Do.
Londa Junction ...	1st W.F. ...	277½	9½	Do.	Do.

STATIONS—*cont.*

Name of station.	Buildings.					
	Passenger.		Goods.		Workshops.	
	Nature.	Size.	Nature.	Size.	Nature.	Size.
Poona Junction...		80′ × 32′ Temporary.		109′ × 17′ Temporary.	Loco. for repairs.	
Phursangi ...	Stone in lime with Mangalore tile roof.	36′ × 32′	...	...	...	...
Alandi		36′ × 32′	...	...	...	...
Rajewadi ...		36′ × 32′	...	...	...	...
Jejuri		65′ × 30′	...	...	...	...
Walhe		36′ × 32′	...	...	...	...
Lonand		40′ × 28′	Cor. iron, Mangalore tiles.	84′ × 24′	...	...
Salpa		36′ × 32′	...	...	...	...
Wathar		154′ × 35′	Cor. iron, Mangalore tiles.	84′ × 24′	...	...
Satara Road ...		76′ × 23′	Cor. iron, Mangalore tiles.	84′ × 24′	...	...
Koregaon ...		95′ × 35′	Stone	146′ × 20′	Loco. for repairs.	
Rahimatpur ...		95′ × 35′	...	...	...	...
Targaon		36′ × 35′	...	...	...	...
[illegible]		80′ × 35′	...	...	...	...
Karad		95′ × 35′	Stone	63′ × 37′	...	...
Shenoli		36′ × 32′	...	...	...	...
Takari		36′ × 32′	...	...	...	...
Kundal Road ...		36′ × 32′	Cor. iron, Mangalore tiles.	84′ × 24′	...	...
Ashta Road ...		46′ × 35	Cor. iron, Mangalore tiles.	84′ × 24′	...	...
Sangli		71′ × 35′	...	...	...	...
Miraj		183 × 34	...	180 × 24′	Loco. for repairs.	
Shedbal		34′ × 24′	...	...	...	...
Kudchi		46′ × 35′	...	...	...	...
Raibag		36′ × 32′	...	...	...	...
Chikodi Road ...		46′ × 35′	...	...	...	...
Gokak Road ...		71′ × 35′	Cor. iron, Mangalore tiles.	84′ × 24′	...	...
Pachapur ...		37′ × 35′	...	...	...	...
Sulebhavi ...		36′ × 32′	...	...	...	...
Belgaum ...		174 × 34′	Stone	120′ × 33′	Loco. for repairs.	
Desur		36′ × 32′	...	...	...	...
Khanapur ...		38′ × 28′	...	...	...	...
Gunji		36′ × 32′	...	...	...	...
Londa Junction...		...	See "Main line" ...	...	...	...

STATIONS—*cont.*

Name of station.	Buildings—*cont.*				
	Others, such as staff quarters, &c.		Latrines.	Engine.	
	Number.	Size.	Number.	Size.	Capacity.
Poona Junction.	7	2 (40 × 36′ 7″) 2 (64′ 6″ × 31′) (102′ × 26′) (39′ × 21′) (70′ 9″ × 24′ 6″).	2	...	...
Phursangi	2	(46′ 9″ × 18′ 6″) (70′ 6″ × 24′ 6″)	1	...	...
Alandi	3	38′ × 35′) (70′ 6″ × 24′ 6″) (25′ × 12′).	1	...	...
Rajewadi	2	(70′ 6″ × 24′ 6″) (46′ 9″ × 18′ 6″).	1	...	...
Jejuri	2	(35′ 6″ × 31′ 9″) (46′ 9″ × 18′ 6″)	1	...	...
Walhe	2	(46′ 9″ × 18′ 6″) (70′ 6″ × 24′ 6″).	1	...	...
Lonand	2	(46′ 9″ × 18′ 6″) (35′ 6″ × 31′ 9″)	1	...	...
Salpa	1	(46′ 9″ × 18′ 6″).	1	...	...
Wathar ...	3	(46′ 9″ × 18′ 6″) (35′ 6″ × 31′ 9″) (33′ × 48′).	2	...	...
Satara Road ...	3	(35′ 6″ × 31′ 9″) (46′ 6″ × 18′ 6″) (70′ 6″ × 24′ 6″).	2	...	...
Koregaon ...	12	(70′ 6″ × 24′ 6″) (52′ × 35′) (32′ × 12″) (91′ 9″ × 18′ 6″) (35′ 6″ × 31′ 9″) (35′ × 30′) (36′ × 32′) (25′ × 12′) (27 × 22) (56 × 25) (30 × 18) (31′ 9″ × 24′).	1	90′ × 36′	4 engines.
Rahimatpur ...	2	(68′ × 18′ 6″) (35′ 6″ × 31′ 9″) (34′ × 24′) (45′ × 12′).	1	...	...
Targaon ...	2	(68′ × 18′ 6″) (35′ 6″ × 31′ 9″).	1	...	...
Masur ...	2	(35′ 6″ × 31′ 9″) (68′ × 18′ 6″).	1	...	...
Karad ...	3	(91′ 9″ × 18′ 6″) (35′ 6″ × 31′ 9″) (40′ × 22″).	1	...	...
Shenoli ...	2	(46′ 9″ × 18′ 6″) (30′ × 27′) ...	1	...	...
Takari	2	(46′ 9″ × 18′ 6″) (70′ 6″ × 24′ 6″)	1	...	...
Kundal Road ...	2	(46′ 9″ × 18′ 6″) (70′ 6″ × 24′ 6″).	1	...	...
Ashta Road ...	2	(68′ × 18′ 6″) (35′ 6″ × 31′ 9″)			
Sangli	2	(68 × 18′ 6″) (34′ × 24′) ...	1	...	...
Miraj	12	2 (105′ 3″ × 33″) 2 (58′ × 35′ 9″) (41 × 24′ 6″) (27′ 9″ × 21′ 6″) (39′ 9″ × 31′ 9″) 2 (70′ 3″ × 33) (45′ 6″ × 39′) (27′ 9″ × 22′) (36 × 32′ 6″).	1	90 × 75	8 engines.
Shedbal	3	(38′ × 45′) (29′ 8″ × 23′ 8″) (43′ × 11′).	1	...	...
Kudchi	3	(35′ 6″ × 31′ 9″) (46′ 9′ × 18′ 6″) (98′ × 24′ 5″).	1	...	...
Raibag	1	(46′ 9″ × 18′ 6″)	1	...	...
Chikodi Road ...	2	(68′ × 18′ 6″) (39′ 9″ × 31′ 9″).	1	...	...
Gokak Road ...	3	(70′ 6″ × 24′ 6″) (68′ × 18′ 6″) (39′ 9″ × 31′ 9″).	1	...	...
Pachapur	3	(46′ 9″ × 18′ 6″) (39′ 9″ × 31′ 9″) (70′ 6″ × 24′ 6″).	1	...	...
Sulebhavi ...	2	(46′ 9″ × 18′ 6″) (70′ 6″ × 24′ 6″).	1	...	...
Belgaum ...	18	8 (70′ 3″ × 33′) (27′ 9″ × 21′ 6″) (114′ 3″ × 18′ 6″) 2 (45′ 6″ × 46′ 3″) (105′ 3″ × 33′ 9″) (70′ 6″ × 24′ 6″) (27′ 9″ × 22′) (36′ × 32′ 6″) (46′ 9″ × 18′ 6″) (74′ 9″) × 30′ 6″).	2	90 × 75	8 engines.
Desur	1	(46′ 9″ × 18′ 6″)	1	...	...
Khanapur ...	3	(68′ × 18′ 6″) (54′ × 13′) (46′ 6″ × 39′ 6″).	1	...	...
Gunji ...	1	(46′ 9″ × 18′ 6″)	1	...	...
Londa Junction...	...	See "Main line"	...	...	...

STATIONS—*cont.*

Name of station.	Platforms.			
	Passenger.		Goods.	
	Covered.	Uncovered.	Covered.	Uncovered.
Poona Junction	Temporary ...	...	...	...
Phursangi	...	All 350 feet long by 25 feet wide.	...	...
Alandi	...		...	...
Rajewadi	...		...	...
Jejuri	...		...	...
Walhe	...		...	...
Lonand	...		...	...
Salpa	...		...	...
Wathar	...		...	...
Satara Road	...		...	...
Koregaon	...		60 × 20	...
Rahimatpur	...		...	...
Targaon	...		...	...
Masur	...		...	...
Karad	...		...	...
Shenoli	...		...	...
Takari	...		...	...
Kundal Road	...		...	...
Ashta Road	...		...	...
Sangli	...		...	...
Miraj	...	800′ × 30′	...	100 × 20
Shedbal	...	...	...	...
Kudchi	NOTE.—As a waggon is 20 feet long these platforms would accommodate 17.		...	...
Raibag			...	...
Chikodi Road	...	...	...	...
Gokak Road	...	...	...	...
Pachapur	...	...	...	...
Sulebhavi	...	...	...	...
Belgaum	...	600′ × 20′	60′ × 30′	240′ × 20′
Desur	...	350′ × 30′	...	...
Khanapur	...	350′ × 30′	...	...
Gunji	...	350′ × 30′	...	...
Londa Junction ...	...	...	...	...
	All passenger are 1′ 3″ high. All goods are 2′ 3″ high.			

STATIONS—*cont.*

Name of station.	Watering arrangements.							
	Wells.		Tanks.			Pumps.	Hydrants.	Water columns.
	No.	Nature.	Size.	Capacity, gallons.	Time to refill.			
Poona Junction ...	1	Masonry 15′ diam.	...	3,600	2½ hours.	1	...	...
Phursangi ...	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 ,,	1	...	2
Alandi	...	...	...	...	...	...	...	...
Rajewadi ...	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 hours.	1	...	2
Jejuri	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 ,,	1	...	2
Walhe	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 ,,	1	...	2
Lonand	...	...	...	...	...	...	...	...
Salpa	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 hours.	1	...	2
Wathar	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 ,,	1	...	2
Satara Road ...	...	...	...	...	...	...	...	...
Koregaon	1	Masonry 15′ diam.	28′ × 15′ × 5′	12,000	8 hours.	1	1	2
Rahimatpur ...	...	...	...	...	...	...	...	...
Targaon	1	Masonry 11′ diam.	...	1,800	2 hours.	1	...	...
Masur		...	...	...	...	...	...	...
Karad	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 hours.	1	...	2
Shenoli	...	...	...	...	...	...	...	...
Takari	...	...	...	...	...	...	...	...
Kundal Road ...	1	Masonry 11′ diam.	13′ × 13′ × 5′	5,000	6 hours.	1	...	2
Ashta Road ...	...	...	...	...	...	...	...	...
Sangli	...	...	...	...	...	...	...	2
Miraj	1	Masonry 15′ diam.	28′ × 28′ × 5′	24,000	6 by steam. 12 by hand.	1 steam.	...	2
Shedbal	...	...	...	...	...	...	...	...
Kudchi	1	Masonry 15′ diam.	12′ × 12′ × 5′	3,000	2 hours.	1	...	2
Raibag	...	...	...	...	...	...	...	...
Chikodi Road ...	1	Masonry 15′ diam.	13′ × 13′ × 5′	5,000	6 hours.	1	...	2
Gokak Road ...	1	Masonry 15′ diam.	Temp. iron.	2,000	1 hour.	1	...	2
Pachapur	1	Masonry 15′ diam.	12′ × 12′ × 5′	3,000	2 hours.	1	...	2
Sulebhavi ...	...	...	...	...	...	...	...	...
Belgaum	1	15′ diam. 33′ deep.	28½ × 28½ × 5′	25,380	1 hour.	1 steam.	...	2
Desur	...	...	...	...	...	...	...	...
Khanapur ...	1	11′ diam. 30′ deep.	13′ × 13′ × 5′	5,000	2 hours.	2	...	2
Gunji	...	...	...	...	...	...	...	...
Londa Junction ...	...	... All steined wells.	See "Main line."			...	...	2

STATIONS—*cont.*

Name of station.	Fuel.			Telegraph.	
	Stage.	Kind.	Where stored.	Number and description of instruments.	Number and nationality of signallers.
Poona Junction ...	1	Coal ...	Poona ...	3 Morse, 1 Block.	5 natives.
Phursangi	...	" ...	...	1 " 2 "	1 "
Alandi	...	" ...	...	1 " 2 "	1 "
Rajewadi	...	" ...	...	1 " 2 "	1 "
Jejuri	...	" ...	...	1 " 2 "	1 "
Walhe	...	" ...	...	1 " 2 "	1 "
Lonand	...	" ...	...	1 " 2 "	1 "
Salpa	...	" ...	...	1 " 2 "	1 "
Wathar	...	" ...	...	1 " 2 "	1 "
Satara Road ...	...	" ...	...	1 " 2 "	1 "
Koregaon	1	" ...	Koregaon.	2 " 2 "	6 "
Rahimatpur ...	...	" ...	...	1 " 2 "	1 "
Targaon	...	" ...	...	1 " 2 "	1 "
Masur	...	" ...	...	1 " 2 "	1 "
Karad	...	" ...	...	1 " 2 "	1 "
Shenoli	...	" ...	...	1 " 2 "	1 "
Takari	...	" ...	...	1 " 2 "	1 "
Kundal Road ...	...	" ...	...	1 " 2 "	1 "
Ashta Road ...	...	" ...	...	1 " 2 "	1 "
Sangli	...	" ...	...	1 " 2 "	1 "
Miraj	1	Wood.	Miraj ...	1 " 2 "	6 "
Shedbal	...	" ...	...	1 " 2 "	2 "
Kudchi	...	" ...	...	1 " 2 "	1 "
Baibag	...	" ...	...	1 " 2 "	1 "
Chikodi Road ...	...	" ...	...	1 " 2 "	1 "
Gokak Road ...	...	" ...	...	1 " 2 "	1 "
Pachapur	...	" ...	Large store kept at Khanapur and Belgaum.	1 " 2 "	1 "
Sulebhavi	...	" ...		1 " 2 "	1 "
Belgaum	1	" ...		2 " 2 "	3 { 1 Eurasian. 2 natives.
Desur	...	" ...		1 " 2 "	1 native.
Khanapur	1	" ...		1 " 2 "	1 "
Gunji	...	" ...		1 " 2 "	1 "
Londa Junction ...	...	" ...	...	...	...
				24 Block & Morse	Batteries at all small stations, at large about double.

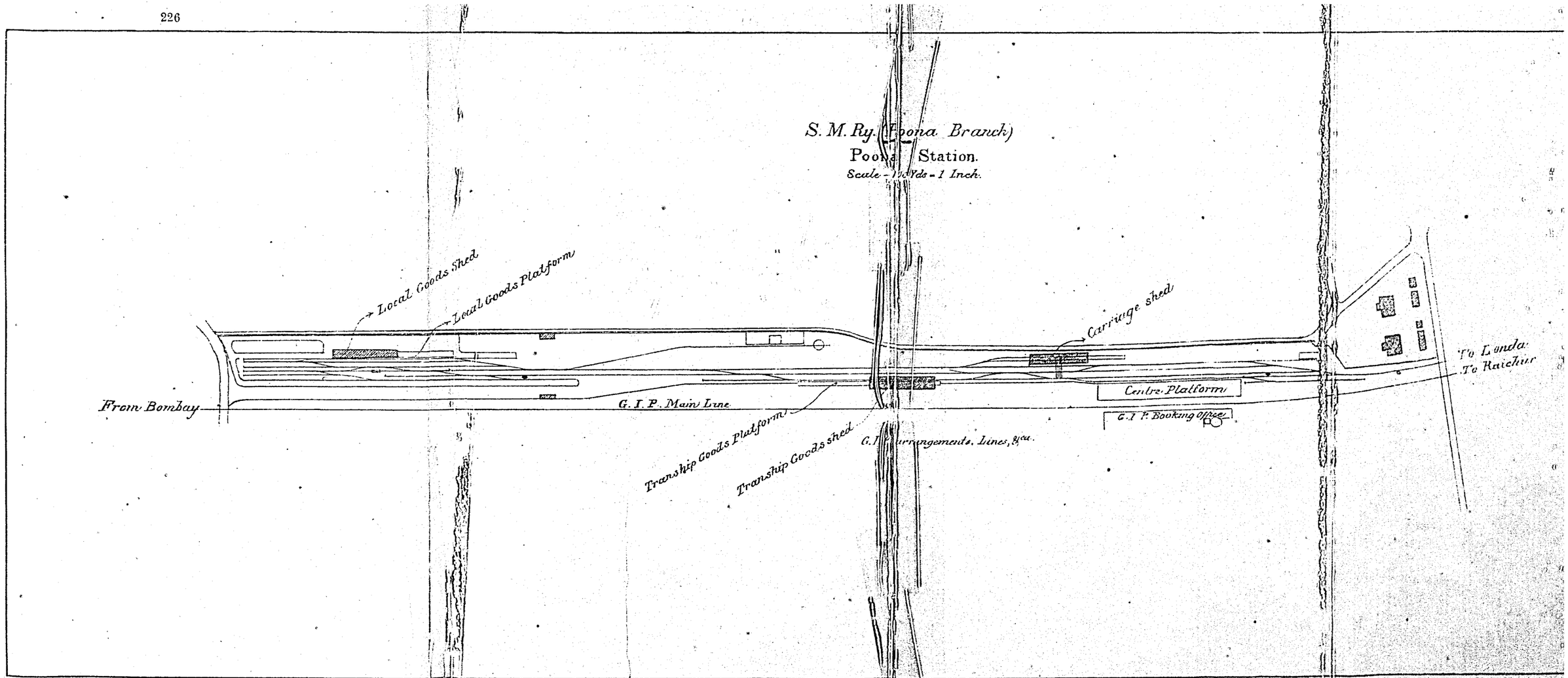
The number of signallers vary according to work.

STATIONS—*cont.*

Name of station.	Sidings.		Cross-overs and Turn-outs.	Dead ends.		Signals.	
	No.	Length.		No.	Length.	Home.	Distant.
Poona Junction ...	...	17,836′	39	...	...	1	2
Phursangi	...	1,925′	3	1	275′	1	2
Alandi	...	1,100′	3	1	"	1	2
Rajewadi	...	2,150′	3	1	"	1	2
Jejuri	...	2,400′	4	1	"	1	2
Walhe	...	2,000′	3	1	"	1	2
Lonand	...	2,050′	3	1	"	1	2
Salpa	...	1,850′	3	1	"	1	2
Wathar	...	3,350′	8	1	"	1	2
Satara Road	...	2,800′	6	1	"	1	2
Koregaon	...	6,600′	13	1	"	1	2
Rahimatpur	...	3,448′	5	1	"	1	2
Targaon	...	1,933′	3	1	"	1	2
Masur	...	2,000′	3	1	"	1	2
Karad	...	2,725′	4	1	"	1	2
Shenoli	...	1,855′	3	1	"	1	2
Takari	...	1,775′	3	1	"	1	2
Kundal Road	...	3,300′	8	1	"	1	2
Ashta Road	...	3,980′	10	1	"	1	2
Sangli	...	1,711′	3	1	"	1	2
Miraj	...	10,000′	13	1	"	1	2
Shedbal	...	1,785′	3	...	...	1	2
Kudchi	...	1,810′	3	...	...	1	2
Baibag	...	1,706′	3	...	...	1	2
Chikodi Road	...	1,621′	4	...	...	1	2
Gokak Road	...	1,628′	3	...	...	1	2
Pachapur	...	1,245′	3	...	...	1	2
Sulebhavi	...	1,245′	3	...	...	1	2
Belgaum	...	11,600′	10	...	...	1	2
Desur	...	1,400′	3	...	...	1	2
Khanapur	...	1,535′	4	...	...	1	2
Gunji	...	1,400′	3	...	...	1	2
Londa Junction ...	...	...	See "Main line."			1	2

STATIONS—*cont.*

Name of station.	Weigh-bridges.	Weighing machines.	Mechanical lifting power.	Turn-tables.	Ashpits.	Carriage examination pits.	Station yard, area.
Poona Junction ...	...	1	...	1	2	...	50 acres.
Phursangi	...	1	...	...	...	...	2,200′ × 300′
Alandi	...	1	...	...	...	...	4½ acres.
Rajewadi	...	1	...	...	...	...	2,200′ × 300′
Jejuri	...	1	...	...	...	...	2,100′ × 300′
Walhe	...	1	...	...	...	...	2,200′ × 288′
Lonand	...	1	...	...	...	...	2,300′ × 380′
Salpa	...	1	...	1	...	...	2,100′ × 230′
Wathar	...	1	...	...	...	...	2,200′ × 277′
Satara Road ...	...	1	...	...	...	...	2,200′ × 290′
Koregaon	...	1	...	...	2	...	2,500′ × 450′
Rahimatpur ...	...	1	...	...	...	...	2,200′ × 370′
Targaon	...	1	...	...	...	...	2,300′ × 350′
Masur	...	1	...	...	..	...	2,200′ × 350′
Karad	...	1	...	...	...	...	2,200′ × 350′
Shenoli	...	1	...	...	...	...	Do.
Takari	..	1	...	...	...	...	Do.
Kundal Road ...	...	1	...	...	...	...	Do.
Ashta Road ...	...	1	...	...	...	...	Do.
Sangli	...	1	...	...	...	...	Do.
Miraj	1	1	...	1	2	...	2,800′ × 700′
Shedbal	...	1	...	...	...	...	2,200′ × 350′ approach road 20′.
Kudchi	...	1	...	...	...	...	
Raibag	...	1	...	...	...	...	
Chikodi Road ...	...	1	...	...	...	...	
Gokak Road ...	...	1	...	...	...	...	
Pachapur	...	1	...	...	...	...	
Sulebhavi	...	1	...	...	...	...	
Belgaum	2	2	1 hand crane and one 6 horse power engine.	1	2	1	25½ acres.
Desur	...	1	...	...	...	...	2,200′ × 350′
Khanapur	1	1	1 hand crane.	...	2	...	Do.
Gunji	...	1	...	...	...	...	Do.
Londa Junction ...	1	1	...	1	...	...	See "Main line."



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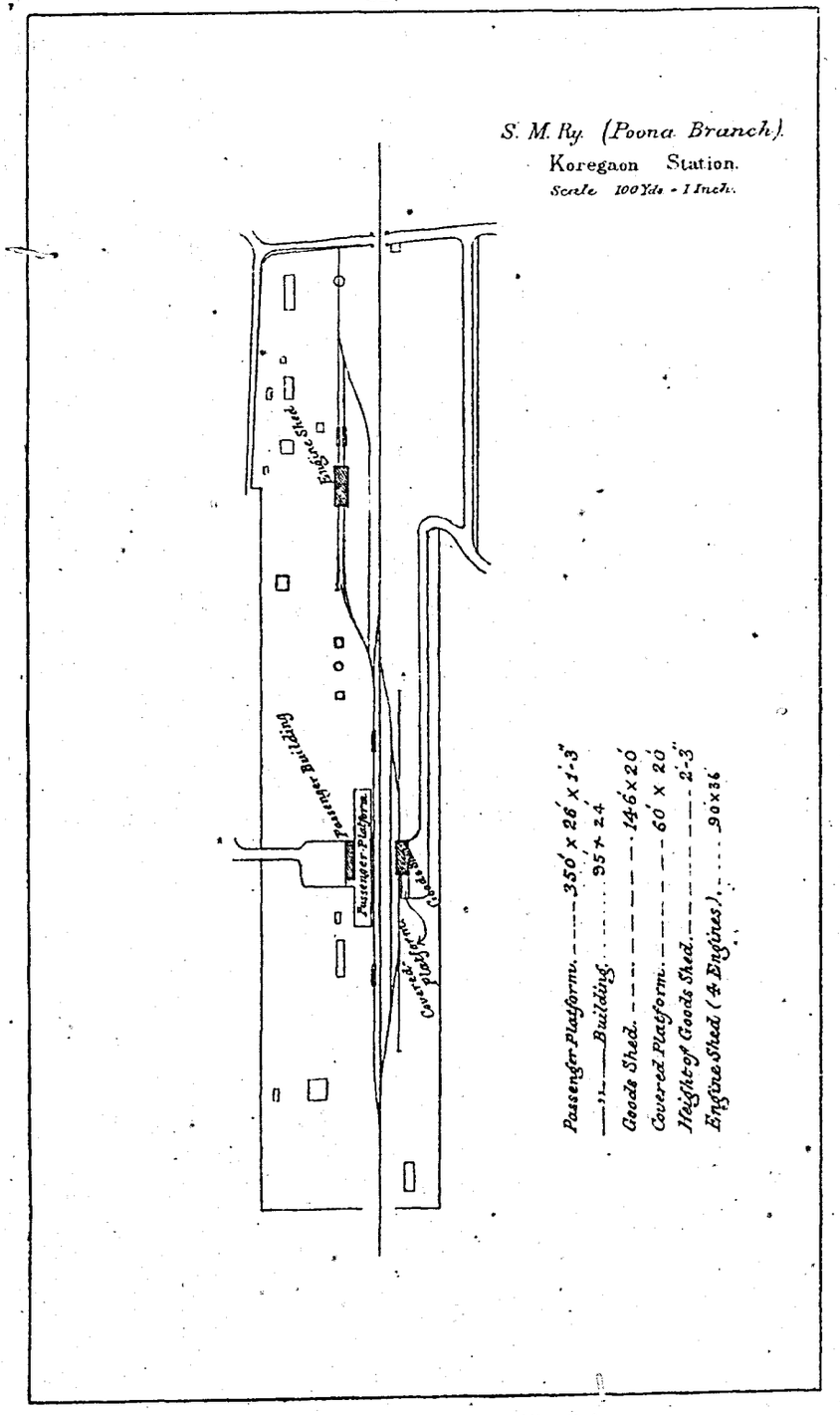

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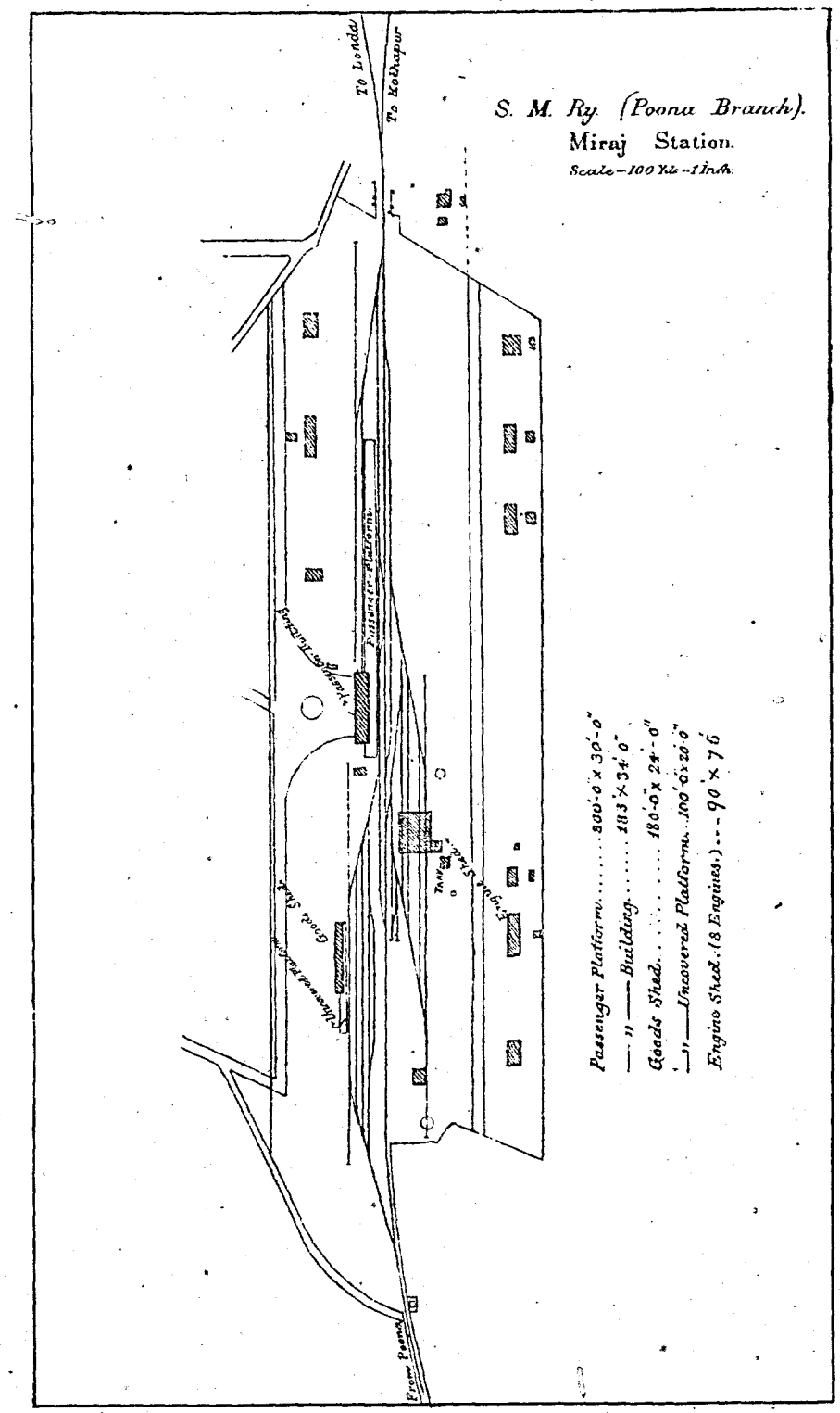

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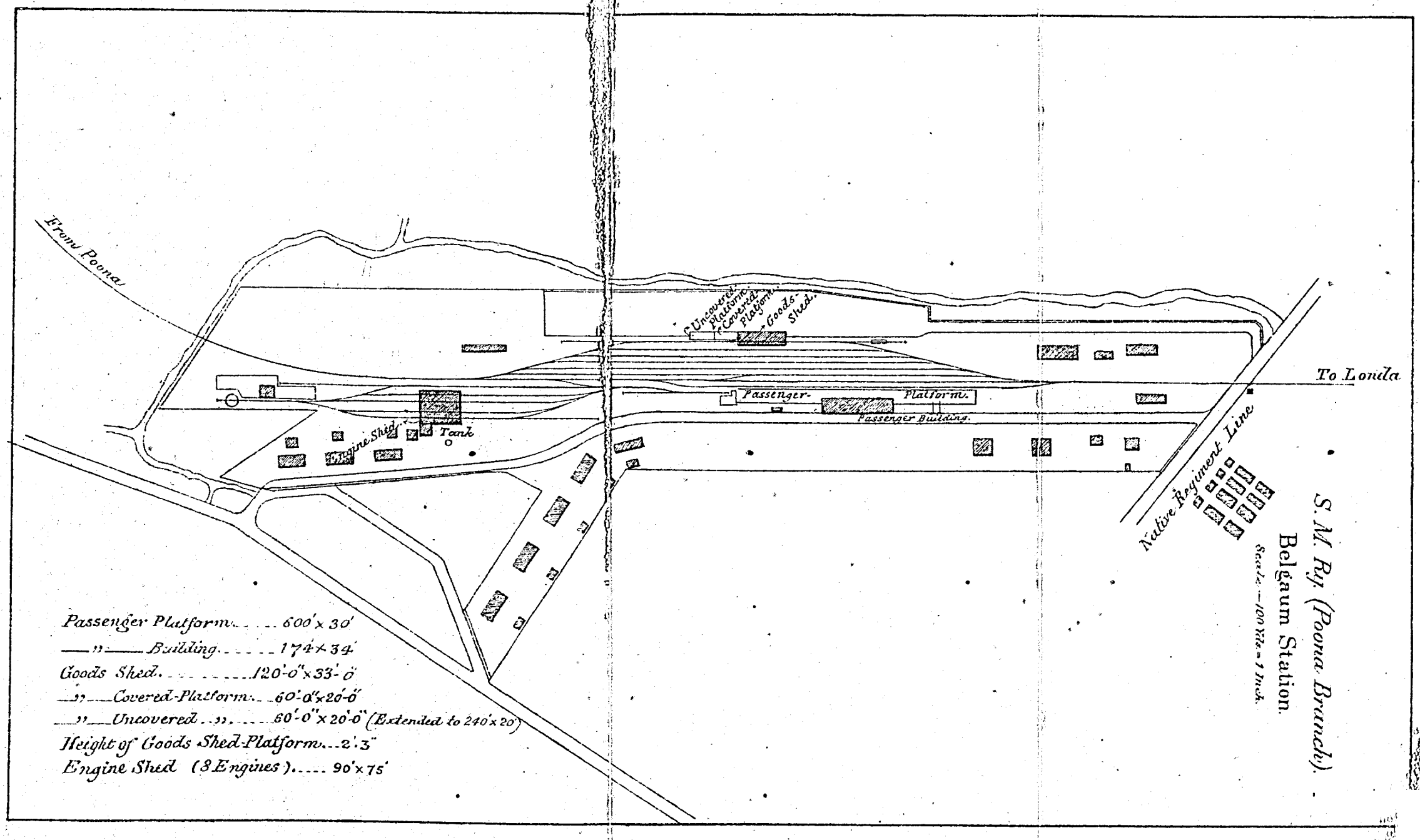

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The Country.

Londa—Poona.

From Londa up to Miraj, or a few miles north of the Krishna river, the line of rail passes through the centre of the Belgaum district, lying between 15° 23′ and 16° 58′ north latitude and 74° 5′ and 75° 28′ east longitude. This district runs parallel to the Sahyadri hills or Western Ghâts and is divided into three belts of varied plain and upland by the Malprabha river in the south, the Ghatprabha in the centre, and the Krishna river in the north, all running from west to east.

The Khanapur sub-division is first entered, the aspect of which is varied and in parts beautiful. In the south and south-west it is crowded with hills and dense forest, the people are few and unsettled, and, except in patches, tillage disappears. Towards Sambotti and in the north-west, near Bailur, the hills are lofty, their bases far stretching and their sides covered with rich brushwood. In the centre, north-east and east of the sub-division, along the Malprabha valley, the country is an open, well tilled, black-soil plain with rich and populous villages. The climate of this part is temperate and healthy during the hot months, feverish in the cold season, and sickly during the rains. North of Khanapur the drainage area of the Malprabha is separated from the Ghatprabha valley by the Belgaum hills on the west and to the east by a succession of low sandstone ranges. North of this the Ghatprabha valley, beginning in the west among rugged forest-clad hills, changes eastward near Pachapur (on the line of rail) into a waving plain, broken by lines of low hills. Further east the Ghatprabha passes through a flat black-soil plain, which, towards the north, is suddenly broken by a table-land 300 to 400 feet above the surrounding valley. Near Gokak, on both banks of the Ghatprabha, the plain is broken by ranges of low sandstone hills, and east of Gokak a wide plain of rich black soil stretches away along both sides of the river.

In the west the Chikodi sub-division is an open, well tilled black-soil plain in the north, with hills and forests in its south. The water-parting between the Krishna and Ghatprabha is marked in the west by some plateaux of poor soil 300 to 400 feet high; further east it is marked by low rolling bare hills. For two or three miles on either side of the Krishna an open, well tilled black-soil plain, dotted with many rich villages, stretches eastwards, gradually broadening as the western ranges break into single peaks. The banks of the Krishna are thickly clothed with babhul trees. North of the Krishna is a belt of deep rich soil with many small villages, beyond which the country gradually rises in waving downs.

From Miraj to the Nira river, 48 miles south of Poona, the railway runs up the centre of the Satara district, lying between 16° 50′ and 18° 10′ north latitude and 73° 45′ and 75° 0′ east longitude. This district is the head of the valley of the Krishna river, which rises on the eastern brow of Mahableshwar plateau in the extreme west of the Wai sub-division, and flows down the valley, which slowly opens into a plain across the whole district from its north-west to its south-east corner.

From the central plain of the Krishna eight valleys branch to the hills, six running west and north-west flanked by spurs from the Sahyadri range, and two north flanked by spurs from the Mahadev. In the west the country is rugged and well watered, but in the east it is flatter and generally parched and barren. Between these two stretches is the rich tract of the Krishna valley. Except in the extreme west the country is not thickly wooded.

Khatav and Khanapur is a waving plateau about 250 feet above the Krishna valley.

After crossing the Nira river the sub-division of Purandhar, in the Poona district, is entered. The country is hilly, in fact, mountainous. The different ranges tend north-east and south-west dividing it into two valleys along which flow parallel streams. The spur of the great Sahyadris range, which is the water-shed between the Nira and Bhima rivers, runs along the northern boundary of the Purandhar sub-division. This is the ghât crossed between the stations of Pharsungi and Rajewadi by this railway section.

A branch of the same spur fills the south half of the sub-division, the most important peak being crowned by the fort of Purandhar. The general level is about 2,800 feet above sea level. After crossing the northern spur or ghât, Poona, the head-quarters of the Haveli sub-division and the Poona district, is approached. To the east of Poona the country is flat, open and bare of trees; to the west it is rugged, hilly and wooded, especially along the south side of the Mutha river, which, joining with the Mula below the city of Poona, flows east into the Bhima. North of the Mula-Mutha the tract of country is chiefly stony, barren and high-lying, better fitted for sheep-grazing; south of the river it is more level and has a large proportion of rich soil.

Rivers.

The following large rivers are crossed on this section of the S.M.R.:—

Malaprabha ...	... 14th	mile from Londa.
Ghatprabha ...	... 66½th	do.
Krishna ...	... 98½th	do.
Yerla	... 130½th	do.
Nira	... 229⅙th	do.

The Malprabha River.

The Malprabha river rises among the eastern spurs of the great Sahyadri range about 8 miles from Jámboti, in Khanapur sub-division of the Belgaum district.

From its source it runs east for 13 miles, when it turns south-east for 8 miles, and then north-east past the towns of Khanapur and Jokodi—in this part of its course, though shallow in the fair season, it flows throughout the year. Through the sub-division of Sampgaon, across which it next passes, it is a sluggish stream with a deep bed and high steep banks. Crossing Parasgad in a north-easterly direction it passes into the Tongal State by Basargi village. Four miles north of Soundatti the Malprabha rushes violently through a gorge in the Monoli hills. It eventually falls into the Krishna at Sangem, its further course being described in Section VII. Its banks vary considerably in character, in some parts rising sharply up from

the water, in others having a gentle slope, and in a few places the river being nearly level with the surrounding country. Near Manoli, the Benakotti, a stream having a southerly course of 20 miles, flows into it. The chief ferries over the Malprabha river are Jamboti, Khanapur, Mugatkhan-Hubli, Turmiri, Sangoli, Virapur, Yakundi and Manoli. The ferry boats vary in size from 8′ × 8′ × 1½ to 39′ × 14′ × 3′ and carry from a quarter to two tons and 15 to 200 passengers.

The Ghatprabha River.

From its source in Sundargad to the north of the Ram Pass, till it joins the Krishna at Kudli Sangam 30 miles north-east of Kaladgi, the Ghatprabha has a total length of 100 miles. After flowing about 30 miles through Kolhapur district, it passes into the Belgaum district, receiving the Tamraparni stream from the south near Shedihal, and flows for 20 miles across the Chikodi sub-division in a north-easterly direction. Three miles west of Gokak (on the line of rail) it rushes through a rugged gorge and dashing over a cliff 175 feet high, forms the falls of Gokak. Above the falls the river is 250 yards wide, but narrows to 80 as it reaches the brink of the chasm. Two miles below the falls the Ghatprabha receives the Markandeya, after a course of 40 miles from the hills to the west of Belgaum. Except among hills its banks are low and sloping, and in places, owing to the hardness of the rock, its bed is shallow. It is unfit for navigation. Beyond Gokak it passes into Mudhol district, running into the Krishna at Kudli Sangam close to Sitimani two stations north of Bagalkot on the Gadag-Hotgi line of rail.

The chief ferries over the Ghatprabha are at Hadkal, Ghodgiri, Modga Dodali, Hansihal, Gokak, Tigdi and Dhavleshvar. It is bridged on the Poona-Harihar road by a large stone bridge. The boats are large round coracles of wicker covered with leather.

The Krishna River.

The Krishna, one of the three great rivers of Southern India, has its source near the hill-station of Mahableshvar in Satara on the eastern flank of the great Sahyadris range 4,500 feet above the sea, and after traversing the whole breadth of the central table-land, falls into the Bay of Bengal by Masulipatam. Its length is about 800 miles and its drainage area about 94,500 square miles.

From its source it flows for about 175 miles through the Satara district in a south-easterly direction parallel with and close to the Londa-Poona line of rail on its west side. In this portion it receives the Kudali stream 10 miles from Wai, the Yenna three miles east of Satara town, the Vasna at Mangalpur, the Urmodi at Vangaon, the Tarli near Umbraj, the Koyna near Karad, the Yerla near Ashta, crossing the railway 130½ miles from Londa, the Varna three miles south of Sangli, the Panchganga about 10 miles west of Shedbal on the line of rail, and the Dudhganga about seven miles further south.

From this point the Krishna turns almost due east, and winding through the Belgaum district crosses the Londa-Poona railway between Kudchi and Shedbal. It receives a small stream called the Halhanla or Dudh nala near Chinchi, and the Agrani from the north eight miles south-west of Athni and after flowing through Jamkandi enters the

Bijapur district and crosses the Gadag-Hotgi railway between the Alimati and Sitimani stations 75½ miles north of Gadag. (Section VII.)

The Krishna is unfit for navigation. Its banks are steep and from 20 to 50 feet high, generally of black soil or laterite. The river-bed is rocky in many parts but as a rule sandy. In the rocky bed are many babhul shaded islands. About Karad and Targaon crops of sugarcane, groundnut, chillies and wheat are grown along the river, and further south rich crops of cotton, grain, millet, rice, &c. During the fair season the Krishna has a scanty flow and is everywhere fordable, but during the rains (from June to December) the volume of water is very large.

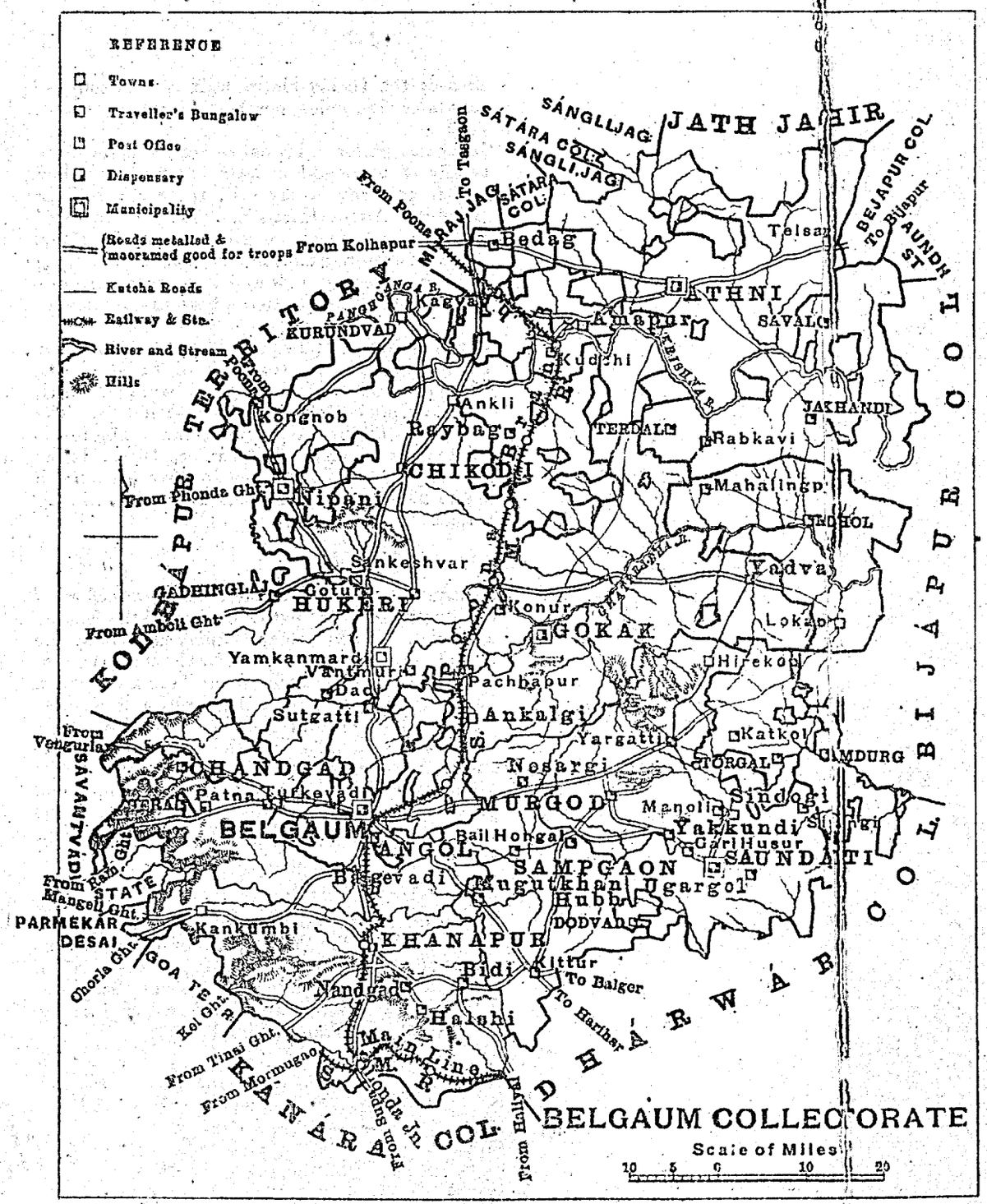
Ferries are worked at Mahuli, three miles east of Satara, Dhamner, south of Koregaon, Umbraj, Karad, Karve, south of Karad, Bahe, Boregaon, Bhilavdi Ainapur, near Kudchi station, Halihal, Satti, Mahisbadgi, Savadi, Shirhati, Chikk Padsaigi and Hire Padsalji. The last eight are within the limits of the Belgaum district. The ferry-boats are round wicker baskets covered with leather, 12′ to 15′ in diameter, and capable of carrying 30 to 40 persons, but some are much larger and carry 2 tons and 200 passengers. It is bridged at Bhuing on the Poona-Belgaum road.

The Yerla River.

The Yerla river, the largest of the left-hand or northern feeders of the Krishna, rises in Solaknath hill in the extreme north of the Khatav sub-division of Satara district. It flows along a valley flanked by the Vardhangad-Machindragad range on the west, and by the Mahimangad-Panhala range on the east. It runs south for about 75 miles through Khatav, Khanapur, Targaon and Sangli. At Dhavleshvar it receives the Nandani, a stream about 300 feet wide. After a south-westerly course of about 75 miles the Yerla falls into the Krishna six miles south of Bhilvadi between the stations of Ashta and Sangli. At its meeting with the Krishna it is 600 feet broad. Its bed is sandy and its banks sloping, earthy and muddy. It holds water throughout the year and crops of sugarcane, groundnut, wheat, potatoes, and onions are raised near the banks.

The Nira River.

The Nira river, separating Satara and Poona districts, rises in the Sahyadri range within the lands of the Pant Sachiv of Bhor. It has a length of 130 miles. From its source it runs east past the north of the sub-division of Wai and the State of Phaltan, whence it passes north of Malsiras and falls into the Bhima five miles east of Tambve. It is bridged on the Poona-Belgaum road at Sirval.



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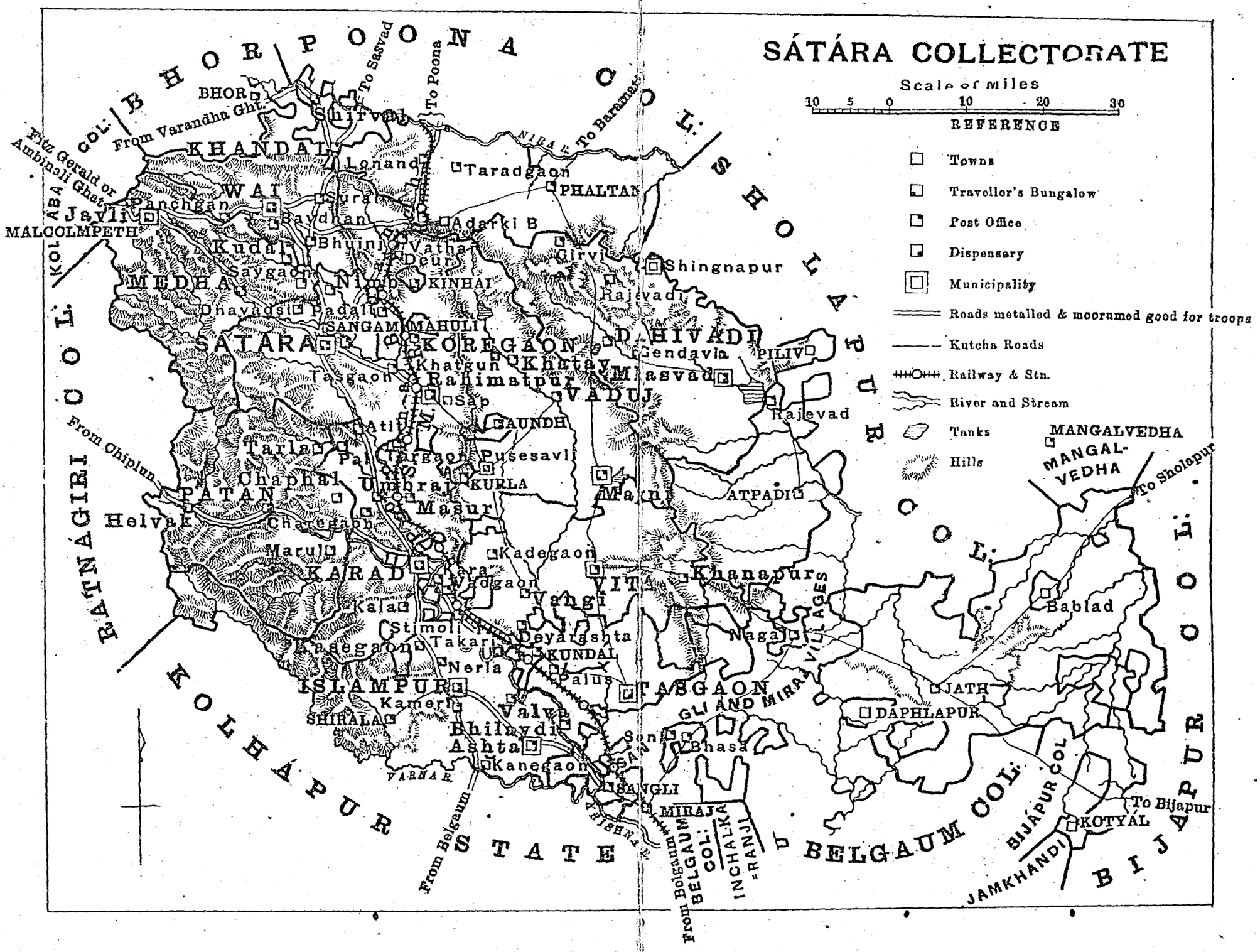

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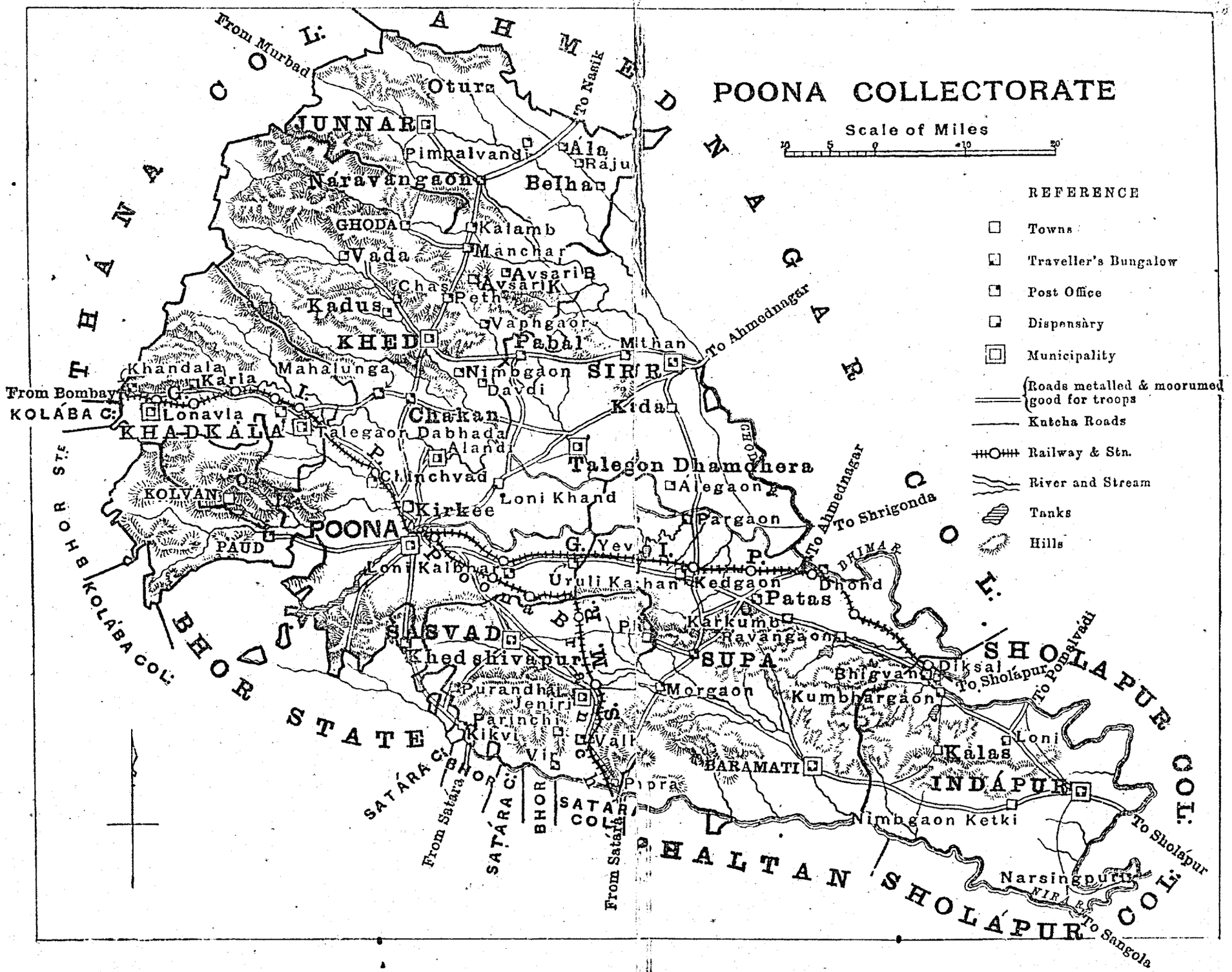

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The Main Road.

Londa—Poona.

The trunk road from Bangalore to Poona, commonly known as "the Poona-Harihar road," which is the old Madras mail road from Bombay to Madras, passes up due north from Belgaum to Poona on the west of the railway and more or less parallel with it. It runs in almost a straight line between the two places (whereas the line of rail bears away to the east between Belgaum and Kudchi on the Krishna, and between Karad and Jejuri) and touches the railway at Karad rather more than half way between Belgaum and Poona.

This road runs, in this section, from Dharwar through Kittur and Bagewadi to Belgaum, thence it passes through Sankeshvar, Nipani, Kolhapur, Kanegaon on the Varna river, Peth, Nerla, Kasegaon, Karad (where it meets the railway), Umbraj, Satara, Shirval on the Nira river, Sasvad and into Poona 16 miles on. It is bridged except over the Malprabha, 20 miles south of Belgaum, but here it is fordable during the fair season and during the rains there is a large ferry with boats capable of carrying four carts, and metalled throughout and has a large traffic. It crosses the Ghatprabha 197 miles, the Harankasi 187 miles, and the Vedganga 165 miles from Poona by large stone bridges (the latter having 7 spans of 45 feet). It is bridged over the Varna at Kanegaon 129 miles, Poona over the Koyna near Karad 101 miles, over the Tarli near Umbraj 91 miles, over the Wemodi near Latna 71 miles, over the Vena near Varya 67 miles, over the Krishna at Bhuinj 56 miles and over the Nira at Shirval 30 miles from Poona. Of these bridges—that over the Varna is masonry 577 feet long, 8 segmental arches of 60′ clear span, the roadway 20′ wide and 30½′ above the river bed. That over the Koyna is partly masonry and partly iron, 709 feet long, 8 spans, of which the four southern ones are masonry arches of 54′ and the other four over the deep part of the river iron girders on masonry piers 108′ span; the roadway is 21½ feet wide and 80¾′ above river-bed. That over the Tarli is masonry 178′ long, 4 arches of 40′ span, the roadway 20′ wide and 53 above river-bed. That over the Umoda is masonry 259′ long, 3 elliptical arches of 60′ span and 2 semicircular arches of 15′ span; the roadway is 20¾ feet wide and 33′ above river-bed. That over the Vena or Yemva is masonry, 245′ long, 8 arches of 30′ span, roadway 20′ wide and 21′ above river-bed. That over the Krishna is masonry 310′ long, 9 segmental arches 30′ span, roadway 20′ wide and 28′ above river-bed. That over the Nira is iron lattice girder on masonry piers, 501′ long, 8 spans of 8—60 feet, roadway 21′ wide and 46½′ above river-bed.

The Poona-Harihar road is well shaded all through the Satara district, *i.e.*, for about 101 miles, by babhuls, fig, tamarind and mango trees. It passes through many trade centres and markets, has bungalows and rest-houses all along, and abundant water-supply. It is crossed by many important roads from all parts as feeders. Forty miles from Poona it runs over the Khamati Pass.

Londa is connected with Belgaum by a good road running from Belgaum to Khanapur 16 miles and on to Sitavada and Londa on the Dharwar-Tinai Pass road 17 miles, beyond which it runs to Supa in Canara. From Londa to Belgaum it is alongside the line of rail all the way.

The Poona-Harihar mail trunk road is in fact good in every way throughout and presents no difficulties at any time.

Lateral Communications.

Londa—Poona.

The main or Poona-Harihar road is well supplied with feeders forming lateral communication to both west and east.

Commencing from the south; in the Belgaum district, extending from the Bellary-Murmagao railway in the south to Miraj in the north—

(*a*) The Belgaum-Kaladgi road of 73 miles stretches east. It is metalled and drained for the first 15 miles only but is a good road as far as Yargatti 36 miles on. Beyond Yargatti parts of it are in black soil and during the rains very bad. In the dry season the cart traffic of cotton is heavy.

(*b*) The Belgaum-Vengurla road of 78 miles stretches west. This road is a continuation of the Belgaum-Kaladgi road and passes over the Amboli ghât to the port of Vengurla. It is metalled and bridged throughout, a sum of £140,000 having been spent on it in 1871, a heavy traffic passes along it and it is kept in repair by the Executive Engineers of Belgaum and Kolhapur.

(*c*) The Sankeshvar-Yádvád road of 48 miles runs east and west through Hukeri, Guras, Arbhavi, Vadurhatti, Musjupi and Kulgod to Yádvád. To the west it is continued from Sankeshvar, on the main Poona-Harihar-Belgaum road, to Vengurla; and to the east from Gádvád it runs to Mudhol and Kaladgi. In the fair weather it is good, but in the rains, parts of it being in black soil, it is very bad. This road passes just north of Gokak.

(*d*) The Kolhapur-Bijapur road of 106 miles crosses the Athni sub-division and passes through the towns of Berag, Kempvad, Athni, Aigal and Telsang. In the fair season it is good, but during the rains the portions of it in the black soil are very bad.

(*e*) The Peth-Sangli road about 20 miles runs west to the town of Peth and is murumed and bridged throughout. This road joins the main Poona-Harihar-Belgaum road to the Sangli State, feeds the Karad-Kumbharli Pass road, and at all seasons has considerable traffic.

(*f*) The Karad-Kumbharli Pass road runs west through Karad and Patan by the Kumbharli Pass to Chiplun in Ratnagiri, whence it is continued on to Khed Mahad and up north to Alibag. This road is metalled and bridged throughout, 58 miles, and is passable throughout the year. It carries to the coast all the exports from the south, south-east and east of the district.

(*g*) The Karad-Nagaj road runs east from Karad through Kadegaon, Vita and Khanapur and on to Bijapur through the Miraj and Jath States. This road goes over the Sadashivgad Pass in Karad sub-division and crosses the Krishna at Karad, the Naudni at Amrapur, 12 miles from Karad, the Yerla at Hanmantvadi, 19 miles, and the Agrani at Sultangad, 40 miles. These rivers are unbridged but some have road-dams and during the fair season the road is passable for all traffic.

(*h*) The Malharpeth-Pandharpur road starting from Malharpeth on the Karad-Kumbharli Pass road, 8 miles east of Patan, runs east by the towns of Umbraj, Masur, Majni, Kaldhon and Diganchi to Pandharpur. Between Malharpeth and Umbraj this road is murumed and bridged and at all times carries heavy traffic. At Umbraj the Krishna is crossed during the rains by a flying bridge, and during the fair season by a heavy sandy crossing. Between Umbraj and Pandharpur this road crosses the Nandni at 25 miles from Malharpeth, the Yerla at 35 miles, and the Mau at 70 miles near Diganchi. It passes over the Ural gorge in Patan sub-division and over the Shamgaon gorge between Karad and Khanapur. It has culverts and road dams but is a fair weather route.

(*i*) The Satara-Pandharpur road of 64 miles runs due east through the sub-divisions of Satara, Koregaon, Khatav and Mau and crosses the Krishna, Vasua, Yerla and Mau rivers of which the Vasua is bridged and the Krishna has a flying-bridge at Mahuli 3 miles from Satara. It is passable for carts at all seasons except in parts during the rains. It is being brought into the condition of a first-class road.

(*k*) The Satar-Malcompeth road of 33 miles leaves the main Poona-Harihar-Belgaum road 2 miles north of Satara and runs by Medha and the Kelghar Pass. The 11 miles from Kelghar to Mahableshvar are metalled and the rest of the road is murumed. The rivers and large streams are all bridged and the small streams are crossed by road-dams. This road is fit for carts at all times.

(*l*) The Wai-Adarki road of 22 miles runs from the Phaltan State to Wai by the Adarki Pass and the Shirgaon gorge, meeting the Surul-Fitzgerald Pass road at Wai. It is fit for carts at all seasons.

(*m*) The Surul-Fitzgerald Pass road leaves the Poona-Harihar-Belgaum main road at 48 miles from Poona and runs by Wai and Malcolmpeth to Mahad in Kolaba. It is metalled and bridged throughout from Surulote Mahad 61 miles, and is fit for carts at all times. It runs over the Pasarni Pass 2 miles west of Wai and over the Fitzgerald Pass 2 miles west of Malcolmpeth.

(*n*) Thd Varandah-Dharmapuri road runs for 87 miles from Dharmapuri to Varandha at the foot of the Sahyadris range. From Varandha it continues west to Mahad and from Dharmapuri it continues east through Phaltan to Malsiras and Panharpur. It crosses the old Poona road at Lonand and the Poona-HariharBelgaum main road at Shirval. Between Bhor and Lonand it is murumed and for 11 miles from Varandha at the foot to Hirdoshi at the top of the Sahyadris, it is bridged drained and metalled. It is passable throughout to carts except in parts during the heavy weather.

(*p*) The Satara-Tasgaon road runs south-east through Karad. From Satara to Karad it is passable for carts during the fair season, but the 35¼ miles from Karad to Kasgaon are murumed and fit for traffic at all times.

(*r*) The Poona-Sholapur road running south-east 165 miles to Sholapur whence it is continued on to Hyderabad in the Nizam's dominions. This road is the main trunk road between Bombay and Hyderabad and is an excellent murumed road, curved and drained throughout. From Poona to Sholapur (Section VII) it passes through Patas 40 miles east and Indapur 80 miles south-east. It is crossed by the Satara-Ahmednagar road connecting it with Supa and Baramati. Sasvad is 16 miles south-east of Poona on the old Poona-Satara road by the Bahdev and Diva passes.

The Poona-Sholapur road runs parallel with the G.I.P. railway and meets the Hotgi-Gadag Branch of the S.M.R. at Hotgi.

(*s*) The Poona-Mahableshwar road of 77 miles, running over the Kahrej ghât of 3 miles to Wai, Panchganni and Mahableshwar Sanitarium. This is an excellent road all the way and passable at all times.

In addition to the above there are many other roads connecting towns and villages with each other, the districts of Satara and Poona being particularly well found in this respect. The main road from Poona to Bombay runs through Khandala 42 miles north-west of Poona and is in excellent order.

Military Posts.

Belgaum, Poona, Kirkee.

Belgaum and Poona are actually on the Londa-Poona line and contain garrisons as follows, viz. :—

Belgaum.—Headquarters of the Belgaum district, Madras Presidency—

1 Battery R.A.	British
1 Regiment Infantry	British
1 Depôt Infantry	British
1 Regiment Infantry	Native.

Poona.—Headquarters of the Poona division, Bombay Presidency—

2 Regiments Infantry	British.
1 Battery (mountain)	Native.
3 Regiments Infantry	Native.
1 Depôt Cavalry	Native.

Kirkee.—Poona division, Bombay Presidency—

1 Battery R.H.A.	British.
3 Batteries R.A.	British.
1 Company R.E.	British.
1 Regiment Infantry	British.
4 Companies Sappers and Miners ...	Native.
5 Companies Infantry	Native.

This line, however, connects the garrisons of Bangalore and Poona; Dharwar and Belgaum being *en route* between the two places. It would also be the line by which troops landed at the port of Goa would be conveyed north.

BIJAPUR BRANCH.

GADAG TO HOTGI.

This section of the S.M. Railway is known as the Bijapur Branch, and has a length of 173½ miles, running into the Great Indian Peninsula at Hotgi.

Its direction is almost due south and north. For the first 30 miles, the line runs downhill to the Malprabha river, close to Alur station, the decline being easy the whole way. From here it continues up a gradient of 1 in 100 over the Lakmapur ghât, about 3 miles, whence it undulates for 27 miles down to the Keirsur nala, 3½ miles beyond Bagalkot station. In the next 13 miles the Karlimatti ghât is ascended and descended, the gradient on each side being 1 in 100, and the Krishna river crossed at the foot of the ghât, 77 miles from Gadag or one mile before reaching Alimatti station. From the Krishna there is an incline for 19 miles, or two miles short of Mulvad station. From this point the line undulates gradually downhill all the way to Hotgi, 77 miles on. The gradient in no place exceeds 1 in 100. The curves throughout are of large radius and the general direction is straight, the only twist of any consequence being between Bagalkot and Alimatti over the Karlimatti ghât.

The Line.

The following shows briefly the curves and gradients on this section :—

Radius of Curves.

	Miles.
Above 600 to 1,000 feet inclusive, length ...	0·06
Above 1,000 feet, length	35·23
Straight line, length	138·44
Total ...	173·15

Gradients.

Above 1 in 80 to 1 in 100 inclusive, length ...	54·07
Above 1 in 100 to 1 in 150 inclusive, length ...	18·53
Above 1 in 150 to 1 in 300 inclusive, length ...	25·25
Above 1 in 300 to 1 in 1,000 inclusive, length.	22·61
Above 1 in 1,000, length	2·70
Level	50·28
Total ...	173·44

There are no tunnels.

The permanent-way, including points and crossings, conforms to the rest of the S.M.R. and in accordance with the standard dimensions.

The rails are fully fished and fastened throughout, and from Gadag to Bijapur rest on steel sleepers; thence to Hotgi on timber, which are being rapidly replaced by steel. The ballast is of mixed quality, being chiefly sand and stone, with gravel, red moorum, kunker and laterite every here and there. The line is unfenced except at certain dangerous places, such as the approaches to the Malprabha bridge and through villages. Four large rivers and 18 nalas are crossed, besides smaller waterways of no importance (see list).

List of Ballast.

Position.		Length, miles.	Character of ballast.
From mile.	To mile.		
Hotgi 0	31¼	31¼	Sand.
31¼	39¼	8	Stone and sand.
39¼	44¾	5¼	Stone.
44¾	50¾	6	Sand.
50¾	52¾	2	Sand and stone.
52¾	54⅓	1¾	Sand.
54⅓	55⅓	1	Stone and sand.
55½	56½	1	Sand.
56⅓	58½	2	Stone.
58½	59	½	Sand.
59	61½	2½	Stone.
61½	63	1½	Sand.
63	63¾	¾	Kunker.
63¾	65½	1¾	Stone.
65⅓	69⅓	4	Kunker.
69½	70½	1	Stone.
70½	74½	4	Sand.
74½	76	1½	Kunker.
76	76½	½	Sand.
76½	78	1½	Kunker.
78	80	2	Laterite.
80	82½	2½	Sand.
82½	86¾	4⅓	Stone and sand.
86¾	88	1¼	Red moorum.
88	95¼	7¼	Sand and moorum.
95¼	97¾	2½	Laterite.
97¾	106⅓	8¾	Gravel and red moorum.
106½	108½	2	Sand.
108½	111¼	2¾	Gravel.
111¼	112¾	1½	Sand.
112¾	113¾	1	Red moorum.
113¾	115	1¼	Gravel and moorum.
115	115½	½	Red moorum.
115½	117	1½	Sand.
117	119	2	Stone.
119	121½	2½	Stone and sand.
121½	123	1½	Stone.
123	128	5	Moorum and sand.
128	132	4	Laterite and sand.
132	134	2	Moorum.
134	135	1	Stone.
135	136	1	Stone and moorum.
136	141	5	Stone and sand.
Gadag 141	173½	32½	Sand.
	Total ..	173½	

Notes on Bijapur Branch.

Gadag to Hombal.

Cultivation, cotton and wheat both sides of line; small babool trees along sides of formation; fencing aloe; telegraph posts, 16 to 18 per mile; ½ mile to left, Gadag-Bijapur old road; country open and slightly undulating; mile 6, corrugated iron gang-hut 60′ × 20′ of 11 rooms (and every 5 miles on to Hotgi).

Hombal to Balganur.

Hombal station being rebuilt two miles from old site; country all round black cotton soil plain; the new Hombal station to be of corrugated iron with mud walls inside and Mangalore tiling; south-east, Dumbal hills; mile 13, village of Balganur close on right, to which road leads crossing line; crops Indian corn.

Balganur to Mallapur.

Balganur station, of corrugated iron, 46′ × 32′, 6 rooms and 1 store, 1 cook and 1 bath room; formation level all along higher than surrounding country; mile 16, gang-house, same pattern as all others; road crosses line; babool trees both sides; mile 18, good road crosses east and west.

Mallapur to Alur.

Behind station a dharamsala; no station building, but station master's quarters and goods shed; country round open level plain; mile 20, road crossing line; cultivation both sides; mile 26, gang-house, same pattern; mile 27, small village ½ mile to right.

Alur to Badami.

Alur station building, 3 small rooms, permanent-way inspector's bungalow of 3 rooms, one 16′ × 16′ and two 16′ × 10′ with 2 godowns and 4 servants' quarters; close by cultivation; all round level plain; range of Lakmapur hills 3 miles north at right angles to line; Alur village close on left, to which road leads; mile 31, Malprabha bridge (see bridges). The bridge over backwater of Malprabha ½ mile on, 2 openings 40′, is dangerous to walk over and should be covered with sheeting; the nala underneath is used as a road; Indian corn crops; on leaving Malprabha bridge it is a gradual rise to cross the Lakmapur ghât, and the line curves to left to wheel round hills; mile 33, foot of hills. These hills rise abruptly from plain and are covered with scrub and bush. The line runs along base but gradually rises and for two miles is on hillside with a rich level plain stretching for miles below. Mile 35, country more hilly and wooded, soil red. Line continues along a valley with scrub and small trees; on each side a country cart track; from Lakmapur ghât to Badami it passes through a sort of basin, hills being seen on all sides; mile 38, good road crosses line by level-crossing having gate-house; on right 1½ miles distant, range of precipitous hills covered with scrub; mile 39, many large

trees about and country slightly cultivated; mile 41, stone gang-house; country again scrub.

Badami to Katgeri.

At Badami station good bungalow for Assistant Engineer; station commanded on two sides; water good; soil red; good building stone all round; mile 43, country jungle and scrub; mile 43½, hilly; on right well; mile 46, open wavy country; gang-house; Katgeri village, 1 mile from station; dharamsala close to station building, same as Badami; country round jungly.

Bagalkot to Karlimatti.

Bagalkot, a largish station; the building has a gable at each end with a large third-class waiting-shed of 7 arches between; the staff quarters and station master's house are 2 small bungalows in rear containing each 6 rooms 10′ square; soil black cotton. There are three native signallers at present. A good bungalow of 5 rooms for permanent-way inspector is on left of station. Good encamping-ground in station yard on left. Water-supply good. Village of Bagalkot lies 1 mile north on left of line. Station yard fenced with aloe. First 2 miles from Bagalkot, country level and cultivated, after which range of hills runs at right angles to line. These are the Karlimatti ghât. The railway passes over a dip in the hills; just on right of this dip and on top of hill is a square mosque commanding the line for some considerable distance; at mile 59¾, the railway crosses a road by an open bridge. As the Karlimatti hills are approached, the country becomes more wooded, and tamarind trees grow along formation. At mile 60½, a large bridge over dry river at foot of hills is crossed; line on both sides fenced with stone walls; hills covered with scrub and many large trees scattered about; mile 61, wire fencing; after crossing hills, country opens out again and line passes through a valley fairly wooded and cultivated, surrounded by hills on all sides. From Bagalkot a country road follows line on left, about 10 yards distant, but crosses over at mile 61, continues north-east for 2 miles, and meets line again at 63; mile 62, country more open and continues so until next range of hills, about 2 miles on, is reached. This range runs diagonally to line, which curls round right of them. On the right is a well cultivated valley opening out towards west, on the left are the hills covered with scrub. It is uphill all the way to Karlimatti station, and the railway winds along conforming to the contours of the hills. Karlimatti station is at the top of the range of hills. It has no water, which is brought up in chatties from a village about a mile distant. The station building is only a small erection of 2 rooms 10′ square.

Karlimatti to Sitimani, Alimatti and Telgi.

From Karlimatti it is downhill and the line runs alongside of hill, having numerous gullies or small dips or valleys which extend from top of hill to base, on alternate cutting and embankment. Mile 70, gang-house; country to left stretches away into a waving plain, on right and close to line it is hilly and scrub. Mile 72, small village on left, Sitimani, very small wayside station, merely a shed 10′ square;

¼ mile on Krishna bridge (see bridges) on east and north hills, wire fencing on both sides up to bridge. After crossing bridge the line runs uphill at 1 in 100 to Alimatti, which station would form the north defences of this large bridge. Along the Krishna valley the soil is black but upon the hills at Alimatti it is red and rocky. Alimatti station building is small, only booking office, 10′ square, and waiting-shed 30′ × 15′. A travellers' bungalow stands 50 yards off as also a dharamsala; a roughstone wall runs all round station yard; country round rocky and hilly with scrub. Mile 77¾, a good road crosses line at right angles. From Alimatti the line continues to rise till mile 85¾, the country becoming open and cultivated. From 85¾ it is a decline to Telgi over open wavy downs.

Telgi to Mulvad.

Telgi station building has 2 small rooms each end with waiting-shed of 4 arches in centre. There are 2 thatched bungalows 500 yards to left of line. Telgi village lies in a clump of trees ¾ mile to left. Water-supply very good; country open. Attached to European latrine is a store-house 20′ × 10′. Good camping all round. Between Telgi and Mulvad country very open, chiefly grassy downs; troops could march alongside of line all the way. Mile 90, wooded patch and village on right.

Mulvad.

Water good and plentiful. Station building 1 room and 1 waiting-shed of 2 arches; porters' quarters and latrine on right. Excellent camping ground on high grassy ground opposite station. Mile 102, bridge over Don river, down to which it is a decline. The valley of the Don is richly cultivated. From bridge it is an ascent of 1 in 100. Mile 103¼, road crosses to village on right. On both sides of river it is a perfectly straight run. Mile 104½, main road crosses and continues along right side; country a vast plain; crops chiefly Indian corn.

Jumnal to Bijapur.

Jumnal stands high country round an open slightly undulating plain richly cultivated. It is an ascent from the Don all the way to Jumnal. The station is very small, with a building having 2 rooms, each 10′ square, and another stone bungalow with 4 small porters' quarters. The water-supply is very good. On each side of line there is camping ground for a regiment but country is richly cultivated all round and close up to station. Jumnal village is 2 miles off. From Jumnal it is a gradual decline to Bijapur, the country being a vast plain; cultivation all round, and not a hill to be seen.

Bijapur to Minchnal.

Bijapur.—This would form the chief halting place on this branch. The accommodation is extensive; supplies and water plentiful. The mosque of "Bolgowaz," of enormous size, with a vast dome of 125′ span, is close behind station, and would of itself afford shelter to a regiment. In addition many of the large mosques and palaces, for which Bijapur is famous, are within easy distance of the line, and shelter or housing for troops is practically unlimited. The walls of the town, which are of great thickness, are within a stone throw of the station, and all

round are open wavy downs and barren country. Encamping ground would be found almost anywhere. This place, celebrated in history, has all the remains of its ancient grandeur, one of the principal being its water-supply, the greater portion of which is brought from Tarvi, 3 miles west, and obtained from the Begam lake. From Bijapur the line continues over barren open wavy downs, without a tree or shrub, till the 121st mile, when it begins to show signs of cultivation; at mile 121 there is an open bridge over a dry river which should be covered with sheeting; also one 4 miles on.

Minchnal.—Country still very open and grassy; good camping ground all round. Water is obtained from nala close by. The station building is very small, 2 rooms 10′ square. At mile 126½, nala with pump on bank by which tank at Minchnal station is filled; the bridge over this, of 7 masonry piers, should be decked. From Minchnal on the country is still very open though undulating, and, on looking back, Bijapur is seen lying in a vast plain surrounded by barren wavy downs. At mile 132, small temple on left on top of Knoll, also range of table-topped hills. At 136 village of Nimbal ½ mile west; ¾ mile on nala with pump and pipe taking water up to Nimbal station.

Nimbal.

Very open country with excellent camping ground. Near station, which is exactly similar to Minchnal, there is a thatched bungalow with 4 rooms. The station stands high and the village is one mile off. At mile 143, nala with water; 144¼, grove of trees and village close by on left, and cultivation begins to increase though the country is still open.

Indi Road to Hotgi.

Indi Road station is situated on the top of a rise; country round very open and the view uninterrupted. The main road to Sholapur crosses line at beginning of siding. Water is brought from a Government well a mile and-a-half distant. Indi village is 3½ miles from station. The passenger building is of a different type from the others, being a stone erection with a fair sized waiting-shed with 2 arches in front, and a booking office at one end; there is an overhanging verandah front and back. Mile 147, country still open but cultivated at mile 151½; village of Lachyan on left amongst trees, soil becoming black.

Lachyan.

The station is well placed on high ground. Excellent encamping ground immediately behind station house, which is very small and similar to Minchnal. The water in well is very low. At mile 156 Bhima river with village on both banks; country level and cultivated with rich black soil. *Tadval* station on a rise similar to Minchnal, ½ mile off, on right considerable wood. Dharamsala opposite station accommodating 50 people. Tadval village one mile distant.

Hotgi.

Country round station under cultivation. In passenger building there are 4 good rooms sub-divided into more. (See "Stations and Plans.")

Working Section—Main Line—Gadag to Hotgi.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
			66 feet chain.					
0	Level ..	..	12·00	Cutting ..	4·00	2·56	..	..
	..	..	..	Bank ..	8·00	2·18	..	..
	1 in 200 ..	D	40·00	Bank ..	40·00	8·57	..	..
	Level ..	..	15·00	Bank ..	15·00	8·18	..	..
	1 in 100 ..	U	10·00	Bank ..	10·00	7·16	..	..
			100 feet chain.					
1	Level ..	..	2·00	Bank ..	2·00	4·98	..	..
	1 in 100 ..	U	33·00	Bank ..	33·00	5·86	Right..	2000
	Level ..	..	13·00	Bank ..	4·00	5·62	..	..
	" ..	..	..	Cutting ..	9·00	0·92	..	..
2	1 in 100 ..	D	17·00	Cutting ..	9·00	1·19	..	..
	..	..	..	Bank ..	8·00	2·54	Left ..	3000
	1 in 240 ..	D	40·00	Bank ..	38·00	5·54	..	..
	..	..	..	Cutting ...	2·00	0·32	..	..
3	Level ..	..	40·00	Bank ..	40·00	8·31	..	..
4	1 in 150 ..	D	70·00	Bank ..	70·00	5·18	Right..	4000
5	1 in 125 ..	D	45·00	Bank ..	45·00	6·01	Left ..	5000
	Level ..	..	10·00	Bank ..	10·00	7·56	Right..	5000
6	1 in 200 ..	U	25·00	Bank ..	25·00	4·44	Right..	2500
7	Level ..	..	80·00	Bank ..	80·00	7·35	..	..
7¼	Hombal station		..	..	..	..	..	..
8, 9	1 in 200 ..	D	60·00	Bank ..	60·00	6·06	..	..
	Level ..	..	35·00	Bank ..	35·00	6·80	Right..	3000
	1 in 100 ..	D	10·00	Bank ..	10·00	6·25	..	..
10	Level ..	..	35·00	Bank ..	35·00	4·81	Left ..	3000
11	1 in 300 ..	D	70·00	Bank ..	70·00	4·64	..	..
12	Level ..	..	30·00	Bank ..	30·00	3·52	Left ..	3000
13	1 in 340 ..	D	67·00	Bank ..	67·00	5·70	Right..	3000 / 2500
13½	Balaganur station		..	..	..	..	..	..
14	1 in 460 ..	D	41·40	Bank ..	41·40	5·50	Left ..	3000
	1 in 250 ..	D	11·60	Bank ..	11·60	4·88	..	..
	1 in 1,000 ..	D	150·00	Bank ..	150·00	5·29	Right..	4000
18	1 in 400 ..	D	60·00	Bank ..	55·00	3·50	..	..
	..	..	..	Cutting ..	5·00	0·87	..	..
	Level ..	..	40·00	Cutting ..	8·00	·84	..	..
	..	..	..	Bank ..	2·00	1·09	..	..
19½	Mallapur station		..	Cutting ..	4·00	0·52	..	..
				Bank ..	26·00	3·55	..	..
	1 in 400 ..	D	140·00	Bank ..	19·00	3·55	..	..
20	..	..	..	Cutting ..	11·00	0·53	Right..	3000
21/22	..	..	..	Bank ..	110·00	6·79	Left ..	4000
23	1 in 2,000 ..	D	70·00	Bank ..	70·00	2·70	Right..	4000
24/25	1 in 625 ..	D	100·00	Bank ..	100·00	4·51	..	..
26	Level ..	..	30·00	Bank ..	30·00	7·97	Right..	3000
	1 in 300 ..	D	20·00	Bank ..	20·00	4·11	..	..
27	1 in 220 ..	D	51·50	Bank ..	51·50	4·56	Left ..	3000
28	1 in 150 ..	D	38·50	Bank ..	38 50	2·59	..	..
	Level ..	..	10·00	Bank ..	10·00	5·52	..	..
29	1 in 100 ..	D	37·00	Bank ..	37·00	6·70	Left ..	4000
	1 in 200 ..	D	28·00	Bank ..	28·00	5·83	Right..	3000
	Level ..	..	29·00	Bank ..	29·00	3·96	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
30	Alur station	..	..	..	..	..	..	..
	1 in 157 ..	U	10·00	Bank ..	10·00	7·83	..	..
31	Level ..	..	52·40	Bank ..	52·40	17·10	..	..
	Malprabha river, 12—100			..	..	..	..	..
	1 in 100 ..	U	14·60	Bank ..	14·60	10·39	..	..
	1 in 200 ..	U	7·00	Bank ..	7·00	5·00	Left ..	3000
	1 in 100 ..	U	119·00	Bank ..	43·00	9·22	Left ..	3000
	..	..	..	Cutting ..	15·00	3·49	..	..
33	..	..	..	Bank ..	6·00	2·95	Right..	5000
	..	..	..	Cutting ..	6·00	4·07	..	..
	..	..	..	Bank ..	6·00	3·95	Left ..	2000
	..	..	..	Cutting ..	3·00	3·35	..	..
	..	..	..	Bank ..	14·00	21·94	Right..	1500
	..	..	..	Cutting ..	10·00	12·63	..	..
	..	..	..	Bank ..	6·00	28·50	Left ..	2000
	..	..	..	Cutting ..	10·00	18·12	Right..	1300
34	Level ..	..	2·00	Cutting ..	2·00	12·42	..	..
	1 in 100 ..	D	19·00	Bank ..	19·00	8·10	..	..
	1 in 130 ..	D	55·00	Bank ..	23·00	2·39	..	..
	..	..	..	Cutting ..	2·00	1·80	..	..
	..	..	..	Bank ..	30·00	5·46	..	..
35	Level ..	D	20·00	Bank ..	20·00	4·77	..	..
36	1 in 200 ..	U	12·00	Bank ..	12·00	15·95	..	..
	Level ..	..	11·00	Bank ..	11·00	17·47	..	..
	1 in 200 ..	D	12·00	Bank ..	12·00	15·98	..	..
37	1 in 560 ..	U	28·00	Bank ..	28·00	5·41	..	..
	1 in 130 ..	U	17·00	Bank ..	15·00	3·46	..	..
	..	..	..	Cutting ..	2·00	0·61	..	..
	1 in 1,000 ..	D	20·00	Cutting ..	2·00	0·43	..	..
	..	..	..	Bank ..	16·00	2·49	..	..
	..	..	..	Cutting ..	1·00	0·04	..	..
	..	..	..	Bank ..	1·00	1·53	..	..
	Level ..	..	10·00	Bank ..	10·00	3·83	..	..
38	1 in 300 ..	D	33·3	Bank ..	33·3	4·83	..	..
	1 in 100 ..	D	16·00	Bank ..	16·00	3·24	..	..
39	Level ..	..	60·00	Bank ..	60·00	19·45	..	..
40	1 in 150 ..	U	34·00	Bank ..	34·00	6·09	..	..
	1 in 100 ..	U	40·00	Bank ..	6·00	5·79	..	..
	..	..	..	Cutting ..	1·00	0·07	..	..
	..	..	..	Bank ..	13·00	6·44	..	..
41	..	..	..	Cutting ..	3·00	1·39	..	..
	..	..	..	Bank ..	2·00	1·53	Left ..	3000
	..	..	..	Cutting ..	10·00	7·18	..	..
	..	..	..	Bank ..	5·00	4·56	..	..
41¾	Level ..	..	80·00	Bank ..	23·00	7·53	..	..
	Badami station.		..	..	..	..	..	..
42	..	..	..	Cutting ..	14·00	7·54	..	..
	..	..	..	Bank ..	26·00	6·34	Left ..	1500
	..	..	..	Cutting ..	2·00	1·11	..	..
	..	..	..	Bank ..	15·00	4·72	..	..
43	1 in 100 ..	D	15·00	Bank ..	15·00	8·99	..	..
	Level ..	..	30·00	Bank ..	30·00	19·98	..	..
44	1 in 100 ..	U	55·00	Bank ..	38·00	13·10	..	..
	..	..	..	Cutting ..	17·00	15·66	Right..	1500
	Level ..	..	3·00	Cutting ..	2·00	0·55	..	..
	..	..	..	Bank ..	1·00	1·66	..	..
45	1 in 125 ..	D	27·00	Bank ..	27·00	8·88	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ..	..	10·00	Bank ..	10·00	12·43	..	..
	1 in 250 ..	..	29·00	Bank ..	20·00	22·43	Left ..	4900
46	1 in 700 ..	U	14·00	Bank ..	14·00	7·25	..	..
	1 in 100 ..	D	36·00	Cutting ..	6·00	4·20	..	..
	..	..	..	Bank ..	30·00	5·72	..	..
47	1 in 125 ..	D	20·00	Bank ..	20·00	4·62	..	..
	1 in 400 ..	D	16·00	Bank ..	16·00	6·04	..	..
	1 in 100 ..	D	14·00	Cutting ..	9·00	..	..	..
	..	..	..	Bank ..	5·00	5·52	..	..
48	Level ..	..	20·00	Bank ..	29·00	17·70	..	..
	1 in 125 ..	D	20·00	Bank ..	29·00	8·20	..	..
49	Level ..	..	86·00	Bank ..	62·00	19·50	..	..
	..	..	..	Cutting ..	21·00	4·55	..	..
	..	..	..	Bank ..	3·00	5·24	..	..
50	Katgeri station	..	..	..	..	..	..	..
	1 in 100 ..	U	44·00	Bank ..	29·00	9·40	Left ..	4900
	..	..	..	Cutting ..	1·00	1·75	..	..
	..	..	..	Bank ..	1·00	1·35	..	..
51	..	..	..	Cutting ..	13·00	11·86	..	..
	Level ..	..	10·00	Cutting ..	5·00	7·74	..	..
	..	..	..	Bank ..	5·00	6·35	..	..
	1 in 125 ..	D	40·00	Bank ..	18·00	5·91	Left ..	5000
	..	..	..	Cutting ..	1·00	0·24	..	..
52	..	..	..	Bank ..	21·00	6·72	..	..
	Level ..	..	45·00	Bank ..	45·00	14·50	Left ..	3000
	1 in 100 ..	D	55·00	Bank ..	2·00	1·14	..	..
53	..	..	..	Cutting ..	13·00	3·75	..	..
	..	..	..	Bank ..	40·00	10·48	..	..
54	Level ..	..	12·00	Bank ..	12·00	3·61	Right..	3000
	1 in 100 ..	D	21·00	Cutting ..	6·00	14·11	..	..
	..	..	..	Bank ..	15·00	7·30	..	..
	Level ..	..	17·00	Bank ..	11·00	5·82	..	..
	..	..	..	Cutting ..	6·00	19·36	..	..
	1 in 100 ..	D	6·00	Cutting ..	6·00	15·48	..	..
55	Level ..	..	24·00	Bank ..	24·00	4·92	..	..
	1 in 150 ..	U	19·50	Bank ..	19·50	3·98	..	..
	Level ..	..	10·50	Cutting ..	10·50	1·94	..	..
56	1 in 400 ..	D	10·00	Cutting ..	2·00	0·71	..	..
	..	..	..	Bank ..	8·00	2·80	..	..
57	1 in 370 ..	D	80·00	Bank ..	75·00	7·03	Right..	2000
	..	..	..	Cutting ..	5·00	2·16	..	..
	Level ..	..	25·00	Bank ..	5·00	1·53	..	..
58	..	..	..	Cutting ..	15·00	2·03	..	..
	..	..	..	Bank ..	5·00	7·76	..	..
	Bagalkot station.		..	..	..	..	..	..
	1 in 125 ..	D	40·00	Bank ..	11·00	7·76	..	..
	..	..	..	Cutting ..	4·00	1·51	..	..
	..	..	..	Bank ..	25·00	7·39	..	..
59	1 in 100 ..	D	29·00	Bank ..	7·00	1·60	..	..
	..	..	..	Cutting ..	2·00	0·18	..	..
	..	..	..	Bank ..	20·00	7·32	Left ..	3000
60	Level ..	..	26·00	Bank ..	26·00	32·39	..	..
	1 in 150 ..	D	12·00	Bank ..	3·00	5·25	Right..	1800
	..	..	..	Cutting ..	6·00	6·39	..	..
	..	..	..	Bank ..	3·00	2·54	..	..
	Level ..	..	78·00	Bank ..	9·00	16·20	..	..
	..	..	..	Cutting ..	5·00	20·36	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction	Curves. Radius.
61	..	..	..	Bank ..	36·00	8·76	Left ..	2000
	..	..	..	Cutting ..	6·00	3·53	..	..
	..	..	..	Bank ..	22·00	20·97	..	..
62	1 in 100 ..	U	49·00	Bank ..	15·00	20·97	..	..
	..	..	..	Cutting ..	21·00	13·52	Right..	2000
	..	..	..	Bank ..	13·00	18·87	..	..
63	Level ..	..	21·00	Bank ..	21·00	8·16	..	..
	1 in 100 ..	D	12·00	Bank ..	5·00	1·86	..	..
	..	..	..	Cutting ..	5·00	3·05	..	..
	..	..	..	Bank ..	2·00	16·93	..	..
	Level ..	..	10·00	Bank ..	10·00	26·74	..	..
	1 in 100 ..	U	180·00	Cutting ..	18·00	5·77	Right..	4000
64	..	..	..	Bank ..	36·00	24·18	Left ..	1300
	..	..	..	Cutting ..	7·00	12·48	..	..
	..	..	..	Bank ..	12·00	12·81	Right..	1300
65	..	..	..	Cutting ..	21·00	7·86	..	..
	..	..	..	Bank ..	13·00	1·60	..	..
66	..	..	..	Cutting ..	28·00	10·13	Right. / Left.	2000
	..	..	..	Bank ..	4·00	4·11	..	..
	..	..	..	Cutting ..	8·00	5·00	..	..
	..	..	..	Bank ..	3·00	2·22	..	..
	..	..	..	Cutting ..	7·00	10·69	Left ..	1300
	..	..	..	Bank ..	8·00	10·78	..	..
	..	..	..	Cutting ..	11·00	17·96	..	..
	..	..	..	Bank ..	4·00	18·74	..	..
67	Level ..	..	10·00	Cutting ..	10·00	28·79	..	..
	Karlimatti station.		..	..	..	..	..	..
	1 in 100 ..	D	155·00	Cutting ..	12·00	26·78	Right..	1300
	..	..	..	Bank ..	5·00	45·22	Right..	2000
	..	..	..	Cutting ..	8·00	14·32	..	..
	..	..	..	Bank ..	3·00	30·61	Left ..	1300
	..	..	..	Cutting ..	16·00	19·79	..	..
68	..	..	..	Bank ..	8·00	43·25	Right..	5000
	..	..	..	Cutting ..	11·00	19·80	..	..
	..	..	..	Bank ..	5·00	20·73	..	..
	..	..	..	Cutting ..	6·00	18·54	..	..
	..	..	..	Bank ..	5·00	14·76	Left ..	5000
69/70	..	..	..	Cutting ..	22·00	19·77	..	..
	..	..	..	Bank ..	54·00	18·51	Right..	5000
	..	..	..	..	..	..	Left ..	3000
	Level ..	..	35·00	Bank ..	35·00	20·60	..	..
	1 in 200 ..	D	10·00	Bank ..	10·00	14·75	..	..
	1 in 100 ..	D	32·00	Bank ..	4·00	2·37	..	..
71	..	..	..	Cutting ..	5·00	3·88	..	..
	..	..	..	Bank ..	23·00	7·81	..	..
	Level ..	..	11·00	Bank ..	11·00	7·84	..	..
72	1 in 700 ..	U	14·00	Bank ..	14·00	3·93	..	..
	Level ..	D	6·00	Bank ..	6·00	2·05	Right..	3000
	1 in 300 ..	D	12·00	Bank ..	12·00	7·39	..	..
	Level ..	..	10·00	Bank ..	10·00	9·83	..	..
	1 in 750 ..	U	15·00	Bank ..	15·00	11·74	Right..	5000
	Level ..	..	30·30	Bank ..	4·00	2·38	..	..
73	..	..	..	Cutting ..	17·00	2·45	..	..
	..	..	..	Bank ..	9·30	3·35	..	..
74	1 in 150 ..	D	69·70	Bank ..	40·70	12·11	..	..
	..	..	..	Cutting ..	11·00	7·50	Right..	4000

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	..	..	..	Bank ..	18·00	6·48	..	..
75/76	Level ..	..	58·00	Bank ..	58·00	56·19	Left ..	1500
	Krishna river 21—150′.			..	..	..	..	..
75	Sitimani station.		..	..	..	..	..	..
	1 in 100 ..	U	22·00	Bank ..	18·00	44·17	..	..
	..	..	..	Cutting ..	4·00	8·10	Right..	5000
	Level ..	..	40·00	Bank ..	5·00	11·70	..	..
77	..	..	..	Cutting ..	22·00	13·26	Left ..	2000
	Alimatti station.		..	..	..	..	..	..
	..	..	..	Bank ..	13·00	8·90	..	..
	1 in 100 ..	U	41·00	Bank ..	10·00	9·70	..	..
78	..	..	..	Cutting ..	26·00	9·87	..	..
	..	..	..	Bank ..	5·00	1·20	..	..
	1 in 200 ..	U	30·00	Bank ..	30·00	5·57	Left ..	4000
79	1 in 250 ..	U	50·00	Bank ..	50·00	4·46	Right..	3000
	1 in 300 ..	U	18·00	Bank ..	18·00	7·64	..	..
80	1 in 150 ..	U	21·00	Bank ..	10·00	5·16	Left ..	5000
	..	..	..	Cutting ..	11·00	1·19	..	..
	Level ..	..	10·00	Bank ..	10·00	0·61	Left ..	3000
	1 in 150 ..	U	21·00	Bank ..	21·00	8·60	..	..
81	1 in 120 ..	U	24·00	Bank ..	17·00	6·95	..	..
	..	..	..	Cutting ..	7·00	1·98	Left ..	5000
	Level ..	..	21·00	Cutting ..	7·00	2·36	..	..
	..	..	..	Bank ..	14·00	8·32	..	..
82	1 in 400 ..	U	16·00	Bank ..	16·00	8·95	..	..
	1 in 250 ..	U	30·00	Bank ..	30·00	7·58	Right..	2000
	Level ..	..	14·00	Bank ..	14·00	8·65	..	..
83	1 in 120 ..	U	24·00	Bank ..	24·00	8·75	..	..
	1 in 100 ..	U	10·00	Bank ..	10·00	8·26	..	..
	1 in 200 ..	U	36·00	Bank ..	19·00	1·63	..	..
84	..	..	..	Cutting ..	10·00	3·47	Right..	5000
	..	..	..	Bank ..	7·00	5·93	..	..
	1 in 100 ..	U	13·00	Bank ..	13·00	5·08	..	..
	Level ..	..	26·00	Bank ..	26·00	4·96	..	..
	1 in 100 ..	U	13·00	Bank ..	13·00	7·86	Left ..	2000
85	Level ..	..	26·00	Bank ..	26·00	4·96	..	..
	1 in 100 ..	U	20·00	Bank ..	20·00	7·86	Right..	3000
	Level ..	..	7·00	Cutting ..	7·00	2·32	..	..
86	1 in 100 ..	D	41·00	Cutting ..	25·00	6·27	Left ..	3000
	..	..	..	Bank ..	16·00	8·18	..	..
	Level ..	..	42·00	Bank ..	34·00	6·13	..	..
87	..	..	..	Cutting ..	8·00	18·96	..	..
	Telgi station.	..	..	..	..	..	..	..
88	1 in 100 ..	U	98·00	Bank ..	50·00	30·83	Right..	3000
	..	..	..	Cutting ..	27·00	25·69	..	..
	..	..	..	Bank ..	21·00	8·03	..	..
89	1 in 750 ..	U	48·00	Cutting ..	14·00	6·98	Left ..	4000
	..	..	..	Bank ..	34·00	8·08	..	..
90	Level ..	..	52·60	Cutting ..	15·00	7·44	Right..	4000
	..	..	..	Bank ..	13·00	16·91	..	..
	..	..	..	Cutting ..	12·00	9·26	Left ..	5000
	..	..	..	Bank ..	12·60	8·56	..	..
91	1 in 100 ..	U	26·40	Bank ..	23·40	11·54	Left ..	3000
	..	..	..	Cutting ..	3·00	0·61	..	..
	Level ..	..	10·00	Cutting ..	10·00	1·42	Right..	3000
	1 in 125 ..	U	10·00	Bank ..	10·00	2·14	..	..
92/93	1 in 100 ..	U	115·00	Bank ..	62·00	23·59	Left ..	3000

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	..	..	..	Cutting ..	49·00	23·33	Right..	3000
	..	..	..	Bank ..	4·00	9·62	..	..
94	Level ..	..	25·00	Bank ..	12·00	13·69	..	..
	..	..	..	Cutting ..	13·00	7·94	Left ..	5060
	1 in 100 ..	D	40·00	Cutting ..	14·00	10·55	..	..
	..	..	..	Bank ..	26·00	8·81	Left ..	3000
	Level ..	..	5·00	Bank ..	5·00	17·75	..	..
	1 in 100 ..	U	40·00	Bank ..	29·00	14·34	..	..
96	..	..	..	Cutting ..	11·00	8·91	..	..
	Level ..	..	8·00	Cutting ..	8·00	7·98	..	..
	1 in 100 ..	D	47·00	Cutting ..	16·00	14·83	Right..	2000
97	..	..	..	Bank ..	31·00	16·57	..	..
	1 in 125 ..	D	20·00	Bank ..	20·00	12·68	..	..
	Level ..	..	10·00	Bank ..	10·00	12·66	Right..	5000
	1 in 100 ..	D	27·00	Cutting ..	11·00	3·96	..	..
98	..	..	..	Bank ..	14·00	16·67	..	..
	..	..	..	Cutting ..	2·00	7·37	..	..
	Level ..	..	30·00	Cutting ..	13·00	7·44	..	..
	..	..	..	Bank ..	11·00	5·91	..	..
	..	..	..	Cutting ..	6·00	5·39	..	..
98½	Mulvad station.		..	..	..	..	..	..
	1 in 100 ..	D	43·00	Cutting ..	5·00	3·03	..	..
99	..	..	..	Bank ..	38·00	13·82	..	..
100	1 in 125 ..	D	25·00	Bank ..	25·00	9·45	..	..
	Level ..	..	15·00	Bank ..	15·00	5·01	..	..
101	1 in 100 ..	D	50·00	Bank ..	50·00	7·06	..	..
102	Level ..	..	80·00	Bank ..	80·00	36·17	..	..
	Don river, 8—100′.		..	..	..	..	..	..
103/104	1 in 100 ..	U	100·00	Bank ..	70·00	11·49	..	..
	..	..	..	Cutting ..	30·00	7·20	Left ..	3000
	1 in 150 ..	U	21·00	Bank ..	7·00	5·49	..	..
105	..	..	..	Cutting ..	14·00	2·77	..	..
	Level ..	..	24·00	Bank ..	24·00	13·33	Right..	3000
	1 in 150 ..	U	15·00	Bank ..	15·00	10·64	..	..
	Level ..	..	50·00	Cutting ..	13·00	4·13	..	..
106	..	..	..	Bank ..	37·00	7·85	Right..	4000
106	Jumnal station.		..	..	..	..	..	..
	1 in 350 ..	D	14·00	Bank ..	14·00	4·51	..	..
107	Level ..	..	60·00	Bank ..	35·00	13·04	..	..
	..	..	..	Cutting ..	15·00	3·65	Right..	3000
108	..	..	..	Bank ..	10·00	5·85	..	..
	1 in 100 ..	U	29·00	Bank ..	12·00	4·87	..	..
	..	..	..	Cutting ..	17·00	4·27	..	..
	Level ..	..	13·00	Cutting ..	13·00	2·64	Left ..	2000
109	1 in 160 ..	D	24·00	Bank ..	24·00	6·68	..	..
	1 in 109 ..	D	64·00	Bank ..	3·00	0·59	Right..	2000
	..	..	..	Cutting ..	33·00	6·04	..	..
110	..	..	..	Bank ..	28·00	9·63	..	..
	Level ..	..	6·00	Bank ..	6·00	6·66	..	..
111	1 in 100 ..	U	50·00	Bank ..	25·00	28·99	Left ..	2000
	..	..	..	Cutting ..	25·00	7·90	{ Right. Right. }	2000
	Level ..	..	10·00	Cutting ..	5·00	3·22	..	..
	..	..	..	Bank ..	5·00	10·15	..	..
112	1 in 100 ..	D	30·00	Bank ..	13·00	10·15	..	..
	..	..	..	Cutting ..	17·00	5·20	..	..
	Level ..	..	20·00	Bank ..	10·00	5·55	Left ..	3000
	..	..	..	Cutting ..	10·00	4·83	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
			66 feet chains.					
	1 in 100 ..	D	98·33	Bank ..	16·00	3·93	..	..
113	..	..	..	Cutting ..	44·00	17·70	Left ..	2640
	..	..	..	Bank ..	38·33	8·62	Left ..	5280
114	1 in 100 ..	D	19·99	Bank ..	19·99	6·63	..	..
	Level ..	..	32·58	Cutting ..	8·58	7·85	..	..
	..	..	..	Bank ..	16·00	2·50	..	..
	..	..	..	Cutting ..	8·00	2·78	..	..
114½	Bijapur station.	..	..	..	..	..	..	..
	1 in 132 ..	D	50·00	Cutting ..	26·00	3·65	Right..	2640
115	..	..	..	Bank ..	24·00	8·95	..	..
	1 in 165 ..	D	50·00	Cutting ..	4·00	0·95	..	..
	..	..	..	Bank ..	27·00	5·50	..	..
	..	..	..	Cutting ..	13·00	2·89	..	..
	..	..	..	Bank ..	6·00	1·76	..	..
	Level ..	..	30·00	Bank ..	8·00	2·31	..	..
116	..	..	..	Cutting ..	11·00	5·99	..	..
	..	..	..	Bank ..	11·00	3·86	..	..
	1 in 150 ..	D	90·00	Cutting ..	21·00	7·23	..	..
	..	..	..	Bank ..	15·00	4·12	..	..
	..	..	..	Cutting ..	18·00	4·59	..	..
117	..	..	..	Bank ..	11·00	2·18	..	..
	..	..	..	Cutting ..	10·00	3·14	..	..
	..	..	..	Bank ..	15·00	4·54	..	..
	1 in 200 ..	D	53·33	Bank ..	21·00	4·86	..	..
	..	..	..	Cutting ..	15·00	4·10	Right..	5280
118	..	..	..	Bank ..	17·33	5·10	..	..
	Level ..	..	36·67	Bank ..	14·00	8·15	..	..
	..	..	..	Cutting ..	22·67	3·09	Right..	5280
	1 in 150 ..	D	20·00	Cutting ..	9·00	2·96	..	..
	..	..	..	Bank ..	11·00	2·82	..	..
	Level ..	..	20·00	Bank ..	15·00	3·55	..	..
	..	..	..	Cutting ..	5·00	2·58	..	..
119	1 in 100 ..	D	20·00	Cutting ..	20·00	3·95	..	..
	Level ..	..	45·70	Bank ..	15·00	5·39	..	..
	..	..	..	Cutting ..	12·00	3·66	..	..
	..	..	..	Bank ..	18·70	6·24	..	..
	1 in 100 ..	D	118·30	Bank ..	2·30	2·51	..	..
120	..	..	..	Cutting ..	23·00	3·90	..	..
	..	..	..	Bank ..	10·00	1·59	..	..
	..	..	..	Cutting ..	38·00	8·11	Left ..	2640
121	..	..	..	Bank ..	45·00	22·48	..	..
	Level ..	..	52·00	Bank ..	52·00	30·76	Right..	2640
122	1 in 100 ..	U	34·00	Bank ..	24·00	11·63	..	..
	..	..	..	Cutting ..	10·00	5·62	..	..
	1 in 165 ..	U	40·00	Cutting ..	10·00	5·62	..	..
	..	..	..	Bank ..	21·00	9·63	..	..
	..	..	..	Cutting ..	9·00	1·45	..	..
123	Level ..	..	10·00	Bank ..	10·00	3·58	..	..
	1 in 220 ..	D	50·00	Bank ..	16·00	3·41	..	..
	..	..	..	Cutting ..	10·00	0·83	..	..
	..	..	..	Bank ..	24·00	7·41	..	..
	1 in 100 ..	D	132·00	Cutting ..	21·00	3·02	..	..
124	..	..	..	Bank ..	24·00	8·89	..	..
	..	..	..	Cutting ..	52·00	8·87	..	..
125	..	..	..	Bank ..	35·00	7·89	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ..	..	6·84	Bank ..	6·84	14·66	Left ..	2640
	1 in 100 ..	D	5·00	Bank ..	5·00	9·55	..	..
	Level ..	..	45·00	Bank ..	45·00	10·38	..	..
125¾	Minchnal station.		..	..	..	..	..	..
126	1 in 200 ..	D	16·00	Bank ..	16·00	12·43	Left ..	5280
	Level ..	..	27·00	Bank ..	27·00	32·26	Left ..	2640
127	1 in 100 ..	U	260·00	Bank ..	70·00	12·00	Right. Left.	1980
	..	..	..	Cutting ..	15·00	2·41	..	..
	..	..	..	Bank ..	13·00	7·16	..	..
128	..	..	..	Cutting ..	25·00	6·47	..	..
129	..	..	..	Bank ..	110·00	24·47	Right. Left.	2640 1980
	..	..	..	Cutting ..	24·00	8·39	Right..	2640
	..	..	..	Bank ..	3·00	3·33	..	..
	Level ..	..	10·00	Bank ..	4·00	3·33	..	..
	..	..	..	Cutting ..	2·00	2·35	..	..
	..	..	..	Bank ..	2·00	2·09	..	..
	..	..	..	Cutting ..	2·00	3·12	..	..
130	1 in 100 ..	D	20·00	Cutting ..	12·00	6·44	..	..
	..	..	..	Bank ..	8·00	6·63	..	..
	Level ..	..	10·00	Bank ..	10·00	8·01	..	..
	1 in 100 ..	U	20·00	Cutting ..	6·00	1·67	..	..
	..	..	..	Bank ..	6·00	4·71	..	..
	..	..	..	Cutting ..	8·00	6·00	Left ..	2640
	Level ..	..	20·00	Cutting ..	5·00	3·66	..	..
	..	..	..	Bank ..	15·00	6·75	..	..
	1 in 200 ..	U	60·00	Bank ..	13·00	11·64	..	..
131	..	..	..	Cutting ..	17·00	5·94	..	..
	..	..	..	Bank ..	30·00	6·61	Right..	1980
	Level ..	..	35·00	Cutting ..	11·00	5·09	..	..
	..	..	..	Bank ..	21·00	8·53	..	..
	..	..	..	Cutting ..	3·00	0·76	..	..
132	1 in 100 ..	D	35·00	Cutting ..	14·00	1·84	..	..
	..	..	..	Bank ..	21·00	6·86	..	..
	1 in 150 ..	D	70·00	Bank ..	17·00	6·04	..	..
	..	..	..	Cutting ..	5·00	1·39	Left ..	2640
	..	..	..	Bank ..	16·00	6·59	..	..
	..	..	..	Cutting ..	8·00	6·19	..	..
133	..	..	..	Bank ..	13·00	8·34	Right..	2640
	..	..	..	Cutting ..	5·00	3·41	..	..
	..	..	..	Bank ..	3·00	1·52	..	..
	..	..	..	Cutting ..	3·00	1·12	..	..
	1 in 100 ..	D	65·00	Cutting ..	32·00	8·07	Left ..	5280
134	..	..	..	Bank ..	33·00	7·32	Right..	2640
	Level ..	..	35·00	Bank ..	12·00	6·68	..	..
	..	..	..	Cutting ..	8·00	6·70	..	..
	..	..	..	Bank ..	15·00	5·92	Left ..	2640
	1 in 100 ..	D	45·00	Cutting ..	4·00	1·99	..	..
135	..	..	..	Bank ..	41·00	1·33	..	..
	Level ..	..	15·00	Bank ..	10·00	4·38	..	..
	..	..	..	Cutting ..	5·00	2·47	..	..
	1 in 200 ..	D	40·00	Cutting ..	18·00	2·50	..	..
	..	..	..	Bank ..	22·00	2·12	Right..	2640
136	1 in 100 ..	D	82·73	Cutting ..	16·00	2·81	Left ..	2640
	..	..	..	Bank ..	10·00	4·86	..	..
	..	..	..	Cutting ..	28·00	6·73	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	..	..	..	Bank ..	28·73	14·32	..	..
137	Level ..	..	13·00	Bank ..	13·00	18·31	..	..
	1 in 100 ..	U	9·00	Bank ..	9·00	12·67	..	..
	Level ..	..	38·80	Bank ..	5·00	3·45	..	..
	..	..	..	Cutting ..	13·00	10·17	..	..
	..	..	..	Bank ..	13·00	10·34	..	..
	..	..	..	Cutting ..	7·80	2·91	..	..
137½	Nimbal station.		..	..	..	..	..	..
	1 in 100 ..	D	5·20	Bank ..	5·20	5·70	..	..
	Level ..	..	12·00	Bank ..	12·00	12·92	..	..
138	1 in 100 ..	U	21·00	Bank ..	21·00	6·32	Right..	2640
	Level ..	..	52·00	Cutting ..	10·00	6·00	..	..
	..	..	..	Bank ..	27·00	15·10	..	..
	..	..	..	Cutting ..	15·00	5·87	..	..
	1 in 132 ..	D	31·80	Bank ..	19·80	5·17	..	..
139	..	..	..	Cutting ..	12·00	3·24	..	..
	1 in 100 ..	D	80·00	Bank ..	38·00	11·48	Left ..	2640
	..	..	..	Cutting ..	32·00	12·67	..	..
140	..	..	..	Bank ..	10·00	16·12	..	..
	Level ..	..	10·00	Bank ..	10·00	25·65	..	..
	1 in 165 ..	U	30·00	Bank ..	30·00	14·62	..	..
	Level ..	..	15·00	Cutting ..	15·00	7·35	..	..
141	1 in 100 ..	D	25·00	Cutting ..	9·00	7·04	..	..
	..	..	..	Bank ..	16·00	12·85	Right..	2640
	Level ..	..	20·00	Bank ..	10·00	5·67	..	..
	..	..	..	Cutting ..	10·00	2·38	..	..
	1 in 165 ..	D	10·00	Bank ..	10·00	16·28	..	..
	Level ..	..	10·00	Bank ..	10·00	16·28	..	..
	1 in 100 ..	U	20·00	Bank ..	20·00	15·04	Right..	5280
142	Level ..	..	20·00	Cutting ..	8·00	5·34	..	..
	..	..	..	Bank ..	12·00	10·34	..	..
	1 in 100 ..	U	10·00	Bank ..	10·00	8·71	..	..
	Level ..	..	10·00	Cutting ..	10·00	8·84	..	..
	1 in 100 ..	D	6·97	Cutting ..	3·00	3·54	..	..
	..	..	..	Bank ..	3·97	3·23	..	..
	Level ..	..	33·03	Bank ..	18·00	13·45	..	..
	..	..	..	Cutting ..	15·03	4·72	..	..
143	1 in 165 ..	D	30·00	Bank ..	15·00	2·90	..	..
	..	..	..	Cutting ..	15·00	2·38	..	..
	Level ..	..	50·00	Bank ..	13·00	6·10	..	..
	..	..	..	Cutting ..	6·00	0·46	..	..
	..	..	..	Bank ..	14·00	4·19	..	..
	..	..	..	Cutting ..	12·00	5·62	Right..	2640
144	1 in 150 ..	D	96·00	Cutting ..	14·00	5·70	..	..
	..	..	..	Bank ..	27·00	7·45	..	..
	..	..	..	Cutting ..	11·00	3·23	..	..
145	..	..	..	Bank ..	33·00	6·35	..	..
	..	..	..	Cutting ..	11·00	5·07	..	..
	1 in 112 ..	D	7·80	Bank ..	7·80	4·93	..	..
	Level ..	..	10·20	Bank ..	10·20	7·36	..	..
	1 in 147 ..	U	8·00	Bank ..	8·00	3·99	..	..
146	Level ..	..	44·00	Bank ..	44·00	3·77	..	..
146	Indi Road station.		..	..	..	..	..	..
	1 in 120 ..	D	34·00	Cutting ..	21·00	4·58	Left ..	2640
	..	..	..	Bank ..	23·00	4·76	..	..
	Level ..	..	40·00	Bank ..	40·00	6·88	..	..
147	1 in 165 ..	D	50·00	Bank ..	50·00	3·96	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ..	..	30·00	Bank ..	30·00	2·58	Right..	2640
148	1 in 150 ..	D	24·00	Cutting ..	19·00	2·14	..	..
	..	..	..	Bank ..	5·00	2·04	..	..
	Level ..	..	11·33	Bank ..	11·33	5·66	..	..
	1 in 200 ..	U	14·67	Bank ..	14·67	4·02	..	..
	Level ..	..	30·00	Cutting ..	10·00	4·20	..	..
	..	..	..	Bank ..	20·00	3·72	Left ..	2640
149	1 in 160 ..	D	100·00	Cutting ..	12·00	2 52	..	..
	..	..	..	Bank ..	28·00	4·10	Left ..	1320
	..	..	..	Cutting ..	35·00	3·91	..	..
150	..	..	..	Bank ..	20·00	11·78	..	..
	..	..	..	Cutting ..	5·00	1·99	..	..
	1 in 132 ..	D	58·00	Cutting ..	6·00	1·69	..	..
	..	..	..	Bank ..	52·00	9·51	..	..
151	1 in 100 ..	D	50·00	Bank ..	50·00	6·97	Right..	2640
152	Level ..	..	87·00	Bank ..	61·00	14·28	..	..
	..	..	..	Cutting ..	21·00	6·68	..	..
	..	..	..	Bank ..	5·00	2·49	..	..
152½	Luchyan station	..	..	..	..	..	..	..
153	1 in 100 ..	D	65·00	Bank ..	27·00	5·35	..	..
	..	..	..	Cutting ..	20·00	3·54	..	..
	..	..	..	Bank ..	18·00	13·58	..	..
	1 in 220 ..	D	40·00	Bank ..	26·00	11·54	Left ..	1320
	..	..	..	Cutting ..	14·00	3·12	..	..
	1 in 250 ..	D	80·00	Bank ..	8·00	1·94	..	..
	..	..	..	Cutting ..	31·00	4·45	..	..
	..	..	..	Bank ..	46·00	18·26	..	..
155	Level ..	..	18·88	Bank ..	18·88	7·90	..	..
	1 in 132 ..	D	21·12	Bank ..	21·12	7·72	Left ..	2640
156	1 in 500 ..	D	44·00	Bank ..	44 00	8·83	..	..
157	Level ..	..	78·00	Bank ..	78·00	36·45	Right Left	1320 2640
	Bhima bridge 14—150 feet.				..	..	..	..
	1 in 500 ..	U	44·00	Bank ..	44·00	14·46	..	..
158	1 in 110 ..	U	60·00	Bank ..	60·00	2·86	..	..
	1 in 400 ..	U	52·00	Cutting ..	9·00	3·25	..	..
	..	..	..	Bank ..	28·00	7·68	..	..
	..	..	..	Cutting ..	15·00	7·44	..	..
159	Level ..	..	42·00	Bank ..	20·00	6·90	..	..
	..	..	..	Cutting ..	12·00	5·48	..	..
	..	..	..	Bank ..	10·00	3·59	..	..
160	1 in 200 ..	U	60·00	Bank ..	48·00	10·44	..	..
	..	..	..	Cutting ..	12·00	3·64	..	..
	1 in 100 ..	U	10·00	Cutting ..	10·00	1·87	..	..
	Level ..	..	40·00	Cutting ..	15·00	2·94	..	..
	..	..	..	Bank ..	17·00	3·87	..	..
	..	..	..	Cutting ..	8·00	5·48	..	..
160½	Tadval station	..	..	..	..	..	..	..
161	1 in 165 ..	U	50·00	Cutting ..	5·00	5·48	..	..
	..	..	..	Bank ..	20·00	7·96	..	..
	..	..	..	Cutting ..	7·00	1·71	..	..
	..	..	..	Bank ..	18·00	9·63	..	..
162	1 in 200 ..	U	66·00	Bank ..	64·00	9·06	..	..
	..	..	..	Cutting ..	2·00	0·93	..	..
	Level ..	..	10·00	Cutting ..	8·00	3 71	..	..
	..	..	..	Bank ..	2·00	2·73	..	..
	1 in 200 ..	D	18·00	Bank ..	18·00	5·98	..	..

Working Section—Main Line—Gadag to Hotgi—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ..	..	20·00	Bank ..	20·00	11·82	..	..
163	1 in 200 ..	U	22·00	Bank ..	22·00	6·25	..	..
	Level ..	..	22·00	Bank ..	22·00	5·33	Right..	2640
	1 in 400 ..	D	32·00	Bank ..	32·00	7·33	..	..
164	1 in 100 ..	D	35·00	Cutting ..	16·00	4·26	..	..
	..	..	..	Bank ..	19·00	8·34	..	..
	1 in 500 ..	D	55·00	Bank ..	55·00	13·41	..	..
165	Level ..	..	19·00	Bank ..	19·00	16·99	..	..
	1 in 100 ..	U	61·00	Cutting ..	10·00	..	..	..
	..	..	..	Bank ..	51·00	2·57	..	..
166	1 in 200 ..	U	100·00	Bank ..	26·00	5·26	..	..
	..	..	..	Cutting ..	5·00	1·31	..	..
	..	..	..	Bank ..	6·00	1·68	..	..
	..	..	..	Cutting ..	25·00	7·58	..	..
167	..	..	..	Bank ..	21·00	10·01	..	..
	..	..	..	Cutting ..	17·00	5·75	..	..
	Level ..	..	14·00	Cutting ..	10·00	3·62	Left ..	2640
	..	..	..	Bank ..	4·05	2·07	..	..
	1 in 165 ..	D	26·00	Bank ..	26·00	2·38	..	..
168	1 in 600 ..	D	120·00	Bank ..	20·00	5·79	..	..
	..	..	..	Cutting ..	21·00	2·83	..	..
	..	..	..	Bank ..	22·00	6·98	..	..
	..	..	..	Cutting ..	6·00	1·04	..	..
	..	..	..	Bank ..	15·00	5·60	..	..
	..	..	..	Cutting ..	9·00	2·46	..	..
169	..	..	..	Bank ..	12·00	5·33	..	..
	..	..	..	Cutting ..	12·00	4·44	..	..
	..	..	..	Bank ..	3·00	1·77	..	..
	1 in 1,650 ..	D	110·00	Bank ..	14·00	5·72	..	..
	..	..	..	Cutting ..	22·00	6·19	..	..
170	..	..	..	Bank ..	33·00	6·72	Left ..	2640
	..	..	..	Cutting ..	16·00	2·66	..	..
	..	..	..	Bank ..	13·00	3·88	..	..
	..	..	..	Cutting ..	12·00	3·81	..	..
	1 in 264 ..	U	80·00	Bank ..	10·00	2·87	..	..
	..	..	..	Cutting ..	15·00	2·00	..	..
171	..	..	..	Bank ..	20·00	2·67	Right..	2640
	..	..	..	Cutting ..	27·00	5·67	Left ..	2640
	..	..	..	Bank ..	8·00	1·43	..	..
	Level ..	..	10·00	Bank ..	10·00	1·85	..	..
172	1 in 300 ..	D	40·00	Bank ..	25·00	5·73	..	..
	..	..	..	Cutting ..	5·00	1·44	..	..
	..	..	..	Bank ..	10·00	3·63	..	..
	1 in 200 ..	D	34·00	Bank ..	34·00	12·62	Left ..	2640
173	Level ..	..	76·00	Bank ..	76·00	12·96	..	..
173¼	Hotgi station-yard centre of platform			..	..	..	..	..

BRIDGES.

Mile from Gadag.	Name.	Openings.	Description.	Rise of flood water above low-water level, feet.	Maximum velocity in flood, feet per second.	Flood area of openings, feet.	Height of under side of girders or soffit of arch. Above flood level.	Height of under side of girders or soffit of arch. Above river-bed.	Remarks.
1¼	..	1— 10′	Arch ..	..	..	..	..	..	Malprabha bridge.—Girders of the simple triangulated type resting on masonry piers built on a rock foundation. The line is carried, on the bottom boom, on cross girders by means of troughed rail bearers fitted with timber longitudinals to which the rails are spiked. The bridge is floored with heavy corrugated iron to carry *cart* traffic, over which metalling is laid forming the roadway.
..	..	1— 10′	Do. ..	..	..	..	..	..	
31¼	Malprabha river	12—100′	Girders ..	21′	8′	22,667′	11′	34′	
32	Nala ..	2— 40′	W.I. Girders	4·50′	..	..	7′ 3″	11′ 6″	
35	..	1— 10′	Arch ..	..	..	..	..	..	
37	Yarkop ..	5— 20′	Arches ..	..	6′	800′	..	10′ 4″	
40	Badami ..	5— 20′	Do. ..	..	6′	800′	..	10′ 10″	
44	Muchalgud ..	3— 20′	Do. ..	..	..	..	..	10′ 4″	The nala at mile 32 is a backwater of the Malprabha. There is no roadway, and this bridge should be covered with corrugated iron sheeting for traffic. Approaches on embankment 20′ high. This nala is generally a dry road.
46	..	2 - 20′	Do. ..	..	..	..	..	..	
48¼	Hera	3— 30′	Do. ..	..	..	..	..	5′ 3″	
49¼	Kemp	9— 30′	Do. ..	11·80′	6′	2,970	..	15′	
50¾	..	1— 10′	Do. ..	..	..	..	..	..	
52¾	..	3— 10′	Do. ..	..	..	..	..	..	
59¾	..	1— 20′	Girder ..	..	..	..	..	..	All the bridges have an open foundation.
60¼	Mullapur ..	7— 30′	Arches ..	..	..	..	4′	22′	
61	..	1— 10′	Arch ..	..	..	..	..	..	
62	Keisur	4— 30′	Do. ..	7′	5′	1,080′	..	12′	Foundation open.
63¾	Pagoda ..	5— 30′	Do. ..	..	6′	1,650′	..	14′ 9″	Do.
65	..	1— 10′	Do. ..	..	..	..	..	..	
67	..	1— 10′	Do. ..	..	..	..	..	..	
67¾	..	5— 10′	Do. ..	..	..	..	..	..	
68¾	..	1— 10′	Do. ..	..	..	..	..	..	
69	..	1— 10′	Do. ..	..	..	..	..	..	
69½	..	1— 10′	Do. ..	..	..	..	..	..	
69¾	..	1— 30′	Do. ..	..	..	..	..	..	

70½	..	1— 10′	Do. ..	..	..	..	..	..	
71	..	1— 10′	Do. ..	..	..	..	..	..	
71¼	..	1— 20′	Do. ..	..	..	..	..	..	
72¼	..	1— 10′	Do. ..	..	..	..	..	..	
73½	..	1— 10′	Do. ..	..	..	..	..	..	
75½	Krishna river ..	21—150′	Girders ..	31′	12′	84,314′	12′	51′	Krishna river.—This is the largest bridge on the Bijapur Branch. The girders are simple triangulated on rollers at one end, resting on masonry piers. The line is carried on the bottom boom on cross girders by means of trough rail bearers fitted with timber longitudinals to which the rails are spiked. The bridge is floored with heavy corrugated iron to carry metalling for *cart* traffic. The approaches are on high embankment (30′). See plan. Foundation open.
86½	..	1— 20′	Arch ..	..	..	..	..	..	
87½	..	1— 20′	Do. ..	..	..	..	..	..	
98¾	..	1— 20′	Do. ..	..	..	..	..	..	
102	Don river ..	8—100′	Girders ..	20′	10′	24,459′	7′	32′	Similar to Malprabha bridge; adapted for cart traffic; approaches on low embankment. (See plan.)
111	Begum tank ..	1— 30′	Arch ..	..	5′	555′	..	23′	
121½	Ingnal ..	5— 40′	Girders ..	18′	6′	3,885′	21′ 3″	32′	The Ingnal, Nagthan and Gunki.—This is an open bridge and should be decked with iron sheeting to carry foot-way. The rails are carried on cross sleepers resting directly on top of girder.
125½	Nagthan ..	4— 40′	Do. ..	7′	6′	1,275′	5′ 6″	13′	
126½	Gunki ..	8— 40′	Do. ..	17′	6′	3,900′	6′ 6″	23′ 6″	
136¾	Nimbal ..	4— 30′	Arches ..	8′	6′	883′	3′ 6″	12′	Foundation open.
137	..	1— 20′	Do. ..	..	..	..	..	..	
140½	Boblad ..	3— 30′	Do. ..	8′	6′	900′	3′	14′ 6″	Do.
141½	Chargi ..	3— 20′	Do. ..	4·50′	6′	420′	..	8′ 4″	Do.
151½	..	1— 15′	Do. ..	..	..	..	..	..	
153½	Pudnur ..	3— 20′	Do. ..	..	..	420′	..	9′ 4″	Do.
156½	Bhima river ..	14—150′	Girders ..	49′	10′	68,475′	10′	65′	Similar in all details to Krishna bridge. (See plan.) Adapted for cart traffic.
159½	..	1— 15′	Arch ..	..	..	..	..	..	
160½	..	2— 10′	Do. ..	..	..	..	..	..	
163	..	1— 15′	Do. ..	..	..	..	..	..	
165¼	Jawalgi ..	3— 20′	Do. ..	..	6′	380′	3′	10′	Foundation open.
173	..	1— 20′	Do. ..	..	..	..	..	..	

Notes on the four large bridges—"Malprabha," "Krishna," "Don," and "Bhima."

1. *"Malprabha."*—The river only runs under the centre 6 spans, 3 spans at each end are over cultivation. It is fordable for 9 months of the year. The village of Alur is at the south side of bridge and that of Jacnoor on the north immediately opposite. The approaches to bridge are on embankment about 15′ high. Artillery could get up about 500 yards distant on either side. The river-bed is sand. The line is fenced on both sides. The corrugated iron cart-track is 14′ wide. The bridge is commanded by the Lakmapur hills about 2 miles north, towards which it is a gradual rise.

2. *"Krishna."*—The very small way-side station of Sitimani is on the south side of the bridge a quarter of a mile distant; the line is on high embankment for this portion and wired on both sides. To the right as you approach the river from Sitimani the range of hills which have been running along the right of the line from Karlimatti and which were crossed at that station, terminate abruptly on the right bank almost overhanging it. On the left the ground is much lower and undulates. The river-bed is stony. There is an artificial reef running right across just under the bridge having 2 or 3 central passages for the water to pass through, and the river could be crossed by this except during the rainy season. Both banks are cultivated on the left of line (approaching from Sitimani), all towards the right it is low wood and scrub. Artillery would get on to line at Sitimani station. On the *north* side of bridge the country is still composed of low hills. A quarter of a mile to the left or west, there is a Hindu temple inside a high wall and a very small village. Immediately above shortly before reaching Alimatti station there is a hill which entirely commands the bridge and would form its north defence. The approach from the north is a decline all the way from Alimatti station at a gradient of 1 in 100. The bridge itself stands very high and is a striking mark, but is commanded on both banks by hills which would form excellent defensive positions, Alimatti being the north and the abrupt hills above alluded to the south. On the north side a tributary with a broad sandy bottom winds along between low sandy hills and during the rains discharges a good volume of water into the Krishna close by the bridge.

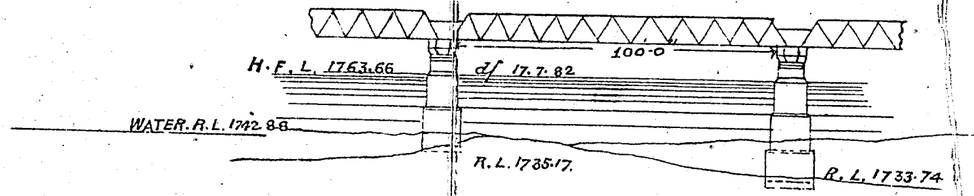
3. *The "Don."*—River banks soft above 10′ high; cultivation along both sides; 100 yards west of bridge road runs with good ford leading to Bijapur. The channel of water is small and the river easily forded except during rains. The bed of river is sandy. The main road to Bijapur is about 50 yards from bridge and is shaded all along this part by trees. The country round, or valley of the Don, is richly cultivated.

4. *The "Bhima."*—The approaches are embankments of black soil but easily surmountable. The 8 northern spans only are over river, the others over cultivation. The river is easily fordable. The bed is sandy and the banks sloping of earth and sand mixed. The bridge stands very high above water and the country round is level and cultivated and of a rich black soil. There is a village close by on each bank. Unlike the Krishna this bridge would be best defended from its own elevation.

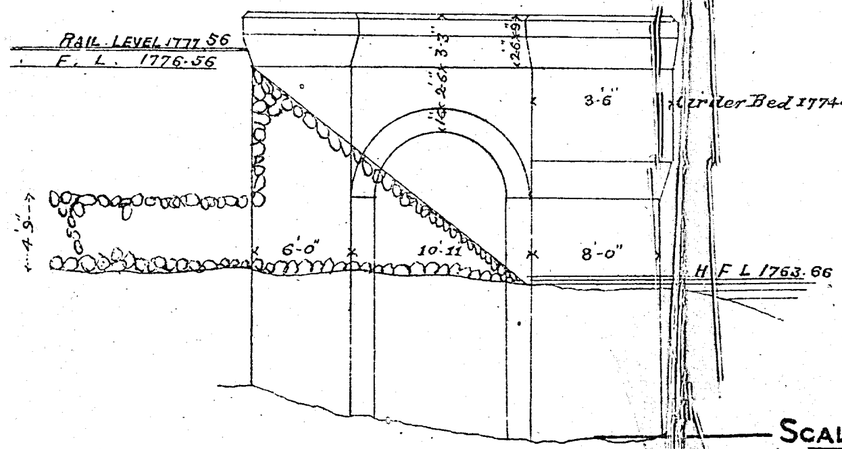
MULAPRABHA & DON GIRDER

SCALE 40 FEET TO ONE INCH

ELEVATION

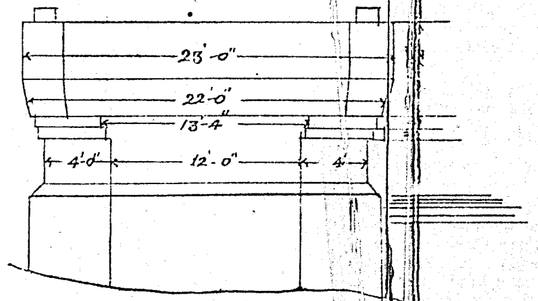


ELEVATION ABUTMENT



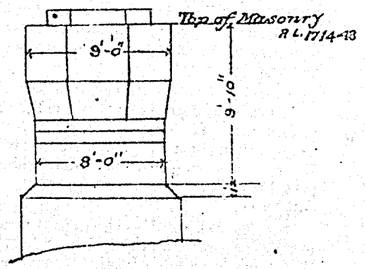
SIDE VIEW

PIER



ELEVATION

PIER



SCALE 8 FEET TO ONE INCH

Photo-Zincographed in Central Survey Office Madras.
1890

STATIONS.

Station.	Class and description; W = watering. AW = Auxiliary. E = Engine. F = Fuel.	Situation.		
		Mileage.		If on curve or gradient.
		From Gadag.	Between Stations.	
Gadag Junction ..	1st W.E.F. ..	..	..	L. and S.
Hombal	4th ..	8¾	8½	3 chains on 1 in 200. 6 chains on curve R. 2,500.
Balaganur	4th ..	13½	4¾	On 1 in 340. 6 chains on curve R. 3,000, 3 chains R. 2,500.
Mallapur	3rd A.W. ..	19½	6	L. and S.
Alur	3rd W. ..	30	10½	L. and S.
Badami	4th ..	42	12	L. 2 chains on curve and R. 3,000.
Katgeri	3rd A.W. ..	50¼	8¼	L. and S.
Bagalkot	3rd W. ..	58¼	8	L. and S.
Karlimatti	4th ..	67½	9¼	3 chains on 1 in 100. 2·5 chains on curve R. 1,300.
Sitimani	4th ..	75¼	7¾	12 chains on 1 in 150. 11 chains on curve R. 2,000.
Alimatti	3rd A.W. ..	77¼	2	4 chains on 1 in 100. 14 chains on curve R. 2,000.
Telgi	2nd W.E.F. ..	87¼	10	L. and S.
Mulwad	4th A.W. ..	99	11¾	3 chains on 1 in 100 straight.
Jumnal	4th ..	106¼	7¼	L. and S.
Bijapur	3rd W. ..	114¾	8½	2 chains on 1 in 100 S.
Minchnal	4th A.W. ..	126¼	11½	L. and S.
Nimbal	4th W. ..	137¾	11½	Do.
Indi Road	3rd ..	146¼	8½	Do.
Lachyan	4th ..	152½	6¼	Do.
Tadval	4th A.W. ..	160¾	8¼	Do.
Hotgi Junction ..	1st W.E.F. ..	173½	12¾	Do.

STATIONS—*cont.*

Station.	Nature of soil.	Buildings.			
		Passenger.		Goods.	
		Nature.	Size.	Nature.	Size.
Gadag Junction ..	Black ..	See "Main line."		..	..
Hombal	Do. ..	Corr. iron, Mangalore tiles.	46 × 32	..	..
Balaganur	Do. ..	Do. ..	46 × 32	..	..
Mallapur	Do. ..	Masonry kutcha.	14 × 14	Corr. iron, Mangalore tiles.	84′ × 24′
Alur	Do. ..	Masonry faced.	44 × 14	Do.	84′ × 24′
Badami	Red ..	Do.	44 × 14	..	..
Katgeri	Jungle ..	Stone in lime.	44 × 14	..	63′ × 23′
Bagalkot	Black ..	Do.	95 × 30	..	60′ × 20′ 12′ × 24′
Karlimatti	Rocky ..	Do.	24 × 14	..	..
Sitimani	Black ..	Stone in mud.	14 × 14	..	..
Alimatti	Red and rocky.	Stone in lime.	44 × 14	Corrugated iron.	84′ × 24′
Telgi	Black ..	Do.	68 × 28	..	63′ × 23′
Mulwad	Do. ..	Do.	44 × 14	..	..
Jumnal	Do. ..	Stone in mud.	24 × 14	..	..
Bijapur	Trap ..	Stone in lime.	55 × 30	Stone ..	82′ × 30′
Minchnal	Do. ..	Stone in mud.	24 × 14	..	..
Nimbal	Do. ..	Do.	24 × 14	..	..
Indi Road	Do. ..	Stone in lime.	..	..	63′ × 23′
Lachyan	Black ..	Stone and mud.	24 × 14	..	..
Tadval	Do. ..	Do.	24 × 14	..	..
Hotgi Junction ..	Do. ..	Stone in lime.	163 × 37	Wood ..	121′ × 42′

STATIONS—*cont.*

Station.	Buildings—*cont.*						
	Engine.		Workshops.		Others, such as staff quarters, &c.		Latrine.
	Size.	Capacity.	Nature.	Size.	No.	Size.	Number.
Gadag Junction .	..	..	Loco. for repairs in engine shed.		See page 181.	..	..
Hombal ..	..	..	..	..		..	..
Balaganur ..	..	..	..	..		..	..
Mallapur ..	..	..	..	..		..	1 = 16 units.
Alur	..	..	..	..		..	1 = 16 units.
Badami	..	..	..	..		..	1 = 16 units.
Katgeri	..	..	..	..		..	..
Bagalkot ..	..	..	..	..		..	3 = 24 units.
Karlimatti ..	..	..	..	..		..	..
Sitimani ..	..	..	..	..		..	..
Alimatti	..	..	..	..		..	..
Telgi	138′×42′	6 engines.	Loco. for repairs in engine shed.			..	3 = 24 units.
Mulwad	..	..	..	..		..	1 = 16 units.
Jumnal	..	..	..	..		..	..
Bijapur	..	..	..	..		..	3 = 24 units.
Minchnal ..	..	..	..	..		..	..
Nimbal	..	..	..	..		..	1 = 16 units.
Indi Road ..	..	..	..	..		..	1 = 16 units.
Lachyan ..	..	..	..	..		..	..
Tadval	..	..	..	..		..	..
Hotgi Junction ..	138′×42′	6 engines.	Loco. for repairs in engine shed.			..	2 = 20 units.

STATIONS—*cont.*

Station.	Platforms.			
	Passenger.		Goods.	
	Covered.	Uncovered.	Covered.	Uncovered.
Gadag Junction	..	668′ × 16′ 365′ × 30′	..	..
Hombal	..	358′ × 31′	..	..
Balaganur	..	600′ × 20′	..	..
Mallapur	..	325′ × 30′	..	84′ × 6′ 100′ × 20′
Alur	..	356′ × 30′	..	84′ × 6′ 100′ × 20′
Badami	..	356′ × 30′	..	..
Katgeri	..	356′ × 30′	60′ × 20′	60′ × 20′
Bagalkot	..	595′ × 50′	100′ × 27′	247′ × 30′ 120′ × 6′
Karlimatti	..	..	..	..
Sitimani	..	..	..	..
Alimatti	..	281′ × 30′	..	..
Telgi	..	338′ × 43′	63′ × 6′	117′ × 20′
Mulwad	..	342′ × 31′	..	..
Jumnal	..	343′ × 30′	..	..
Bijapur	..	350′ × 28′	120 × 20	120′ × 6′
Minchnal	..	348′ × 30′	..	..
Nimbal	..	350′ × 30′	..	..
Indi Road..	..	362′ × 28′	60 × 20	60′ × 20′
Lachyan	..	349′ × 28′	..	..
Tadval	..	346′ × 28′	..	..
Hotgi Junction	..	600′ × 16′	107 × 42	..

STATIONS—*cont.*

Station.	Water.						
	Wells.	Tanks.			Pumps.	Hydrants.	Water columns.
	Number, nature, &c.	Size.	Capacity gallons.	Time to refill.			
Gadag Junction..	See "Main line."		..	..	..	..	..
Hombal ..	..	..	..	..	..	..	..
Balaganur ..	..	..	..	..	..	..	..
Mallapur ..	1 dry, water sent out in iron tanks from Gadag.	4 each 4′×4′×4′	1,600	2 hours.	1	..	1
Alur ..	1 steined 7′ diameter close to Malprabha bridge.	6 each 5′×5′×5′ on earth bunds.	4,674	6 do.	1	..	2
Badami ..	1 steined diameter 15′ depth 112′, good.	Tank house but no tank.	..	..	..	..	..
Katgeri ..	1 steined diameter 12′, good, depth 92′.	2 iron, each 4′× 4′×4′.	800	1 hour.	1	..	1
Bagalkot ..	1 steined diameter 10′ depth 105′, good.	15′×15′×5′ ..	7,200	10 hours.	1	..	2
Karlimatti ..	..	..	..	..	..	..	..
Sitimani ..	Water (*nil*) from Kistna river.	..	..	..	..	..	..
Alimatti ..	1 steined diameter 14′ depth 30′, good.	15′×15′×5′ ..	7,200	10 hours.	1	..	2
Telgi ..	1 steined diameter 19′ depth 46′, good.	30′×15′×5′ ..	14,000	15 do.	1	..	1
Mulwad ..	1 steined diameter 12′ depth 49, very good.	12×12×5 ..	4,600	6 do.	1	..	2
Jumnal ..	1 Do. good.	..	..	..	..	..	..
Bijapur ..	2 steined, 1 round, diameter 10, depth 30′, 1 square, supply scarce.	12×12×5 ..	4,600	6 hours.	1	..	2
Minchnal ..	1 diameter 16′, but water obtained from nala.	4 iron each 4′× 4′×4′	1,600	2 do.	1	..	1
Nimbal ..	1 steined diameter 27′ but water from nala.	12×12×5′ ..	4,600	6 do.	1	..	2
Indi Road ..	Water brought in chatties from Government well 1½ miles distance.	..	..	..	..	..	..
Lachyan ..	1 steined diameter 9′, bad, depth 17′.	4 iron each 4′× 4′×4′.	1,600	2 hours.	1	..	..
Tadval ..	1 steined diameter 13′ depth 25′, good.	12×12×5′ ..	4,600	6 do.	1	..	2
Hotgi Junction..	3 steined 1·20′ diameter and 43′ deep, good.	30′×15′×5′ ..	14,000	15 do.	1	..	1
					All lift and force pumps, 2′ pipes.		

STATIONS—*cont.*

Station.	Fuel.			Sidings.		Dead ends.	
	Stage.	Kind.	Where stored.	No.	Length.	No.	Length.
Gadag Junction ..	3	Wood.	Gadag ..	..	..	..	..
Hombal	..	..	..	1	1,400′	1	400′
Balaganur	..	..	..	1	1,166′	1	325′
Mallapur	..	..	..	1	1,316′	1	437′
Alur	..	..	..	3	3,079′	2	300′
Badami	..	..	..	1	1,207′	1	732′
Katgeri	..	..	..	3	3,634′	2	410′
Bagalkot	..	..	..	3	4,460′	2	650′
Karlimatti	..	..	..	1	962′	1	160′
Sitimani	..	..	..	..	..	..	..
Alimatti	..	..	..	2	1,970′	..	..
Telgi	1	Coal & wood.	Telgi ..	6	4,311′	3	791′
Mulwad	..	..	..	1	1,090′	1	340′
Jumnal	..	..	..	1	1,296′	1	309′
Bijapur	..	..	..	4	3,283′	1	327′
Minchnal	..	..	..	1	1,097′	1	254′
Nimbal	..	..	..	1	1,312′	1	235′
Indi Road	..	..	..	3	2,858′	1	300′
Lachyan	..	..	..	1	1,818′	1	160′
Tadval	..	..	..	1	1,440′	1	200′
Hotgi Junction ..	1	Coal & wood.	Hotgi ..	3	4,729′	3	1,800′

STATIONS—*cont.*

Station.	Cross-overs.	Turn-outs.	Signals.		Weigh-bridges.	Weighing machines.
			Home.	Distant.		
Gadag Junction	5	18	..	..	1	..
Hombal	1	1	1	2	..	1
Balaganur	1	1	1	2	..	1
Mallapur	1	1	1	2	..	1
Alur	2	2	1	2	..	1
Badami	..	3	1	2	..	1
Katgeri	2	3	1	2	..	1
Bagalkot	2	4	1	2	1	1
Karlimatti	1	1	1	2	..	1
Sitimani	..	..	1	..	..	1
Alimatti	..	2	1	2	..	1
Telgi	6	12	1	2	..	1
Mulwad	1	2	1	2	..	1
Jumnal	1	2	1	2	..	1
Bijapur	..	8	1	2	1	3
Minchnal	1	2	1	2	..	1
Nimbal	1	2	1	2	..	1
Indi Road	1	6	1	2	..	2
Lachyan	1	2	1	2	..	1
Tadval	1	2	1	2	..	1
Hotgi Junction	5	2	1	2	1	1

STATIONS—*cont.*

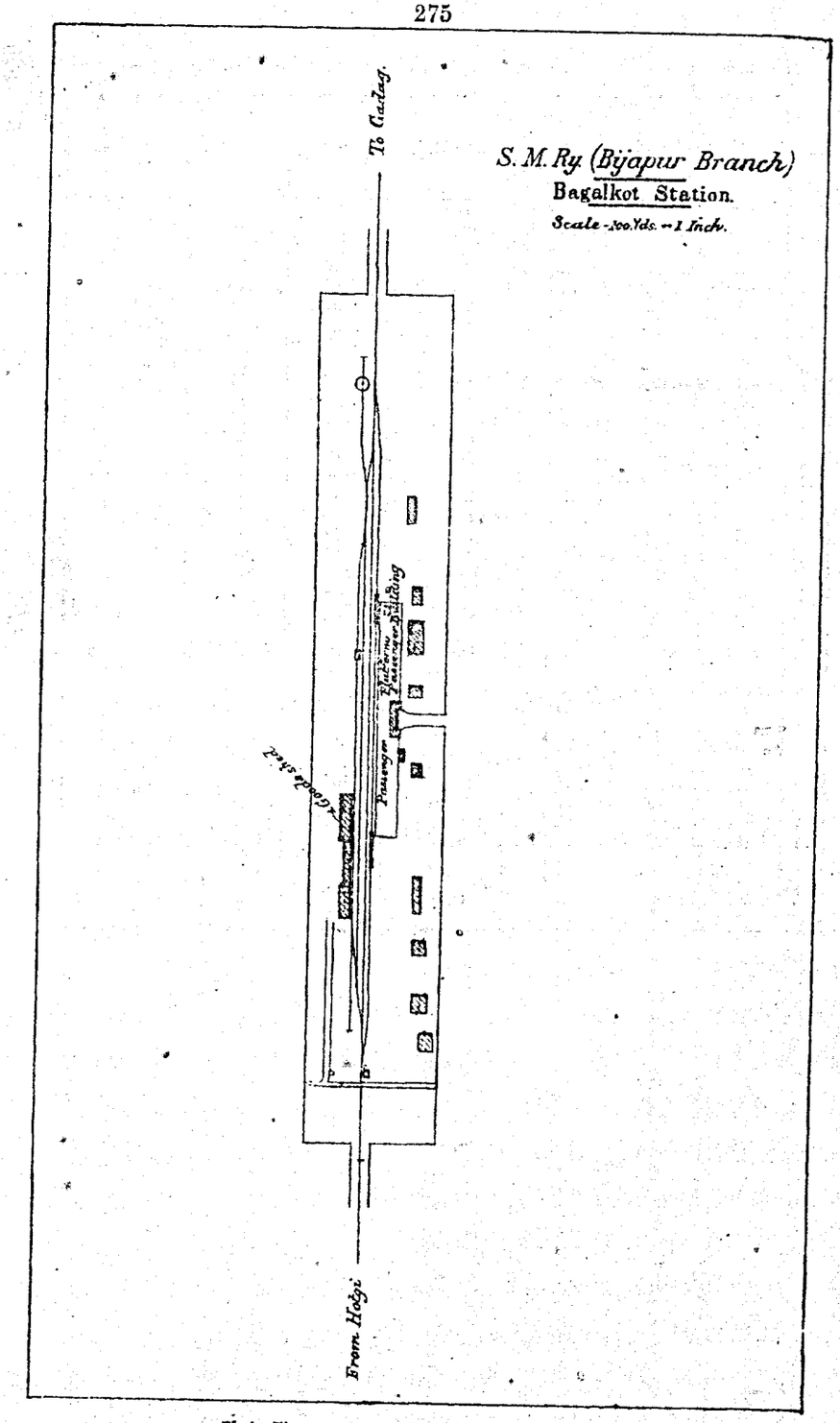
Station.	Mechanical lifting power.	Turn-tables.	Ashpits.	Carriage examining pits.	Station yards, area.
Gadag Junction ..	..	1 engine ..	4	1	..
Hombal	..	..	..	..	2,300′ × 350′
Balaganur	..	...	..	..	2,300′ × 350′
Mallapur	..	..	..	..	1,990′ × 455′
Alur	..	..	1	..	1,800′ × 300′
Badami	..	..	2	..	1,647′ × 300′
Katgeri	..	..	2	..	1,560′ × 300′
Bagalkot	..	1 engine ..	2	..	2,185′ × 350′
Karlimatti	..	..	..	..	250′ × 50′
Sitimani	..	..	..	..	300′ × 50′
Alimatti	..	..	2	..	1,722′ × 250′
Telgi	..	1 engine ..	2	..	1,561′ × 350′
Mulwad	..	..	2	..	1,710′ × 320′
Jumnal	..	..	..	..	1,764′ × 300′
Bijapur	..	1 engine ..	2	..	2,225′ × 392′
Minchnal	..	..	..	..	1,960′ × 390′
Nimbal	..	..	2	..	1,975′ × 400′
Indi Road	..	..	..	..	2,604′ × 300′
Lachyan	..	..	..	..	2,996′ × 300′
Tadvāl	..	..	2	..	1,973′ × 300′
Hotgi Junction ..	10-ton crane.	1 engine and 1 traverser.	2	1	3,960′ × 320′

Buildings "other" than Passenger, Engine, Goods or Workshops.

Block.	Name of Building.	Unit.	Locality.	Length.	Breadth.	Remarks.
1	Third-class bungalow ...	1	Hotgi ...	47′	39′	
1	Do. do. ...	1	Do. ...	47′	39′	
1	Do. do. ...	1	Do. ...	45′	38′	
1	Do. do. ...	1	Do. ...	44′	39′	
1	Storekeeper's office ...	1	Do. ...	76′	38′	
1	Locomotive and Carriage Foreman's office ...	1	Do. ...	42′	32′	
1	Driver's quarters ...	4	Do. ...	72′	38′	
1	Guard's quarters ...	2	Do. ...	38′	37′	
1	Do. ...	4	Do. ...	85′	38′	
1	Driver's quarters ...	2	Do. ...	43′	38′	
1	Do. ...	2	Do. ...	43′	38′	
1	Do. ...	2	Do. ...	43′	38′	
1	Old Driver's quarters ...	3	Do. ...	39′	40′	
1	Hospital	1	Do. ...	50′	29′	
1	Clerk's quarters ...	6	Do. ...	76′	31′	
1	Do.	6	Do. ...	76′	24′	
1	Do.	6	Do. ...	76′	31′	
1	Khallasee's quarters ...	30	Do. ...	150′	20′	
1	Porter's quarters... ...	6	Do. ...	58′	19′	
1	Do.	8	Do. ...	95′	19′	
1	Do.	5	Do. ...	58′	19′	
1	Carriage Examiner's office	1	Do. ...	30′	20′	
1	Porter's quarters ...	4	Tadval ...	46′ 9″	19′	
1	Station Master's quarters.	1	Do. ...	33′	31′	
1	Do. do. ...	1	Lachyan ...	33′	31′	
1	Porter's quarters ...	4	Do. ...	46′ 9″	19′	
1	Station Master's quarters.	1	Indi ...	33′	31′	
1	Porter's quarters ...	11	Do. ...	113′	19′	
1	Do. ...	6	Nimbal ...	69′ 9″	19′	
1	Station Master's quarters.	1	Do. ...	33′	31′	
1	Public Works Inspector's bungalow	1	Do. ...	66′ 6″	38′	Not in station yard.
1	Station Master's quarters.	1	Minchnal ...	33′	31′	
1	Porter's quarters ...	4	Do. ...	46′ 9″	19′	
1	Resident Engineer's bungalow	1	Bijapur ...	86′	80′	Outside of station compound.
1	Do. do. ...	1	Do. ...	48′	34′ 6″	Do.
1	Porter's quarters ...	8	Do. ...	91′	19′	
1	Cook-house and Servant's quarters	4	Do. ...	38′	29′	
1	Station Master's quarters.	1	Do. ...	33′	31′	
1	Clerk's quarters ...	6	Do. ...	69′ 6″	19′	
1	Store shed	1	Do. ...	100′	70′	
1	Post office	2	Do. ...	31′ 9″	28′ 6″	
1	Station Master's quarters.	1	Jumnal ...	33′	31′	
1	Porter's quarters ...	6	Do. ...	69′ 6″	19′	
1	Station Master's quarters.	1	Mulvad ...	33′	31′	
1	Porter's quarters ...	6	Do. ...	69′ 6″	19′	
1	Running Room, Telgi ...	1	Telgi ...	46′	38′	
1	Driver's quarters ...	2	Do. ...	42′ 6″	37′ 6″	
1	Do. ...	2	Do. ...	42′ 6″	37′ 6″	
1	Do. ...	2	Do. ...	42′ 6″	37′ 6″	
1	Guard's barracks ...	4	Do. ...	72′	37′ 6″	
1	Station Master's quarters.	1	Do. ...	33′	31′	

Buildings "other" than Passenger, Engine, Goods or Workshops—cont.

Block.	Name of Building.	Unit.	Locality.	Length.	Breadth.	Remarks.
1	Foreman's quarters ...	10	Telgi ...	113′ 5″	18′ 7″	
1	Do. ...	10	Do. ...	113′ 5″	18′ 7″	
1	Station Master's quarters.	1	Alimati ...	33′	31′	
1	Porter's quarters ...	10	Do. ...	106′ 6″	19′	
1	Third-class bungalow ...	1	Do. ...	46′	38′	North of Krishna River.
1	Do. do. ...	1	Do. ...	46′	38′	South of do.
1	Station Master's quarters.	1	Karlimati...	33′	17′	
1	Porter's quarters ...	2	Do. ...	23′ 9″	13′	
1	Station Master's quarters.	1	Bagalkot ...	33′	31′	
1	Third-class bungalow ...	1	Do. ...	45′ 9″	36′ 6″	
1	Porter's quarters ...	6	Do. ...	93′ 6″	19′	
1	Do. ...	4	Do. ...	46′ 9″	19′	
1	Do. ...	8	Do. ...	69′ 9″	19′	
1	Do. ...	2	Do. ...	31′ 9″	28′ 6″	
1	Clerk's quarters	6	Do. ...	69′ 6″	19′	
1	Station Master's quarters.	1	Katgeri ...	33′	31′	
1	Porter's quarters ...	8	Do. ...	93′ 6″	19′	
1	Station Master's quarters.	1	Badami ...	33′	31′	
1	Porter's quarters ...	8	Do. ...	93′ 6″	19′	
1	Assistant Engineer's bungalow	1	Do. ...	46′	35′	Outside of station.
1	Station Master's quarters	1	Alur ...	33′	31′	
1	Porter's quarters ...	10	Do. ...	106′ 6″	19′	
1	Public Works Inspector's bungalow	1	Do. ...	41′	31′ 3″	
1	Station Master's quarters.	1	Malapur ...	33′	31′	
1	Porter's quarters ...	6	Do. ...	69′ 6″	19′	
1	Station Master's quarters.	1	Balaganur.	46′	32′	
1	Porter's quarters ...	2	Do. ...	20′	10′	
1	Station Master's quarters.	1	Hombal ...	60′	24′	Including Booking Office.
1	Porter's quarters ...	4	Do. ...	24′	24′	



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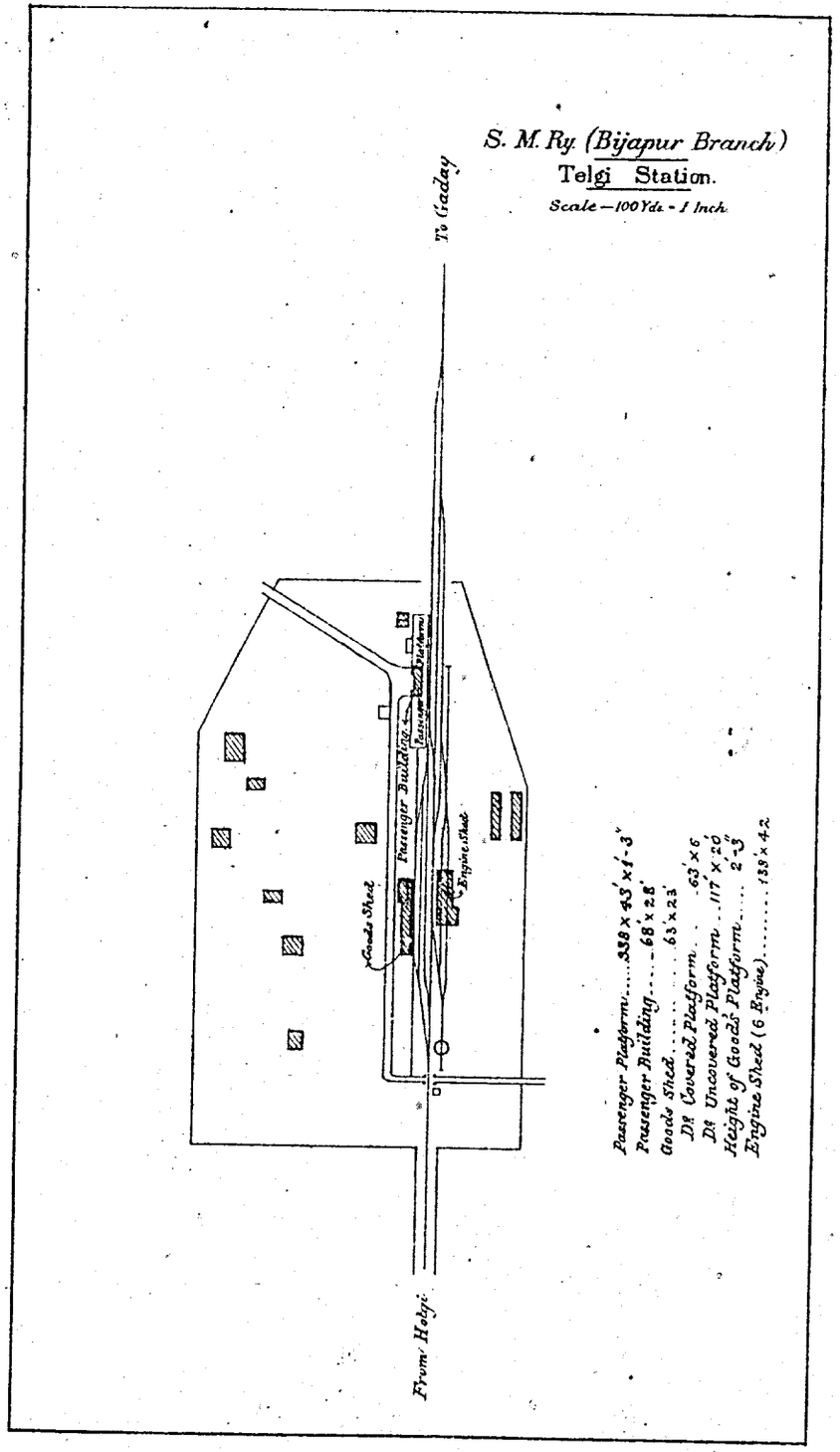

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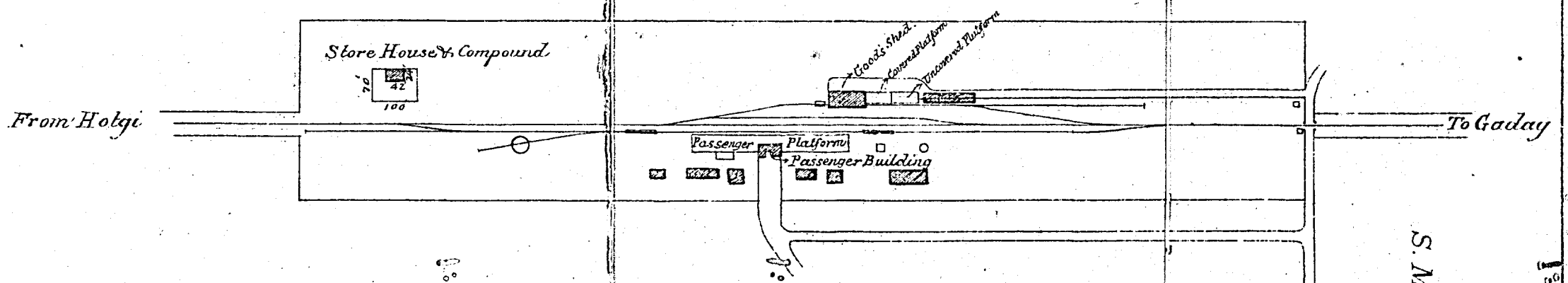

S. M. Ry. (Bijapur Branch).

Bijapur Station.

Scale—100 Yds. = 1 Inch.

Passenger Platform ... 350' × 2'-8" × 1'-3"
Passenger Building ..... 55' × 30'
Goods Shed ..... 82 × 30
— Do. Covered Platform 120' × 20'
— Do. Uncovered Platform 120' × [illegible]
Height of Goods Platform ..... 1'-3"

Photo-Zincographed in Central Survey Office, Madras.
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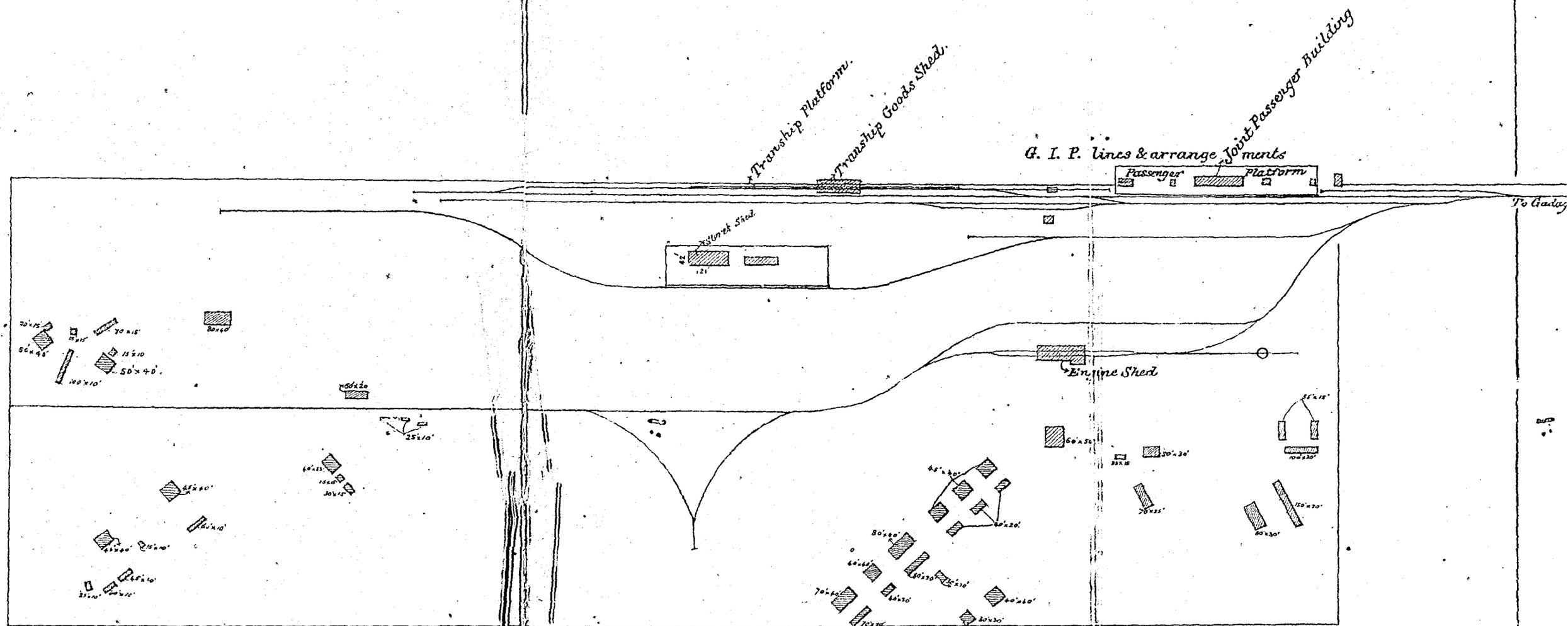

Joint Passenger Platform...600' x 16'
—"— "— Building....163' x 37'
Tranship Goods Shed.....121' x 42'
—"— "— Platform..107' x 42'
Engine Shed (6 Engines)_138' x 42'

S. M. Ry. (Bijapur Branch)

Hotgi Station.

Scale—100 Yds = 1 Inch.

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The Country.

Between Gadag and the Malprabha the line runs through the sub-division of Ron, in the Dharwar district, the nature of the country being one stretch of rich black soil, without a hill and with hardly any upland, highly tilled, with large villages, the people skilful, hardworking and well-to-do. After crossing the Malprabha, the district of Bijapur, in the extreme east of the Bombay Presidency, extending up to the Bhima river, 156½ miles north of Gadag, is entered. This district is an example of the influence of geological conditions on scenery, the landscape of Badami in the south being totally unlike that of Indi in the north—the former being sandstone, and the latter a sterile trap country. Across the centre of the district, commencing just south of the old city of Bijapur, the valley of the Don, a rich tract of deep black soil, runs from west to east; and further south is the valley of the Krishna, a rich alluvial plain, separated from the Don valley by a stretch of barren trap.

From Badami to the Krishna the country is broken by ranges of sandstone hills separated in many places by plains of red sand. Badami itself lies at the mouth of a ravine between two rocky hills on its north and south and a dam to the east between the foot of the hills forming a large reservoir. The climate of Badami is bad and water is scarce. North of Badami is the sub-division of Bagalkot, on the east and north-west of which is the valley of the Krishna, an open, well-tilled black soil plain with several rich villages. This alluvial tract, broken here and there by a knoll, stretches south till it meets either with the main range or with some outlying spur of the line of sandstone hills which touches on the river at a few points and is generally some four or five miles distant. This range of sandstone hills occupies a great part of the north-west of the sub-division as far south as Bagalkot, beyond which a broad alluvial plain stretches south to Sirur and east to the Malprabha. In the north-east, between the meeting of the Ghatprabha and the Krishna, a range of iron charged claystone hills runs west and east. Seventeen miles north of Bagalkot is the Krishna river flowing from west to east.

Bijapur.

North of the Krishna, in the Bagevadi sub-division, the country is bare and sterile until the valley of the Don is entered, but all round Bijapur for long distances stretch waving treeless downs. Bijapur itself is 1,950 feet above sea level, and is a large and important town with a strong fort and many palaces, tombs, mosques and towers. For 40 miles north of Bijapur the country is a succession of low billowy uplands bare of trees, a barren trap country until the Bhima river is reached. In this monotonous stretch there is nothing that can be called a hill, but the water-supply is good.

The Malprabha River.

The Malprabha, 30½ miles north of Gadag, rises to the south-west of the town of Belgaum, and, after flowing east about 60 miles through

that district, passes for about 25 miles through the Southern Mahratta States. Then for 16 miles it forms the boundary between the sub-divisions of Ron and Navalgund, in the Dharwar district, and the Badami sub-division, in the Bijapur district.

From Alur, or just beyond Dharwar limits, it passes north-east for about 40 miles through the Badami and Hungund sub-divisions of the Bijapur district, and falls into the Krishna river at Sangem, 10 miles north of Hungund. During the rains it is a large stream, but in the fair season it has but a slight flow. In the Dharwar district the bed of the Malprabha is muddy and sandy and often 350 yards wide with banks sloping and earthy and about 12 feet high, but beyond Alur, in the Bijapur district, it passes through a hilly country and has a white sandy bed with water of a lovely blue. It is fed by the Benihalla, which flows into it close to Alur, and by the nalas flowing from the south—all of which cross the railway in the Gadag-Dharwar section.

The Krishna River.

The Krishna rises in the Mahabaleshvar hills on the eastern flank of the Sahyadris and flows south-east through Satara, Kolhapur, Belgaum, Jamkhandi, Bijapur, into the Nizam's dominions, when it takes a slight turn northwards and falls into the Bay of Bengal by Masulipatam. It is fed by the Malprabha, Tungabhadra, Ghatprabha and many smaller streams.

At its meeting with the Ghatprabha, close to where the line of rail crosses, it is about 500 yards wide, and the current runs 2½ feet the second. Near its meeting with the Malprabha, at Dhanur, it is 600 yards wide in the rainy season. Its north bank is in most places lower than its south. Mud, sand and silt gather along its banks. Carts can cross in the fair season, and in the rainy, there are ferries.

The Bhima River.

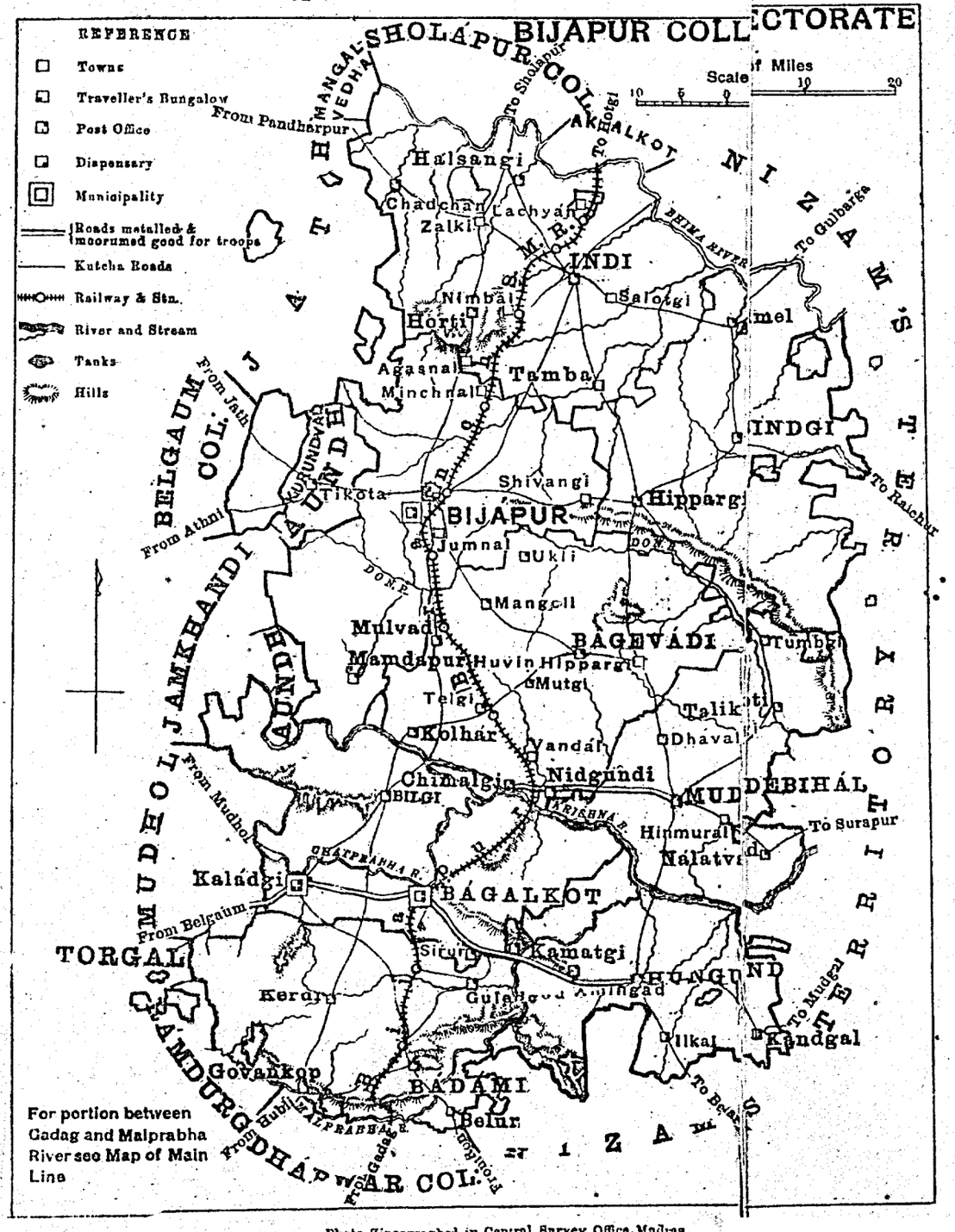
The Bhima river rises in the Sahyadris near Bhimashankar and runs east for 105 miles across the Poona district; it then turns south-east and after separating Poona from Ahmadnagar for 35 miles, and from Sholapur for 60 miles, flows through Sholapur for 50 miles. It here turns east forming the southern boundary of Sholapur for 16 miles, separates the Bijapur and Sholapur districts for 30 miles, receives the Sina, skirts Bijapur for 50 miles, enters the Nizam's territory and flows into the Krishna after a further course of 150 miles. Its banks are overlain by layers of gravel and are 900 feet apart. Its ordinary bed is alluvial soil and the rock bed is ten feet below low water level. High flood level is about 49 feet above the river-bed. It can be forded at many places during the fair weather. It is fed by the Nira and Man streams on its right bank and by the Sina river on its left.

The 25 miles between the Bhima and Sholapur is flat with groves of trees and rich soil. The climate is dry and the water abundant.

The Don River.

The Don river, which is crossed by the line of rail 71 miles south of Hotgi between the stations of Jumnal and Mulwad, rises in the Jath

State about four miles south of Jath and flows east and south-east to Talikoti, south of which it enters the Nizam's dominions and, winding through a rocky defile, falls into the Krishna river after a total course of 125 miles. Its banks are of black soil more than 10 feet high, and its channel very winding. It runs along a narrow valley on the top of the watershed between the Krishna and Bhima. The fall of its bed is as a rule slight and the breadth of the bed not more than 200 feet. In many places its bed is treacherous black mud and can be crossed only where there is gravel, but towards the east in the limestone district it is of thin slippery slabs of limestone. The deep black soil lands on the banks of the Don are celebrated for their cold weather grain crops.



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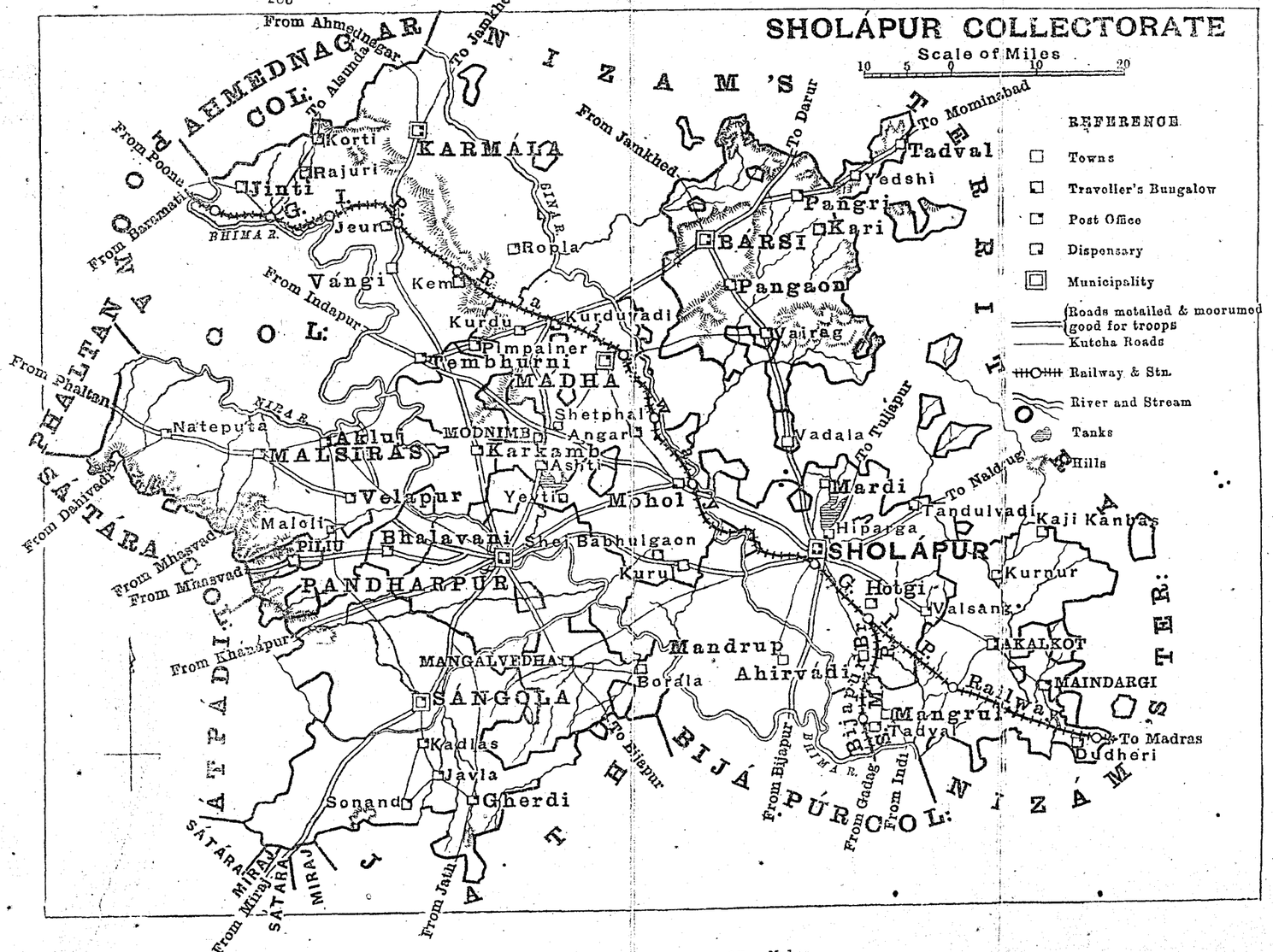
1890



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The Main Road.

There are two main lines of road for ordinary traffic leading north to Hotgi and Sholapur—one the "Hubli-Sholapur" road, starting from Hubli 37 miles west of Gadag, and the other the "Bellary-Sholapur" starting from Bellary 93 miles east of Gadag.

Both these roads converge towards each other and the Gadag-Hotgi railway, and from the Malprabha northward run more or less parallel with each other and the line of rail.

The "Hubli-Sholapur" road crosses the Malprabha at Govankop, by a ferry and a ford, about 10 miles west of Alur station. From here it runs for 113 miles up to Sholapur along the left or west side of the railway. As far as Bagalkot it is distant about 7 or 8 miles from the line, but on approaching the Krishna river the line bears away to the right, and by so doing increases the distance to 15 miles. It crosses the Ghatprabha, 86 miles from Sholapur, at Anagvadi by an ordinary ferry during the rains and by a ford after December, and the Krishna by an ordinary ferry at Kolhar, 70 miles from Sholapur, and by a ford at Baloti, 3½ miles south-east of Kolhar.

On approaching Bijapur the line of rail runs into the road crossing it twice and continuing alongside of it for 15 miles. The Don river is crossed at Savanhalli south of Bijapur by a ford.

From Bijapur the road continues parallel and adjacent to the railway and crosses the Bhima at Dhulkhed by a ferry—thence it runs for another 16 miles into Sholapur and Hotgi.

This road connects the trade centres of Bijapur and Bagalkot with the surrounding country and market towns. Connecting Gadag with the "Hubli-Sholapur" road is one running through Hombal, meeting it at Nurgoond; and a better one passing through Ron and Badami, meeting it a little west of Katgeri.

The other road, or "Bellary-Sholapur," passes through Ilkal, Hungund, Mudebihal, Hippargi and Indi, meets the "Hubli-Sholapur" road at Halsagi, 5 miles south of the Bhima, and so runs into Hotgi and Sholapur.

It crosses the Krishna river at Dhanur by a basket ferry boat and a fairly good ford passable by January. The Don is passed 3 miles south of Hippargi by a ford, and the Bhima by both a ferry and a ford. This road was originally intended to be the military trunk road from Bellary north, but it is not kept in good repair and is really a fair-weather tack. Cross roads connect it with "Hubli-Sholapur" road at Hungund, Bagevadi, Hippargi and Indi, all of which cross the railway.

As the country and roads between Gadag and Hotgi are intersected by four large rivers, namely, the Malprabha, Krishna, Don and Bhima, it will be useful to give a list of the ferries over each within measurable distance of the line of rail.

Ferries.

The Malprabha has 12 ferries at Govankop, Tolachgad, Soyedgundi, Patadkal, Sul, Bennur, Kapilasangam, Ganjihal, Chikmagi, Kamatgi, Ramthal and Hebli.

The ferry boat at Govankop, where the Hubli-Sholapur road crosses, is a wooden one 31 to 34 feet long, 9 to 11 feet broad and 4 to 5 feet high, and carries 4 tons.

The Krishna has 21 ferries at Kolhar, two at Korti, Nainegal, Gulbal, Sutgundar, Mundagnua, Rolli, Buddihal, Islampur, Marol Dhanur, Chimalgi, Baluti, Ningadhali, Tangadgi, Rakossi, Sultanpur, Madri, Budihal and Kalgi. The ferry boat at Korti is iron, 29 feet long, 11 feet broad and 4 feet high. There is also a wooden boat.

The Don runs very low in the fair weather and can be easily crossed; during the rains there are ferries and fords on both the Hubli-Sholapur and Bellary-Sholapur roads at Savanhalli.

The Bhima has five ferries at Dhulkhed, Padnur, Umrani, Margur and Devangaon. The boats are wooden 31′ × 9′ × 4′ and carry about 4 tons.

There are also five ferries over the Ghatprabha at Anagvadi, Bagalkot, Mugalhali, Kaladji and Kundarji.

Lateral Communications.

The principal roads running west and east are—

(*a*) The Belgaum-Hungund metalled road passing through Pansgaon, Kaladgi, Bagalkot, where it crosses the line of rail, and Amingad. From Bagalkot to Belgaum, 71 miles, it is made and passable at all seasons. From Bagalkot to Hungund, 27 miles, it is passable at all times, except the short portion between Amingad and Hungund, which is black soil and during the rains very heavy. This road is continued beyond Belgaum to Vengurla on the Ratnagiri coast and is a good one nearly all the way, being made and bridged up to Savant Wari. Between Bagalkot and Hungund the Malprabha is crossed at Kamatgi, 15 miles south-east, by a leather basket boat and a good ford.

(*b*) The Bijapur-Miraj and Bijapur-Sindgi roads.—The former runs 68 miles west to Miraj, where it cuts the Londa-Poona section of the Southern Mahratta Railway, and the latter leads east 35 miles to Lindgi. About half of the road to Miraj is passable at all times and is now under construction as a first-class road; the remaining portion is only fit for fair weather. From Bijapur to Sindgi the road is good and is also under construction as a first-class route. Between Bijapur and Miraj the road passes through Athni, 70 miles north-east of Belgaum.

(*c*) The Indi-Almela road running 19 miles east, a fair weather track; and the Indi-Pandhapur road running 52 miles west along the south side of the Bhima river, also a fair weather track.

Military Posts.

There are no military posts on the Gadag-Hotgi section, Belgaum being the nearest garrison, 71 miles distant, having a force of—

1 Battery, R.A.,
1 Regiment Infantry, } British.
1 Depôt, Infantry,
1 Regiment, Infantry—Native.

But the line would be useful for the conveyance of troops and stores between Bombay and the south and would relieve the pressure of traffic on the main G.I.P. and Madras railways.

N.B.—It is most important that this section should be extended from Hotgi Junction northward through Akola to Kandwa on the G.I.P., so as to connect the metre-gauge systems of north and south, and so enable troops and stores to be run right through without break of gauge.

HARIHAR BRANCH—HUBLI TO HARIHAR.

THE LINE AND PERMANENT-WAY.

THIS branch is 81¼ miles in length. From Hubli to two miles beyond Gudgeri station it runs up-hill at an easy incline, a distance of 24 miles. The next 16 miles is downhill, the gradient being in many places 1 in 100, after which it again rises along a gentle incline till Byadgi station, at the 55½ mile, is reached. From this point it undulates downhill to the Tungabhadra river, 80 miles from Hubli, the gradient being at first 1 in 100 but afterwards becoming easy. The line is practically straight, though there is a considerable curve to the west between the Yellogi and Byadgi stations. Between Saunshi and Gudgeri the line runs along a watershed and at the 24th mile attains a height of 100 feet above Hubli. Up to this point the ground passed over is black soil yielding rich crops of cotton, millet and wheat; beyond it changes to a red and stony, though not barren, soil till Yellogi is reached, when it again becomes black. At the 40th mile, two miles before Koloor station is reached, the Wardha river is crossed, and at the 49th mile the rail cuts the Poona Harihar road. From the plateau on which Byadgi stands the line turns east and, passing through a low range of heights, composed of amorphous iron stone and again cutting the Poona-Harihar road at the 59th mile, runs to the town of Ranibennur, with 12,000 inhabitants and an important trade. Nine miles south of Ranibennur it crosses a range of hills and strikes the banks of the Tungabhadra at a point about one mile east of Harihar town, or 80 miles from Hubli. The following shows briefly the curves and gradients :—

Number.	Radius of Curves.	Length.
60	Above 1,000 feet straight line	14·94 miles. 65·27 ,,
	Total ..	80·21 miles.

Number.	Gradient.	Length.
52	1 in 100 to 1 in 150 inclusive	32·78 miles.
25	1 in 150 to 1 in 300 ,, ...	16·92 ,,
12	1 in 300 to 1 in 1,000 ,, ...	6·53 ,,
1	1 in 1,000 and over	0·39 ,,
	Level	23·59 ,,
	Total ..	80·21 miles.

The permanent-way conforms to the S.M.R. pattern and is in accordance with the standard dimensions, with 41¼ lb. to the yard flat-footed steel rails, 16 feet banks and 22 feet cuttings inclusive of side-drains.

The sleepers are, for the first 50½ miles and over all girder bridges, of teak, 2,000 to the mile; thence to Harihar of steel, 8 to the mile; all transverse. Over girder bridges the wooden sleepers are 2 feet apart centre to centre. The ballast is laid as follows :—

Mile 0 to mile 13 screened moorum and gravel.
,, 13 to ,, 14 ,, ,, and sand.
,, 14 to ,, 15 ,, ,, and stone.
,, 15 to ,, 16 ,, ,, and gravel.
,, 16 to ,, 17 broken stone and gravel moorum.
,, 17 to ,, 18 ,, ,, gravel and sand.
,, 18 to ,, 21 ,, ,, and moorum.
,, 21 to ,, 22 gravel and moorum.
,, 22 to ,, 26 broken stone, moorum and picked gravel.
,, 26 to ,, 35 picked gravel.
,, 35 to ,, 45 screened gravel.
,, 45 to ,, 46 broken stone.
,, 46 to ,, 49 screened gravel.
,, 49 to ,, 55 modules and broken stone.
,, 55 to ,, 67 quartz, modules and broken stone.
,, 67 to ,, 80·21 stone.

The masonry in all bridges and culverts is of the excellent stone obtained from the quarries at Seibpur, Badanir and Anigri. The line is fenced with aloe for some miles from Hubli, from which for over a mile it runs along the same formation as the main line. The country at first is well cultivated but becomes rougher and more hilly from Byadgi on. The only large water-ways are the Wardha and Tungabhadra rivers and these are crossed in each case by both road and rail by means of two fine bridges within easy distance of each other.

List of Banks and Cuttings—Harihar Branch.

Mileage.	Banks.		Cuttings.	
	Length, chains.	Height, feet.	Length, chains.	Depth, feet.
1 to 8	433	33	..	..
8¼	..	..	19	2
8¾	19	3	..	..
9	..	..	10	5
9½	25	11	..	..
9¾	..	..	18	5
10 to 12¼	120	20	..	..
12½	..	..	17	5
13 to 16¼	195	27	..	..
16½	..	..	11	5
16¾ to 21¾	270	12	..	..
22	..	..	14	10
23	83	8	..	..
24	..	..	59	9
24¾ to 26¼	92	16	..	..
26½	..	..	9	3
26¾	13	28	..	..
27½	..	..	15	14
27¼	9	4	..	..
27¾	..	..	25	14
28¼	25	14	..	..
28½	..	..	7	2
28¾	7	2	..	..
29	..	..	21	3
29½	14	11	..	..
29¾	..	..	9	9
30	14	7	..	..
30¼	..	..	18	1
30¾	7	11	..	..
..	..	..	9	7
31	8	7	..	..
31¼	..	..	15	6
31½ to 33	87	11	..	..
33⅛	..	..	8	2
33¼ to 41	421	28	..	..
41¼	..	..	6	2
41½ to 43	92	11	..	..
43⅛	..	..	10	6
43¼ to 45¼	114	15	..	..
45¾	..	..	24	13
46 to 47½	84	17	..	..
48	..	..	29	6
48¼	22	4	..	..
48½	..	..	6	6
49	36	11	..	..
49½	..	..	12	10
49¾	11	11	..	..
..	..	..	5	3
50 to 52½	144	19	..	..
53	..	..	50	5
53¾	12	3	..	..
54¼	..	..	31	3
55	32	3	..	..
55½	..	..	27	6
55¾ to 57	73	7	..	..
57⅛	..	..	17	7
57½	18	8	..	..
57¾	..	..	4	4
58¼	31	10	..	..

List of Banks and Cuttings—Harihar Branch—cont.

Mileage.	Banks.		Cuttings.	
	Length, chains.	Height, feet.	Length, chains.	Depth, feet.
58¾	..	..	12	4
59	22	13	..	..
59¼	..	..	7	1
59½	15	11	..	..
60	..	..	22	4
60¼	26	16	..	..
60¾	..	..	20	8
61 to 64	164	28	..	..
64¼	..	..	13	4
64½	28	11	..	..
65	..	..	26	4
66	60	7	..	..
66¾	..	..	15	2
67 to 69⅛	129	12	..	..
69¼	..	..	10	3
70	35	16	..	..
70¼	..	..	22	8
71	36	16	..	..
71½	..	..	10	8
71¾ to 73¼	130	12	..	..
74¼	..	..	20	4
74¾	21	12	..	..
75	..	..	15	2
75¼ to 78¾	190	13	..	..
79	..	..	14	3
80	54	24	..	..

BRIDGES.

Mile and chain from Hubli.		Name.	Openings.	Description.	Rise of flood water above low-water level, feet.	Maximum velocity in flood, feet per second.	Flood area of openings, feet.	Height of underside of girders or soffit of arch.		—
								Above flood level.	Above river-bed.	
5	269	Dasur	4—40′	Girders ..	10·63	8·83	2,030	7·11′	18′	All piers and abutments are of masonry. Dasur and Kundgol bridges.—Foundation, stiff moorum and gravel; the ends of the girders are bedded on sheet lead spread over the bed stones; they are not bolted down to the piers but are tied together by the permanent-way. The sleepers rest directly on the upper flange of the girders to which they are secured by hook-bolts.
7¾	412·50	Kundgol ..	4—40′	Do. ..	7	11·80	3,310	16·73′	23′	
10¾	561	..	1—10′	Arch ..	..	..	..	..	..	
11½	603	Bonnihulla ..	5—40′	Girders ..	15·04	5·35	4,000	12·16′	27′	Foundation, hard clay. Similar to Dasur bridge.
13¾	723	Saonshi ..	3—40′	Do. ..	8·73	8·28	2,940	11·39′	26′	Foundation, stiff moorum and hard rock. Similar to Dasur.
15	782·75	..	1—10′	Do. ..	..	..	..	..	..	
	806	..	1—10′	Do. ..	..	..	..	..	..	
16	859	..	1—10′	Do. ..	..	..	..	..	..	
28¼	1499·50	..	1—10′	Arch ..	..	..	..	..	..	
33	1736	..	1—10′	Do. ..	..	..	..	..	..	
40½	2143	Wardha ..	15—60′	Girders ..	32·67	8·11	26,785	9·91′	55′	Ward hariver bridge.—Foundation, stiff moorum and hard rock. The ends of the 60′ plate girders rest on sliding plates which are bolted into the bed stones, both ends of the girders being free to move. There is a decking of sheet iron over the entire bridge on which the cross sleepers carrying the rails are laid. A gang way with hand-rail and recesses over piers runs along the side.
40¾	2307·50	..	1—20′	Arch ..	..	..	..	..	..	
45	2378	..	1—10′	Do. ..	..	..	..	..	..	
45¼	2390·75	..	1—10′	Girders ..	..	..	..	..	..	

46	2441	Haveri ..	1—40′	Girders ..	8·40	4·51	700	13·37′	20′ 6″	All piers and abutments are of masonry. Foundation, stiff moorum and hard rock.
49	2577·50	..	1—10′	Arch ..	..	..	..	..	..	
50¼	2657·50	Nilugal ..	2—40′	Girders ..	14·89	16·28	1,680	11·66	29′ 6″	Foundation, stiff moorum and hard rock. Similar to Dasur bridge.
52	2735·50	Motibinnur ..	2—40′	Do. ..	10·40	5·49	1,450	12·94	23′	Do. do. do.
56½	2982·50	..	1—10′	Arch ..	..	..	..	..	..	
59	3117	..	1—10′	Do. ..	..	..	..	..	..	
59½	3146	..	1—10′	Do. ..	..	..	..	..	..	
60¼	3184	..	1—20′	Do. ..	..	..	..	..	..	
61¼	3236	..	2—20′	Do. ..	..	..	..	..	..	
63¾	3359	Kumbee ..	3—30′	Do. ..	10·88	12·36	2,074	11′	24′	Foundation, rock.
64½	3411	..	1—10′	Do. ..	..	..	..	..	..	
66	3489	..	2—10′	Do. ..	..	..	..	..	..	
67	3561	..	4—10′	Do. ..	..	..	..	..	..	
70	3700	..	1—10′	Do. ..	..	..	..	..	..	
80	..	Tungabhadra river.	16—60′	Girders ..	34′ 2″	14·58	42,514	11′	54′	Nature of stream, "constant," width at flood level 1,500′; masonry, stone in lime; distance from Bangalore 211 miles (4,183 chains). The Poona-Harihar trunk road crosses river 400 yards west by a stone bridge with brick superstructure of 14—60′ spans.
81	..	..	1—20′	Arch ..	..	..	..	..	..	

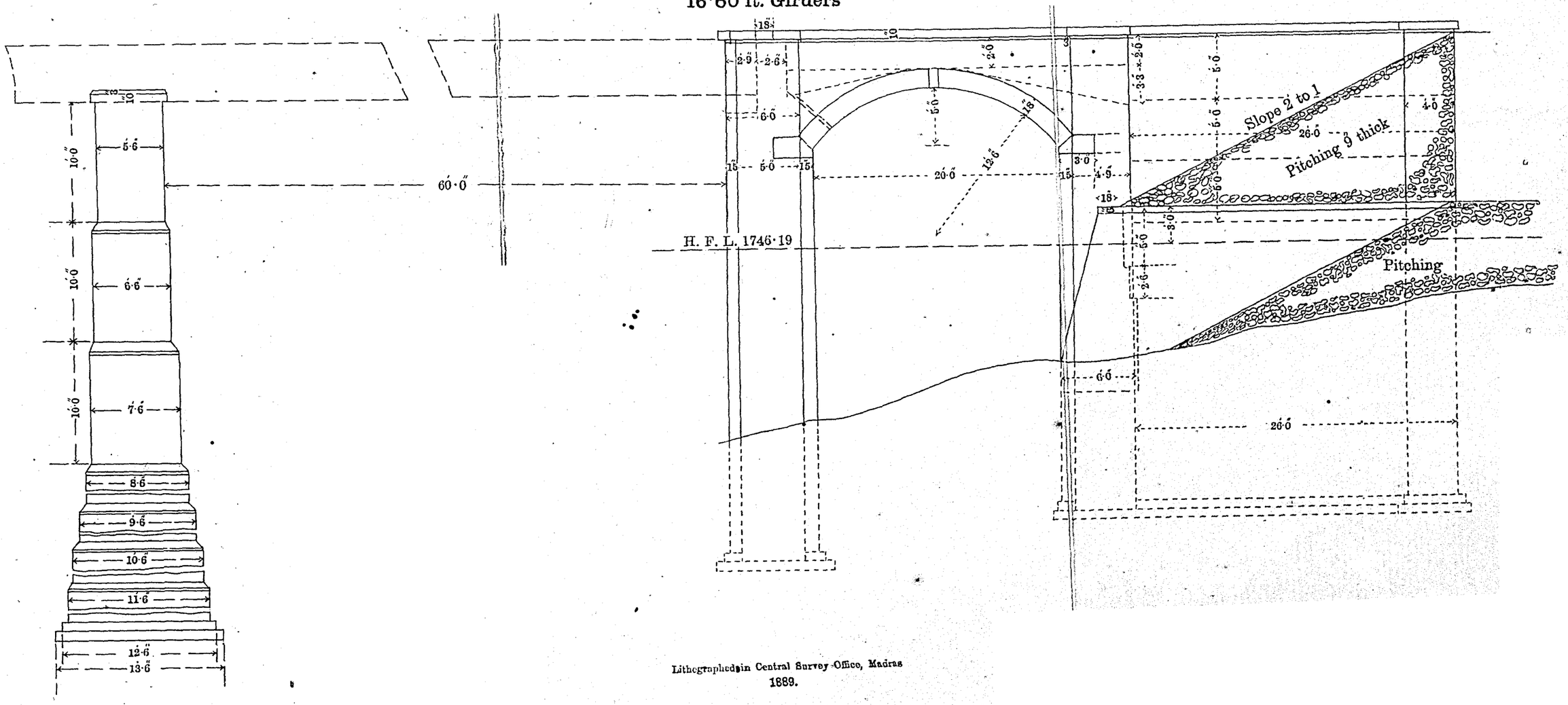
STATIONS.

Station.	Class and description. W. = watering. A.W. = Auxiliary do. E. = Engine. F. = Fuel.	Situation.			Nature of soil.	Buildings.					
		Mileage.		Curve or gradient.		Passenger.		Goods.		Engine.	
		From Hubli.	Between stations.			Nature.	Size.	Nature.	Size.	Size.	Capacity.
Hubli Junction	1. W.E.F.	0	0	L. and S.	..	All stone in lime with Mangalore tile roofing.	..	See "Main line."			
Kundgol	4.	9¾	9¾	L. and S.	Black.		40′ × 25′	..	..	..	..
Saunshi	4. W.	15	5¼	L. and S.	Do.		40′ × 25′	..	..	..	..
Gudgeri	4.	21¾	6¾	L. and S.	Do.		40′ × 25′	..	..	..	..
Yalvigi	4. W.	28¾	7	Curve of L. & 2000 R.	Red.		40′ × 25′	..	..	..	..
Hattimattur	4.	34¼	5½	L. and S.	Dark.		40′ × 25′	..	..	..	..
Karajgi	4.	42	7¾	L. and S.	Red.		40′ × 25′	..	..	..	..
Haveri	4. W.F.	46½	4½	L. and S.	Do.		40′ × 25′	..	..	..	..
Byadgi	4.	55¼	8¾	L. and S.	Do.		40′ × 25′	..	..	..	..
Devargudda	4.	61¾	6½	L. and S.	Do.		No station house.	..	..	..	..
Ranibennur	4. W.	66¾	5	L. and S.	Black.		40′ × 25′	..	..	..	..
Chalgeri	4.	75	8¼	L. and S.	Do.		24′ × 14′	..	..	..	..
Harihar	2. W.E.F.	81¼	6¼	L. and S.	Do.		35′ 9″ × 34′ 6″	Cor. iron teak & M.T.	84′ × 24′	101′ × 42′	4

HARIHAR BRANCH

Abutment & pier of Tungabhadra Bridge

16·60 ft. Girders



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1889.

STATIONS—*cont.*

Station.	Buildings—*cont.*					Platforms.			
	Workshops.		Other.		Latrines.	Passenger.		Goods.	
	Nature.	Size.	Number.	Size.	Number.	Covered.	Uncovered.	Covered.	Uncovered.
Hubli Junction	..	..	..	These show number of quarters for staff, &c.; each quarter is about 10 feet square, and the buildings are generally 34′ × 14′.	See "Main line."			..	..
Kundgol	..	..	5		1 = 16 units	..	350′ × 30′	..	..
Saunshi	..	..	6		Do.	..	Do.	..	..
Gudgeri	..	..	5		Do.	..	Do.	..	..
Yalvigi	..	..	6		Do.	..	Do.	..	..
Hattimattur	..	..	5		Do.	..	Do.	..	..
Karajgi	..	..	5		Do.	..	Do.	..	..
Haveri	..	..	8		Do.	..	Do.	..	..
Byadgi	..	..	5		Do.	..	Do.	..	..
Devargudda	..	..	5		Do.	..	Do.	..	..
Ranibennur	..	..	12		Do.	..	Do.	..	..
Chalgeri	..	..	5		Do.	..	Do.	..	..
Harihar	Loco. for repairs in engine shed.		10	1 = 5 rooms 16′ × 19′ 2 = 2 ,, 14′ × 14′ 2 = 1 ,, 14 × 12 1 = 4 ,, 12 × 8 1 = 1 ,, 19 × 19 and 2 ,, 19′ × 10′ 1 = 8 ,, 10 × 10 2 = 22 ,, 12 × 8	6	..	600′ × 20′	84′ × 6′	100′ × 20′

STATIONS—*cont.*

Station.	Water.						
	Wells.		Tanks.			Pumps.	Hydrants.	Water-columns.
	Number.	Nature.	Size.	Capacity, gallons.	Time to refill.			
Hubli Junction	..	..	See "Main line."			..	..	..
Kundgol	1	Steined ..	..	..	..	..	..	..
Saunshi	1	Do. ..	17′ — 17′	5,000	6 hours ..	1	..	2
Gudgeri	1	Do. ..	..	..	..	..	..	..
Yalvigi	1	Do. ..	17′ — 17′	5,000	6 hours ..	1	..	2
Hattimattur	1	Do. ..	..	..	..	..	..	..
Karajgi	1	Do. ..	..	..	..	..	..	..
Haveri	1	Do. ..	17′ — 17′	5,000	6 hours ..	1	..	2
Byadgi	1	Do. ..	..	..	..	..	..	..
Devargudda	1	Do. ..	..	..	..	..	..	..
Ranibennur	1	Do. ..	17′ — 17′	5,000	6 hours ..	1	..	2
Chalgeri	1	Do. ..	..	..	..	..	..	..
Harihar	1	Do. 15 diam.	13′ 3″ — 13′ 3″ — 4′ 6″	5,000	6 hours ..	1	..	2

STATIONS—*cont.*

Station.	Fuel.			Sidings.		Dead ends.		Cross-overs.	Turn-outs.	Signals.		Weigh-bridges.	Weighing machines.	Mechanical lifting power.	Turn-tables.	Ashpits.	Carriage examination pits.	Station yard, area.
	Stage.	Kind.	Where stored.	Number.	Length in feet.	Number.	Length in feet.			Home.	Distant.							
Hubli Junction ..	..	..	Hubli.	..	..	..	See "Main line."							..	..	..	..	..
Kundgol	..	..	..	1	1,100	..	..	..	2	1	2	..	1	..	..	..	..	2200′ × 350′
Saunshi	..	..	..	1	1,143	..	..	..	2	1	2	..	1	..	..	2	..	Do.
Gudgeri	..	..	..	1	1,149	..	..	..	2	1	2	..	1	..	..	..	..	Do.
Yalvigi	..	..	..	1	930	1	..	1	1	1	2	..	1	..	..	2	..	Do.
Hattimattur	..	..	..	1	1,130	1	..	1	1	1	2	..	1	..	..	..	..	Do.
Karajgi	..	..	..	1	1,135	..	..	..	2	1	2	..	1	..	..	..	..	Do.
Haveri	1	Wood.	Haveri.	1	1,109	..	..	..	2	1	2	..	1	..	..	2	..	Do.
Byadgi	..	..	..	1	1,134	..	..	..	2	1	2	..	1	..	..	..	..	Do.
Devargudda	..	..	..	1	1,258	..	..	..	2	1	2	..	1	..	..	..	..	Do.
Ranibennur	..	..	..	1	1,210	..	..	..	2	1	2	..	1	..	..	2	..	Do.
Chalgeri	..	..	..	..	1,258	..	..	..	2	1	2	..	1	..	..	..	..	Do.
Harihar	3	Wood.	Harihar.	7	7,400	4	1,200	..	15	..	2	1	2	..	1	2	..	ACRS. R. P. 38 2 31 Total points and crossings 19.

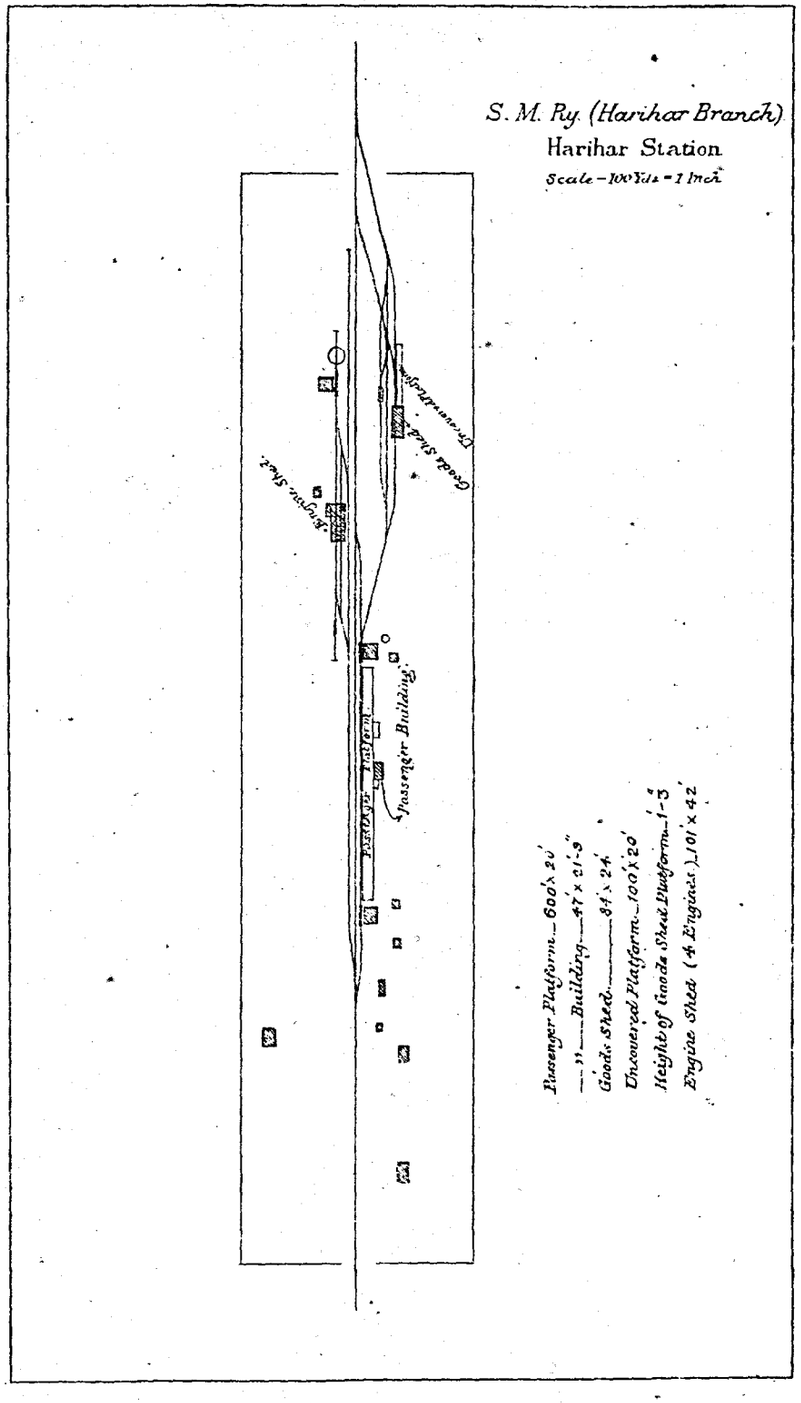


Photo-Zincographed in Central Survey Office, Madras.
1890

The Country.

The line of the Poona-Harihar road, which runs north-west and south-east and follows the line of rail from Hubli to Harihar, divides the district of Dharwar, extending from Belgaum and Ramdurg districts, in the north, to the Tungabhadra river and Mysore in the south, through which this section of the S.M. railway passes along its entire length, into two very unlike parts, an irregular belt of hilly and woody country to the west, and to the east a rocky, bare, and uninteresting country broken by ranges and blocks of stony bush-covered hills in the south, and in the north-east terminating in a bare black soil plain stretching away for over 60 miles towards the Malprabha river. The western belt is part of the rough wooden country along the Sahyadri water-shed, Dharwar town, 13 miles north-west of Hubli, standing at the water-parting 2,420 feet above the sea, the source of streams flowing west to the Indian Ocean and east to the Bay of Bengal. All along in the west by Kanara district the country is wild with wooded hills, 100 to 300 feet high, rugged and smooth, detached and in ranges, many, especially those about Kalghotgi, Hangal and Bankapur, giving cover to deer, pig, tigers and panthers. Throughout this western belt ranges of bushy hills, 300 to 700 feet high, run in parallel lines north-west and south-east, gradually becoming barer, less rugged and isolated towards the east, where they are separated by broad rich valleys. South of Ranibennur and Kod two nearly parallel steep and narrow ranges, 400 to 600 feet high, run west and east 7 miles apart for about 41 miles, terminating gradually to the east at the Tungabhadra river.

The soil along this western belt is red and gravelly, the air cool, the rainfall 30 to 40 inches, and the water-supply abundant.

The villages are generally close together, on rising ground, the people poor but hardworking.

The eastern belt is composed of the few southern bush-covered hills, which, at Airani, 12 miles east of Ranibennur, rise 500 to 700 feet above the plain, north of which the black soil valley of the Varda river runs west and east. Further north the range of Kappatgudd stretches 30 miles north-west from the Tungabhadra; and north-east from Hubli the large black soil plain, before alluded to, extends for 60 miles past Ron to the Malprabha. During the rainy and cold season this plain is a broad stretch of rich crops of grain, pulse, oil-plants, and cotton, but in the hot months it is bare, monotonous and dusty. The villages are generally large and far apart in the eastern belt and the water-supply scanty. At Byadgi, on the line of rail, 11½ miles north of Ranibennur, a weekly market, one of the largest in the district, is held—it is surrounded by betel and cocoa-palm gardens and has a good water-supply. At Karajgi, close to Haveri station, there is also a good market, whilst at Bankapur, a large village or town of 6,037 inhabitants about half-way between Hubli and Harihar, supplies of all kinds can be obtained.

The Main Road.

The main road from Hubli to Harihar is part of the Poona-Harihar trunk road (described in section Londa—Poona), passing through Belgaum, Dharwar, Hubli, Bankapur and Harihar and continuing on to Bangalore through Mysore territory. It is parallel with and close to the line of rail, which crosses it twice between Haveri and Kugree and touches it at Ranibennur, and is bridged and metalled throughout and fit for traffic at all times. The mile-stones are numbered from *Poona*, that at Hubli being marked 274 miles, Tirmalkop 287, Shiggaon 301, Bankapur 305, Haveri 320, Motibennur 327, and Ranibennur 340. At the 312th mile-stone, near Konemelehalli, 40¾ miles from Hubli, the Wardha river is crossed by a fine masonry bridge of seven spans of 50 feet each, and at the 353rd mile-stone, by Harihar, which is on the south side of the river, the Tungabhadra is crossed by a large masonry bridge of 14 spans of 60 feet each with stone piers and a brick superstructure. This latter bridge is close to the railway one about 400 yards west.

LATERAL COMMUNICATIONS.

Commencing from Hubli there is lateral communication to the east and west by—

(*a*) The Bellary-Karwar road, running from Bellary, in the east, through Gadag, Hubli, Kalghatgi, Yellapur and the Kanara district, to Karwar port, in the west, by the Arbail pass.

This road is bridged throughout and metalled most of the way. From Karwar for 74¾ miles it is laid with schist granite and gneiss, and for the next 90 miles, to Hesrur, on the Tungabhadra, 29 miles south-east of Gadag and 63 miles east of Hubli, it is metalled for 35 miles and murumed, or laid with decayed trap, for 55 miles; at Hesrur this road crosses the Tungabhadra by a good ford and continues on 22 miles further to the arsenal and garrison of Bellary.

It varies from 18 to 24 feet broad. The mile-stones are numbered from Karwar.

(*b*) The Dharwar-Kumta road, which leads to the large port of Kumta, in Kanara district, leaves the Poona-Harihar road at Tirmalkop, 25 miles south of Dharwar and 13 miles south of Hubli, passes Tadas and runs west for about 87 miles by Mundgod, Pala, Sirsi and the Devimani pass to Kumta. This road is from 20 to 24 feet wide, is bridged and metalled with granite and schist and is passable at all times. It carries a heavy traffic in cotton.

(*c*) The Bankapur-Mundgod road of 16 miles west to Mundgod where it meets the Dharwar-Kumta road. This road is in good order and was built to connect Bankapur with the port of Kumta.

(*d*) The Pala-Badami road, running north-east from Pala, on the Dharwar-Kumta road, 12 miles south of Mundgod, for about 114 miles, to Badami (section Gadag-Hotgi) through Bankapur, 21 miles, and Gadag, 69 miles, by Savanur, Lakshmeshvar and Mulgund. The 21 miles between Pala and Bankapur are bridged and metalled, but the 48 miles of road between Bankapur and Gadag is only good during the fair season.

(*e*) From Ekambi, on the Dharwar Kumta road, 10 miles south of Pala, a road runs 7 miles east to *Samasgi*, about 6 miles west of Hangal, where it divides in two, one branch leading 53 miles east to Havanur thence on to Bellary, and the other going 60 miles east and south-east to Harihar.

The former, or Samasgi-Havanur road, passes through Hangal, the Wardha river by a ford near Sangar, Haveri at 32 miles, on the line of rail and on the Poona-Harihar road, Guttal at 49 miles, and Havanur at 53 miles. At Havanur this road crosses the Tungabhadra by a good ford and continues on to Bellary. It is partly bridged, murumed and drained and is passable for carts.

The latter or Samasgi-Harihar road runs east and south through Makravalli, 12 miles east of Samasgi, crosses the Wardha river at 15 miles near Honthan, passes Tallivalli at 17 miles, Havasbhavi at 27 miles, Kod at 35 miles, Halgeti at 45 miles, and Yennihossahalli

on the Poona-Harihar road at 54 miles. From Yennihossahalli the main Poona-Harihar road is followed for 5 miles south into Harihar. This road is passable for carts in the fair season, but during the rains is bad in parts.

(*f*) The Masur-Mundargi road, running north-east from Masur, on the borders of the Mysore territory, to the large market of Mundargi, 24 miles south-east of Gadag. From Masur it passes through Rattihalli at 6 miles, Halgeti at 18 miles, Ranibennur, on the Poona-Harihar main road and on the line of rail, at 22 miles, and Guttul, on the Samasgi-Havanur road, at 38 miles. From Guttal for 24 miles north the road is only partially made and crosses the Wardha river at Belvigi by a ford, passes through Shirhatti sub-division and runs over the Kappatgud range by the Virapur pass.

From Masur to Guttal, 38 miles, and from the Virapur pass to Mandargi, 8 miles, the road is made.

In addition to the above mentioned there are many other cross-roads, some in fair order, but they only connect these principal roads with the neighbouring villages and with one another.

Military Posts.

There are no military posts on this section, but it is important as being a portion of the direct route which will connect the garrisons of Poona, Belgaum and Bangalore together, and as enabling troops to be run through from the south as far as Poona independent of the broad-gauge lines.

MYSORE STATE BRANCH.

THE LINE.

From the Tungabhadra river, on the south side of which is Harihar town, for the remainder of its course southward, the Southern Mahratta Railway runs entirely through the Native State of Mysore. The first 156·11 miles, from Harihar to Gubbi, has only this year (1889) been completed and opened to traffic, and is at present known as the "Mysore Extension." The remaining 139¾ miles, composed of two sections, viz., Gubbi to Bangalore, 54 miles, and Bangalore to Mysore, 85¾ miles, is the original Mysore State Railway, and was taken over by the Southern Mahratta Railway on the 1st July 1886. The completion of the Mysore extension and the establishment of connection between Harihar and Gubbi is of the greatest importance, not only as opening up so large a portion of the State, but on account of through communication by metre-gauge being established between the important garrisons of Poona, Belgaum and Bangalore. It is probable that much of the traffic between Bombay and Southern India will pass over this and the Poona Branch, which together form almost a straight line running parallel to the West Coast. It is intended to run through-trains with "bogie" carriages from Poona to Bangalore, which will carry mails and passengers in over six hours less time than the broad-gauge. The old Mysore State, *i.e.*, Gubbi to Mysore, having been laid some years (Bangalore to Mysore completed in 1882, Bangalore to Gubbi in 1884), is in good running order; but the new extension will take some time before the formation has become consolidated. One type of station, with the usual belongings, has been adhered to throughout the new portion of line, and with eight exceptions between Harihar and Beeruru all the bridges are arch.

The permanent-way of 41¼ lb. steel rails conforms to the rest of the Southern Mahratta Railway (between Maddur and Yeleyar, 16¾ miles, iron rails are used). The sleepers laid transversely are all teak from the Mysore forests, except miles 41 to 61 from Harihar, which are steel, and some portions of the line between Bangalore and Mysore which is laid with jungle timber and creosoted pine, but these latter are being replaced with teak. There are no tunnels. The general direction of this branch is as follows: Harihar to Arsikere, North-West and South-East; Arsikere to Tumkur, West and East; Tumkur to Bangalore, North-West and South-East; Bangalore to Mysore, North-East and South-West. It was originally intended to have carried the new extension in a continuation of the straight line between Bangalore and Tumkur (only diverging very slightly so as to take in Gubbi), which would have followed the line of the Harihar-Bangalore trunk road and have cut into the present formation about Chick Jajura. A divergence was, however, made to the westward so as to take in Bururu, Kadur, Arsikere and the principal villages and

towns. At Bangalore station (city) the Southern Mahratta Railway is connected with the broad-gauge system of the Madras Railway, the distance to the sea-ports of Madras (East) and Beypore (West) being 219½ and 361 miles, respectively.

The whole course of the "Mysore State Branch" is very undulating, and, although 1 in 100 is the limiting gradient, there are 34¾ miles of 1 in 70, on the *old* Mysore State, between Bangalore and Mysore, the longest run of this being 1 mile and ½ a furlong. In this old portion the minimum radius of curvature is 660 feet or 10 chains. Between Gubbi and Bangalore it is almost entirely at grades of 1 in 100, whilst the following shows briefly the new extension between Harihar and Gubbi:—

59 curves above 1,000 feet radius	... Length	13·21
61 straight lines	Do.	142·90
	Total miles ...	156·11

149 gradients	1 in 600	Length, miles		82·14
10 do.	1 in 100 to 1 in 150.	Do.	do.	2·90
33 do.	1 in 150 to 1 in 300	Do.	do.	14·37
10 do.	1 in 300 to 1 in 1,000	Do.	do.	4·715
76 level		Do.	do.	512·85
		Total miles ...		156·11

From Harihar to Beeruru the ballast is of sand and screened moorum, the remainder of the line being laid with 2 inches broken stone in cuttings and river ballast on banks.

BANGALORE, situated in 12° 57′ N. lat. and 77° 35′ E. long., is the seat of Government of the Mysore province, the head-quarters of the Bangalore brigade, and the chief town of the district and taluk of the same name. It is divided into two parts—the pettah or old native quarter including the fort and the cantonments. It covers a total area of 13½ square miles and has a population of 142,513.

The City of Bangalore stands in the centre of the Mysore tableland about 3,000 feet above the sea. The general level is broken only by a few slight elevations and the plain is interspersed with large tanks.

The pettah or old native quarter is densely populated and has a brisk trade, especially in grain and cotton, and many wealthy merchants. It has an area of 2⅓ square miles.

The cantonments cover 11¼ square miles and have many fine buildings including the Government house, public offices, jail, central college, the Maharajah's palace, besides many churches and temples. There are in addition two fine parks and many excellent barracks for all arms, as well as sepoy lines.

The principal manufactures and trades are silk, country cloth, carpets, gold and silver work, leather, and handicrafts of every kind.

There are two commodious market-places, where a most excellent daily market is held and every kind of supplies procurable. The railway station is in the extreme north of the city. The climate is healthy and the temperature mild, the mean annual being about 76·2°. The water-supply is abundant.

The Bangalore *City* station is 3 miles from the Bangalore station. It is intended to pull down the present city (or pettah) station and to build a much larger and more commodious one to meet the requirements of the increased traffic. Plans and estimates for this have already been drawn up.

MYSORE town, the capital of the taluk, district, and state of that name, is situated in 12° 18′ 24″ N. lat. and 76° 41′ 48″ E. long., 10 miles south by west of Seringapatam. It consists of three suburbs covering an area of 3 square miles and has a population of 60,292. The town lies at the foot of the Chamundi Hill in a valley formed by two parallel ridges running north and south. The streets are broad and regular and contain many substantial houses and fine public buildings, except in the neighbourhood of the fort on the south side where they are narrow and irregular. The fort is quadrangular in plan, but its defences are mean and ill-planned. Inside the fort is the palace of the Maharajah. There is a good market, and supplies and water are plentiful. The Bangalore-Ootacamund road runs through the town, from which roads diverge eastward to Malavalli and westward to Mercara and Coorg.

It is also intended to extend this branch of Southern Marhatta Railway southward to Nanjangud, Gundlupet, and the foot of the Segur Ghât, by which direct communication will be established with Ootacamund. This extension has already been located and surveyed, and will, it is believed, be shortly taken in hand.

Working Section—Harihar to Mysore.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
0	1 in 100 ...	U	14	Bank ...	14	11	...	...
	Level ...	...	32	Cutting* ...	15	5	...	...
	...	...	...	Bank* ...	17	5	...	...
	1 in 100 ...	U	31	Bank ...	9	7	...	...
1	...	...	...	Bank ...	10	9	...	...
	...	...	...	Cutting ...	9	2	...	...
	...	...	...	Bank ...	3	3	...	...
	1 in 300 ...	U	39	Bank ...	31	4	...	...
2	...	...	...	Bank ...	8	3	...	...
	1 in 400 ...	...	48	Bank ...	45	4	Right...	3,000 feet.
3	...	...	...	Bank ..	3	2	...	...
	Level ...	...	14	Bank ...	14	2	...	...
	1 in 100 ...	D	20	Bank ...	20	9	Left ...	30 chains.
	Level ...	...	19	Bank† ...	15	11	...	...
4	...	...	...	Bank ...	4	14	...	...
	1 in 100 ...	U	28	Bank ...	28	7	...	...
	Level ...	...	3	Bank ...	3	1	...	...
	1 in 100 ...	U	82	Bank ...	18	7	...	...
5	...	...	...	Bank ...	53	4	...	...

* Harihar section. † 3·20′ arches Bata Nallah.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
6	...	...	...	Bank ...	11	4	...	...
	Level ...	...	3	Bank ...	3	3	...	...
	1 in 100 ...	U	11	Bank ...	11	5	...	...
	Level ...	...	26	Bank ...	26	5	...	...
	1 in 100 ...	D	33	Bank ...	1	3	...	...
7	...	...	...	Bank ...	7	2	...	...
	...	...	...	Cutting ...	9	1	...	...
	...	...	...	Bank ...	16	11	...	...
	Level ...	...	11	Bank ...	11	13	...	...
	1 in 100 ...	...	21	Bank ...	9	16	Left ...	30 chains.
8	...	...	...	Bank ...	10	5	...	...
	Level ...	...	27	Bank * ...	7	3	...	...
	...	...	...	Cutting ...	18	3	...	...
	...	...	...	Bank ...	2	1	...	...
	1 in 100 ...	D	17	Bank ...	16	5	...	...
9	...	...	...	Bank ...	1	7	...	...
	1 in 300 ...	D	18	Bank ...	18	14	Right...	30 chains.
	Level ...	...	5	Bank ...	5	3	...	...
	1 in 150 ...	U	11·50	Bank ...	10·50	1	Right...	30 chains.
	Level ...	...	15	Bank ...	15	10	...	...
	1 in 150 ...	U	13·50	Bank ...	3·50	1	...	...
10	...	...	...	Bank ...	2·00	1	...	...
	...	...	...	Cutting ...	7	5	...	...
	...	...	...	Bank ...	1	3	...	...
	Level ...	...	7	Bank ...	7	5	...	...
	1 in 200 ...	D	8	Bank ...	8	5	...	...
	Level ...	...	24	Bank ...	24	9	...	...
	1 in 200 ...	U	54	Bank ...	3	8	...	...
11	...	...	...	Bank ...	26	6	...	...
	...	...	...	Cutting ...	8	1	...	...
	...	...	...	Bank ...	17	8	...	...
	1 in 500 ...	U	40	Bank ...	2	4	...	...
12	...	...	...	Bank ...	38	9	...	...
	1 in 100 ...	U	35	Bank ...	15	4	...	...
13	...	...	...	Bank ...	4	1	...	...
	...	...	...	Cutting ...	6	1	...	...
	...	...	...	Bank ...	10	8	...	...
	1 in 200 ...	U	28	Cutting ...	9	2	...	...
	...	...	...	Bank ...	19	14	...	...
	Level ...	...	42	Bank † ...	5	1	...	...
14	...	...	...	Bank ...	37	9	...	...
	1 in 100 ...	U	12	Bank ...	12	5	...	...
	Level ...	...	10	Bank ...	2	1	...	...
	...	...	...	Cutting ...	2	4	...	...
15	...	...	...	Cutting ...	6	4	...	...
	1 in 100 ...	D	20	Cutting ...	5	4	...	...
	...	...	...	Bank ...	15	4	...	...
	Level ...	...	24	Bank ...	24	13	...	...
16	1 in 100 ...	U	33	Bank ...	3	7	Left ...	30 chains.
	...	...	...	Bank ...	29	6	...	...
	...	...	...	Cutting ...	1	1	...	...
	Level ...	...	8	Cutting ..	8	8	...	...
	1 in 100 ...	D	10	Cutting ...	5	2	...	...
	...	...	...	Bank ...	5	2	...	...

* Davangeri station. † Tholunsee.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ...	...	35	Bank ...	4	9	...	...
17	...	...	...	Bank ...	31	11	...	...
	1 in 300 ...	U	12	Bank ...	11	8	...	...
	...	...	...	Cutting ...	1	1	...	...
	Level ...	...	4	Cutting ...	4	1	...	...
	1 in 100 ...	D	11	Cutting ...	5	1	...	...
	...	...	...	Bank ...	1	3	...	...
18	...	...	...	Bank ...	5	3	...	...
	Level ...	...	20	Bank ...	20	12	...	...
	1 in 100 ...	U	31	Bank ...	21	14	...	...
	...	...	...	Cutting ...	7	2	...	...
19	...	...	...	Cutting ...	3	3	...	...
	Level ...	...	8	Cutting ...	8	5	...	...
	1 in 100 ...	U	24	Cutting ...	3	1	...	...
	...	...	...	Bank ...	21	16	...	...
	Level ...	...	15	Bank * ...	15	17	...	...
	1 in 100 ...	U	39	Bank ...	3	9	...	...
20	...	...	...	Bank ...	27	6	...	...
	Level ...	...	23	Bank ...	16	3	...	...
21	...	...	...	Bank † ...	7	7	...	...
	1 in 200 ...	D	8	Bank ...	8	10	...	...
	Level ...	...	38	Bank ‡ ...	38	16	Right...	30 chains.
22	1 in 100 ...	U	41	Bank ...	22	7	...	...
	...	...	...	Cutting ...	19	4	...	...
	Level ...	...	20	Cutting ...	5	3	...	...
	...	...	...	Bank ...	7	8	...	...
23	...	...	...	Bank ...	4	7	...	...
	...	...	...	Cutting ...	4	5	...	...
	1 in 100 ...	D	14	Cutting ...	8	8	...	...
	...	...	...	Bank ...	6	8	...	...
	Level ...	...	10	Bank ...	10	13	...	...
	1 in 100 ...	U	21	Bank ...	11	11	...	...
	...	...	...	Cutting ...	10	2	...	...
	Level ...	...	10	Bank ...	1	4	...	...
24	...	...	...	Bank ...	7	7	...	...
	...	...	...	Cutting ...	2	5	...	...
	1 in 300 ...	D	39	Cutting ...	7	7	...	...
	...	...	...	Bank ...	13	7	...	...
	...	...	...	Cutting ...	9	4	...	...
	...	...	...	Bank ...	10	7	...	...
	Level ...	...	20	Bank ...	5	11	...	...
25	...	...	...	Bank ...	15	13	...	...
	1 in 100 ...	U	14	Bank ...	14	19	...	...
	Level ...	...	46	Bank ...	12	6	...	...
	...	...	...	Cutting § ...	2	3	Right...	3,000 feet.
26	...	...	...	Cutting ‖ ...	3	1	...	...
	...	...	...	Bank ...	19	19	...	...
	1 in 100 ...	U	25	Bank ...	16	6	...	...
	...	...	...	Cutting ...	9	6	...	...
	Level ...	...	29	Cutting ...	3	1	...	...
	...	...	...	Bank ...	3	3	...	...
27	...	...	...	Bank ...	23	8	...	...
	1 in 100 ...	U	13	Bank ...	9	7	...	...
	...	...	...	Cutting ...	4	4	...	...

* 5-20′ arches. Mykonde. † Kodaganur. ‖ 3-20′ arches. ‡ { 1-40′ girder. 3-40′ do.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ...	...	28	Cutting ...	10	9	...	...
	...	...	...	Bank ...	7	15	...	...
28	...	...	...	Bank ...	6	13	...	...
	...	...	...	Cutting ...	5	4	...	...
	1 in 100 ...	D	10	Cutting ...	2	2	...	...
	...	...	...	Bank ...	8	8	...	...
	Level ...	...	15	Bank ...	15	14	...	...
	1 in 500 ...	U	50	Bank * ...	16	19	...	...
29	...	...	...	Bank ...	29	12	...	...
	...	...	...	Cutting ...	5	3	...	...
	Level ...	...	40	Cutting ...	3	2	...	...
	...	...	...	Bank ...	16	4	...	...
30	...	...	...	Bank † ...	21	26	...	...
	1 in 100 ...	U	11	Bank ...	11	5	...	...
	Level ...	...	24	Bank ...	13	3	Right...	3,000 feet.
	...	...	...	Cutting‡ ...	8	2	...	...
31	...	...	...	Bank ...	3	2	...	...
	1 in 250 ...	U	35	Bank § ...	30	19	...	...
	1 in 100 ...	U	83	Bank ...	15	7	...	...
32	...	...	...	Bank ...	42	11	...	...
	...	...	...	Cutting ...	7	3	...	...
	...	...	...	Bank ...	3	6	...	...
33	...	...	...	Bank ...	5	10	...	...
	...	...	...	Cutting ...	11	7	...	...
	Level ...	...	6	Cutting ...	6	5	...	...
	1 in 100 ...	D	10	Bank ...	10	2	...	...
	Level ...	...	28	Bank ‖ ...	21	3	...	...
34	...	...	...	Bank ...	7	1	...	...
	1 in 300 ...	D	12	Bank ...	12	1	...	...
	1 in 100 ...	D	1	Bank ...	11	3	...	...
	1 in 200 ...	D	18	Bank ...	18	4	...	...
	Level ...	...	15	Bank ...	5	8	...	...
35	...	...	...	Bank ...	10	12	...	...
	1 in 200 ...	U	8	Bank ...	8	6	...	...
	Level ...	...	7	Bank ...	7	2	...	...
	1 in 150 ...	D	22·50	Bank ...	22·50	4	...	...
	Level ...	...	64·50	Bank ¶ ...	6	4	...	...
36	...	...	...	Bank ...	40	14	...	...
	...	...	...	Cutting ** ...	10	2	...	...
	...	...	...	Bank ...	2·50	2	...	...
37	...	...	...	Bank ...	6	8	...	...
	1 in 100 ...	D	6	Bank ...	6	8	...	...
	Level ...	...	11	Bank ...	11	10	...	...
	1 in 100 ...	U	23	Bank ...	12	5	Right...	3,000 feet.
	...	...	...	Cutting ...	11	2	...	...
	Level ...	...	10	Cutting ...	6	1	...	...
38	...	...	...	Bank ...	4	2	...	...
	1 in 100 ...	D	32	Bank ...	8	2	...	...
	...	...	...	Bank ...	8	2	...	...
	...	...	...	Bank ...	16	15	...	...
	Level ...	...	19·50	Bank ...	17	19	...	...
39	...	...	...	Bank ...	2·50	12	...	...
	1 in 150 ...	D	27	Bank ...	27	7	...	...
	Level ...	...	31·50	Bank ...	23·50	17	...	...

* 2-40′ girder. † 3-20′ arches. ‡ Sasalu.
§ 5-20′ arches. ‖ Bharamamkandroog. ¶ 9-10′ arches.
** Jajur.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
40	...	...	...	Bank * ...	8	19	...	...
	1 in 100 ...	U	21	Bank ...	13	7	...	...
	...	...	...	Cutting ...	8	2	...	...
	Level ...	...	2	Cutting ...	2	1	...	...
	1 in 100 ...	D	1,400	Cutting ...	3	1	...	...
	...	...	...	Bank ...	11	3	...	...
	Level ...	...	1,200	Bank ...	8	11	...	...
41	...	...	...	Bank ...	4	11	...	...
	1 in 100 ...	U	8	Bank ...	5	3	...	...
	...	...	...	Cutting ...	3	1	...	...
	Level ...	...	2	Cutting ...	2	4	...	...
	1 in 100 ...	D	18	Cutting ...	10	5	...	...
	...	...	...	Bank ...	8	7	...	...
	Level ...	...	32	Bank ...	21	14	...	...
42	...	...	...	Bank ...	11	6	...	...
	1 in 200 ...	D	20	Bank ...	20	6	...	...
	Level ...	...	52	Bank ...	21	12	...	...
43	...	...	...	Bank ...	31	14	...	...
	1 in 100 ...	U	33	Bank ..	14	5	...	...
	...	...	...	Cutting ...	8	1	...	...
44	...	...	...	Bank ...	11	1	...	...
	Level ...	...	7	Bank ...	7	2	...	...
	1 in 100 ...	D	5	Bank ...	5	1	...	...
	Level ...	...	18	Bank ...	18	10	...	...
	1 in 100 ...	U	29	Bank ...	12	8	...	...
45	...	...	...	Cutting ...	17	4	...	...
	Level ...	...	38	Cutting ...	7	1	...	...
	...	...	...	Bank ...	29	1	...	...
46	...	...	...	Bank ...	2	10	...	...
	1 in 100 ...	U	54	Bank ...	38	9	...	...
	...	...	...	Cutting ...	13	8	...	...
47	...	...	...	Cutting* ...	3	5	...	...
	Level ...	...	40	Bank † ...	40	14	Left ...	3,000 feet.
	1 in 100 ...	...	63	Bank ...	9	11	...	...
48	...	...	...	Bank ...	40	16	...	...
	...	...	...	Cutting ...	13	14	...	...
49	...	...	...	Cutting ...	1	12	...	...
	Level ...	...	25	Cutting ‡ ...	10	11	Right.	3,000 feet.
	...	...	...	Bank ‡ ...	15	10		
	1 in 200 ...	U	6	Bank ...	6	5	...	...
	Level ...	...	6	Bank ...	6	5	...	...
	1 in 150 ...	U	15	Bank ...	15	10	...	...
50	Level ...	...	76·37	Bank ...	52·80	9	...	...
51	...	...	...	Bank § ...	23·57	12	...	...
	1 in 100 ...	U	57	Bank ...	2	12	...	...
	...	...	...	Cutting ...	2	6	...	...
	...	...	...	Bank ...	25·23	8	...	...
52	...	...	...	Bank ...	27·77	9	...	...
	1 in 175 ...	U	21	Bank ...	21·00	5	...	...
	Level ...	...	6	Bank ¶ ...	4·03	9	...	...
53	...	...	...	...	2	4	...	...
	1 in 100 ...	U	5	Bank ...	5	2	...	...
	Level ...	...	5	Bank ...	5	8	...	...
	1 in 100 ...	U	27	Bank ...	27	12	...	...

* 3-20′ arches. † 5-20′ arches. ‡ Ramgeri.
§ 5-40′ girder. ¶ 3·40′ girder.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ...	...	3	Bank ...	3	1	Right...	3,000 feet.
	1 in 100 ...	U	70	Bank ...	11	16	...	...
54	...	...	...	Bank ...	53	21	Right...	3,000 feet.
55	...	...	...	Cutting ...	6	1	...	...
	Level ...	...	30	Cutting * ...	21	6	...	...
	...	...	...	Bank * ...	9	21	...	...
	1 in 100 ...	...	29	Bank ...	17	20	Right...	3,000 feet.
56	...	...	...	Bank ...	12	12	...	...
	1 in 100 ...	U	19	Bank ...	7	11	...	...
	...	...	...	Cutting ...	9	2	...	...
	...	...	...	Bank ...	3	1	...	...
	Level ...	...	6	Cutting ...	3	2	...	...
	...	...	...	Bank ...	3	8	...	...
	1 in 100 ...	U	77	Bank ...	3	17	...	...
57	...	...	...	Bank ...	38	19	...	...
	...	...	...	Cutting ...	5	3	...	...
	...	...	...	Bank ...	7	12	...	...
	...	...	...	Cutting ...	3	2	...	...
58	...	...	...	Bank ...	3	3	...	...
	...	...	...	Cutting ...	3	1	...	...
	...	...	...	Bank ...	4	4	...	...
	...	...	...	Cutting ...	11	4	...	...
	Level ...	...	5	Cutting ...	5	9	...	...
	1 in 100 ...	D	27	Cutting ...	6	6	...	...
	...	...	...	Bank ...	21	11	...	...
59	1 in 400 ...	D	20	Bank ...	20	11	...	...
	1 in 200 ...	D	20	Bank ...	20	7	...	...
	Level ...	...	7	Cutting ...	7	1	...	...
	1 in 100 ...	D	27	Cutting ...	5	1	...	...
60	...	...	...	Cutting ...	5	1	...	...
	...	...	...	Bank ...	17	18	...	...
	Level ...	...	21	Bank ...	21	9	...	...
	1 in 200 ...	U	8	Bank ...	8	4	...	...
	Level ...	...	6	Bank ...	2	2	...	...
61	...	...	...	Cutting ...	4	1	...	...
	1 in 100 ...	D	16	Bank ...	16	2	Right...	30 chains.
	Level ...	...	3,296½	Bank † ...	1	1	...	...
	...	...	...	Cutting † ...	10	2	...	...
	...	...	...	Bank ...	22	5	...	...
62	1 in 200 ...	D	26	Bank ...	26	4	...	...
	1 in 100 ...	D	83	Bank ...	27	5	...	...
63	...	...	...	Bank ...	53	14	...	...
64	...	...	...	Bank ...	6	15	...	...
	Level ...	...	31	Bank ‡ ...	31	22	...	...
	1 in 150 ...	U	14·50	Bank ...	14·50	10	...	...
	Level ...	...	6·50	Bank ...	2	1	...	...
65	...	...	...	Bank ...	4·50	1	...	...
	1 in 400 ...	D	9	Bank ...	9	5	...	...
	Level ...	...	4	Bank ...	4	13	...	...
	1 in 100 ...	U	25·50	Bank ...	25·50	12	...	...
	Level ...	...	10·50	Cutting ...	10·50	3	...	...
66	1 in 100 ...	D	7	Bank ...	2	1	...	...
	...	...	...	Cutting ...	5	2	...	...
	Level ...	...	6	Bank ...	6	7	...	...

* Bedarkeri. † Sivoni Station. ‡ 5-40′ girder.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	1 in 200 ...	U	16	Bank ...	16	7	...	...
	Level ...	...	13·50	Bank ...	350	2	...	...
	...	...	...	Cutting ...	10	3	...	...
	1 in 100 ...	D	29·50	Cutting ...	10	3	...	...
67	...	...	...	Bank ...	19·50	13	...	...
	Level ...	...	23	Bank * ...	23	19	...	...
	1 in 100 ...	U	8	Bank ...	8	2	...	...
	Level ...	...	22	Cutting † ...	2	1	...	...
68	...	...	...	Cutting † ...	8	2	...	...
	...	...	...	Bank † ...	12	2	...	...
	1 in 100 ...	U	36	Bank ...	19	17	...	...
	...	...	...	Cutting ...	6	2	...	...
	...	...	...	Bank ...	2	4	...	...
	...	...	...	Cutting ...	5	2	...	...
	...	...	...	Bank ...	...	2	...	...
69	...	...	...	Bank ...	3	2	...	...
	1 in 200 ...	...	78	Bank ...	50	8	...	...
70	...	...	...	Bank ...	20	4	...	...
	1 in 100 ...	...	86	Bank ...	25	10	...	...
71	...	...	...	Bank ...	13	9	...	...
	...	...	...	Cutting ...	19	5	...	...
	...	...	...	Bank ...	21	9	...	...
72	...	...	...	Bank ...	1	1	...	...
	...	...	...	Cutting ...	7	2	...	...
	Level ...	...	2½	Bank ...	2½	1	...	...
	1 in 150 ...	U	16½	Bank ...	16½	8	...	...
	1 in 200 ...	...	26	Bank ...	26	18	...	...
73	Level ...	...	22	Cutting ...	16	3	...	...
	...	...	...	Bank ...	6	4	...	...
	1 in 150 ...	...	15	Bank ...	11	8	...	...
	...	...	...	Cutting ...	4	3	...	...
	Level ...	...	2	Cutting ...	2	2	...	...
	1 in 100 ...	D	41	Cutting ...	8	2	...	...
	...	...	...	Bank ...	4	1	...	...
74	...	...	...	Cutting ...	2	1	...	...
	...	...	...	Cutting ...	10	3	...	...
	...	...	...	Bank ...	17	19	Left ...	30 chains.
	Level ...	...	2	Bank ...	2	15	...	...
	1 in 300 ...	U	30	Bank ...	24	12	...	...
75	...	...	...	Bank ...	6	2	...	...
	Level ...	...	23	Bank ...	23	7	...	...
	1 in 100 ...	...	20	Bank ...	15	13	...	...
	...	...	...	Cutting ...	5	1	...	...
	1 in 200 ...	...	24	Bank ...	4	1	...	...
76	...	...	...	Bank ...	20	7	...	...
	Level ...	...	3	Cutting ...	3	1	...	...
	1 in 100 ...	D	25	Bank ...	25	13	Lef ...	30 chains.
	Level ...	...	17	Bank ...	5	12	...	...
77	...	...	...	Bank ...	5	3	...	...
	...	...	...	Cutting ...	5	1	...	...
	...	...	...	Bank ...	2	1	...	...
	1 in 100 ...	D	30	Bank ...	30	10	Left ...	30 chains.
	Level ...	...	3	Bank ...	3	10	...	...
	1 in 100 ...	U	11	Bank ...	8	12	...	...

* 1-60′ girder. † Ajampur Station.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves.	
							Direction.	Radius.
78	...	...	...	Bank ...	3	4	...	...
	Level ...	...	7	Bank ...	7	1	...	...
	1 in 100 ...	D	13	Bank ...	13	12	...	...
	Level ...	...	3	Bank ...	3	13	...	...
	1 in 100 ...	U	12	Bank ...	12	13	...	...
	1 in 400 ...	...	20	Bank ...	15	6	...	...
79	...	...	...	Bank ...	5	3	...	...
	Level ...	...	27	Bank * ...	7	2	...	...
	...	...	...	Cutting ...	14	3	...	...
	...	...	...	Bank ...	6	3	...	...
	Berur station.	...	...	...	...	...	...	...
79¾	Level ...	...	11	Cutting ...	4	2·65	...	...
	...	...	...	Bank ...	7	3·15	...	...
80	1 in 100 ...	D	48	Bank ...	32	4·39	...	...
	...	...	...	Cutting ...	8	2·11	...	...
	...	...	...	Bank ...	8	13·79	...	...
81	Level ...	...	25	Bank ...	25	3·18	Left ...	30 chains.
	1 in 100 ...	D	20	Bank ...	20	1·81	...	...
	Level ...	...	7	Bank ...	7	0·79	...	...
	1 in 100 ...	D	47	Bank ...	3	0·39	...	...
82	...	...	...	Cutting ...	20	1·38	...	...
	...	...	...	Bank ...	24	16·13	...	...
	Level ...	...	6	Bank ...	6	27·58	...	...
	Kodúr bridge 5-30′ spans.			...	...	...	...	...
83	1 in 100 ...	U	20	Bank ...	20	20·33	Right	30 chains.
	Level ...	...	23	Cutting ...	14	5·49	...	...
	Kodúr station.	...	...	...	...	...	...	...
	...	...	...	Bank ...	9	15·32	...	...
	1 in 100 ...	D	5	Bank ...	5	15·32	...	...
	Level ...	...	12	Bank ...	12	13·71	...	...
84	1 in 200 ...	U	10	Bank ...	10	6·64	...	...
	Level ...	...	19	Bank ...	2	2·23	...	...
	...	...	...	Cutting ...	13	4·0	...	...
	...	...	...	Bank ...	4	3·88	...	...
	1 in 100 ...	D	34	Bank ...	23	7·00	...	...
	...	...	...	Cutting ...	11	1·42	...	...
85	Level ...	...	39	Bank ...	39	32·50	Left.	30 chains.
86	1 in 100 ...	U	51	Bank ...	28	19·26	...	...
	...	...	...	Cutting ...	23	4·81	...	...
87	Level ...	..	8½	Bank ...	8½	3·06	...	...
88	1 in 150 ...	U	19½	Bank ...	19½	8·70	...	...
	1 in 100 ...	U	7	Bank ...	7	4·59	...	...
	Level ...	...	6	Bank ...	2	3·48	...	...
	...	...	...	Cutting ...	4	6·64	...	...
	1 in 100 ...	D	30	Cutting ...	15	11·95	...	...
	...	...	...	Bank ...	15	17·67	...	...
89	Level ...	...	6	Bank ...	6	10·83	...	...
	1 in 100 ...	U	32	Bank ...	17	16·03	...	...
	...	...	...	Cutting ...	15	11·02	...	...
90	Level ...	...	17	Bank ...	12	10·32	...	...
	...	...	...	Cutting ...	5	5·88	...	...
	1 in 100 ...	D	18	Cutting ...	9	6·09	...	...
	...	...	...	Bank ...	9	14·97	...	...
	Level ...	...	7	Bank ...	7	11·10	...	...

* Berur Station.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves.	
							Direction.	Radius.
	1 in 100 ...	U	19	Bank ...	14	16·78	..	...
	...	...	...	Cutting ...	5	6·10	...	...
91	Level ...	..	5	Cutting ...	5	6·51	...	...
	1 in 300 ...	D	21	Cutting ...	3	3·60	...	...
	...	...	...	Bank ...	11	12·89	...	...
	...	...	...	Cutting ...	7	3·25	Left ...	30 chains.
	1 in 200 ...	D	30	Cutting ...	8	2·96	...	...
	...	...	...	Bank ...	22	6·69	...	...
92 to 93	1 in 100 ...	D	11	Cutting ...	14	7·66	...	...
	...	...	...	Bank ...	39	24·40	...	...
	...	...	...	Cutting ...	18	6·22	...	...
	...	...	...	Bank ...	10	19·92	...	...
	Level ...	...	18	Bank ...	18	54·64	...	...
	Vedavati river 5 × 40.			...	...	...	...	...
94	1 in 250 ...	U	20	Bank ...	20	7·33	...	...
	1 in 150 ...	U	6	Bank ...	6	4·94	...	...
	Level ...	...	24	Cutting ...	20	6·12	...	...
	...	...	...	Bank ...	4	8·47	...	...
	Davanur station.		...	...	...	...	...	...
95	1 in 100 ...	D	8	Bank ...	8	14·10	...	...
	Level ...	...	21	Bank ...	21	16·21	...	...
	1 in 200 ...	U	28	Bank ...	28	14·57	Right.	30 chains.
96	Level ...	...	7½	Bank ...	7½	13·31	...	...
	1 in 200 ...	U	4½	Bank ...	4½	8·43	...	...
97	1 in 100 ...	U	89	Bank ...	40	16·69	Left.	30 chains.
	...	...	...	Cutting ...	17	9·33	...	...
	...	...	...	Bank ...	16	14·81	...	...
	...	...	...	Cutting ...	16	9·85	Right.	30 chains.
98	Level ...	...	14	Cutting ...	14	8·00	...	...
	Banawar station.		...	...	...	...	...	...
99	1 in 100 ...	D	15	Bank ...	15	8·71	...	...
	Level ...	...	4	Bank ...	4	15·26	...	...
	1 in 109 ...	U	29	Bank ...	5	13·99	...	...
	...	...	...	Cutting ...	4	2·22	...	...
	...	...	...	Bank ...	7	8·27	...	...
	...	...	...	Cutting ...	13	10·96	...	...
	Level ...	...	3	Bank ...	3	3·90	...	...
100	1 in 100 ...	U	36	Bank ...	23	17·30	...	...
	...	...	...	Cutting ...	4	1·85	...	...
	...	...	...	Bank ...	9	7·17	...	...
	1 in 325 ...	U	26	Bank ...	18	4·71	...	...
	...	...	...	Cutting ...	4	1·61	...	...
	...	...	...	Bank ...	4	5·87	...	...
101	Level ...	...	12	Bank ...	12	8·21	...	...
	1 in 100 ...	D	15	Bank ...	15	14·65	...	...
	Level ...	...	11	Bank ...	11	9·05	...	...
	1 in 200 ...	U	10	Bank ...	10	11·25	...	...
102	Level ...	...	4	Bank ...	4	5·61	...	...
	1 in 200 ...	U	4	Bank ...	4	1·70	...	...
	Level ...	...	22	Bank ...	6	2·59	...	...
	...	...	...	Cutting ...	10	8·96	...	...
	...	...	...	Bank ...	6	9·13	...	...
	1 in 100 ...	U	20	Bank ...	15	21·76	...	...
	...	...	...	Cutting ...	5	3·46	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
103	1 in 250 ...	U	20	Cutting ...	8	3·46	Right...	20 chains.
	...	...	...	Bank ...	12	9·47	...	...
	Level ...	...	4	Bank ...	4	3·97	Left ...	30 chains.
	1 in 100 ...	D	52	Cutting ...	22	8·24	...	...
104	...	...	...	Bank ...	30	23·41	...	...
	Level ...	...	13	Bank ...	13	20·58	Left ...	30 chains.
105	1 in 100 ...	U	28	Bank ...	18	19·37	...	...
	...	...	...	Cutting ...	10	7·24	...	...
	Level ...	...	6	Cutting ...	4	2·29	...	...
	...	...	...	Bank ...	2	3·01	...	...
	1 in 100 ...	D	5	Bank ...	5	5·48	...	...
	Level ...	...	12	Bank ...	12	10·26	...	...
	1 in 100 ...	U	8	Bank ...	8	9·66	...	...
	Level ...	...	7	Cutting ...	7	7·61	...	...
106	1 in 100 ...	D	8	Cutting ...	2	3·32	...	...
to	...	...	...	Bank ...	6	11·07	...	...
	Level ...	...	10	Bank ...	10	14·09	...	...
	1 in 100 ...	U	23	Bank ...	18	11·46	...	...
	...	...	...	Cutting ...	5	12·62	Right...	30 chains.
	Level ...	...	3	Cutting ...	3	15·10	...	...
107	1 in 100 ...	D	19	Cutting ...	8	14·48	...	...
	...	...	...	Bank ...	11	19·03	...	...
	Level ...	...	2	Bank ...	2	12·85	...	...
	1 in 100 ...	U	10	Bank ...	10	11·48	...	...
	Level ...	...	15	Bank ...	15	6·08	...	...
	1 in 100 ...	U	6	Bank ...	6	8·80	...	...
	Level ...	...	6	Cutting ...	6	13·41	...	...
108	1 in 100 ...	D	12	Cutting ...	4	8·29	...	...
	...	...	...	Bank ...	8	14·18	...	...
	Level ...	...	4	Bank ...	4	13·63	...	...
	1 in 100 ...	U	13	Bank ...	10	9·33	...	...
	...	...	...	Cutting ...	3	7·78	...	...
	Level ...	...	31	Cutting ...	11	7·45	...	...
	...	...	...	Bank ...	20	3·31	...	...
	Arsikiri station.	...	...	...	...	...	...	...
109	1 in 100 ...	D	12	Bank ...	12	16·96	...	...
	Level ...	...	18	Bank ...	12	13·35	...	...
	...	...	...	Cutting ...	6	16·46	...	...
	1 in 100 ...	D	12	Cutting ...	8	16·80	...	...
	...	...	...	Bank ...	4	14·36	Left ...	30 chains.
110	Level ...	...	44	Bank ...	44	22·44	...	...
to	1 in 100 ...	U	117	Bank ...	58	20·18	Right...	30 chains.
	...	...	...	Cutting ...	27	15·07	...	...
	...	...	...	Bank ...	7	5·05	...	...
111	...	...	...	Cutting ...	6	1·94	...	...
	...	...	...	Bank ...	11	2·80	Left ...	30 chains.
	...	...	...	Cutting ...	8	9·13	...	...
	Level ...	...	2	Cutting ...	2	8·86	...	...
112	1 in 150 ...	D	18	Bank ...	18	10·95	...	...
	Level ...	...	9	Bank ...	9	14·21	...	...
113	1 in 100 ...	U	61	Bank ...	43	20·44	Right...	30 chains.
to	...	...	...	Cutting ...	18	1·65	...	...
114	Level ...	...	7	Bank ...	7	8·26	...	...
to								
115	1 in 100 ...	U	44	Bank ...	16	17·58	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	5	3·29	...	...
	...	...	...	Bank ...	14	24·10	...	...
	...	...	...	Cutting ...	9	8·81	...	...
	Level	...	14	Cutting ...	4	6·67	...	...
	...	...	...	Bank ...	10	12·41	...	...
116	1 in 100 ...	U	59	Bank ...	22	15·43	...	...
to	...	...	...	Cutting ...	18	13·09	Left ...	30 chains.
	...	...	...	Bank ...	19	10·24	...	...
	Level	...	20	Bank ...	5	7·77	...	...
	Konchally station.		...	...	...	...	...	...
	...	...	...	Cutting ...	15	3·23	...	...
	1 in 100 ...	D	9	Bank ...	9	5·85	...	...
	Level	...	6	Bank ...	6	3·54	...	...
	1 in 100 ...	D	23	Cutting ...	13	1·88	...	...
117	...	...	...	Bank ...	10	15·13	...	...
118	Level	...	6	Bank ...	6	19·30	...	...
	1 in 100 ...	U	23	Bank ...	9	14·82	...	...
	...	...	...	Cutting ...	14	2·69	...	...
	Level	...	7	Cutting ...	7	4·21	...	...
	1 in 100 ...	D	14	Bank ...	14	12·19	...	...
119	Level	...	31	Bank ...	10	14·99	...	...
to	...	...	...	Cutting ...	10	5·95	...	...
	...	...	...	Bank ...	11	16·97	...	...
	1 in 100 ...	U	39	Bank ...	24	17·04	...	...
	...	...	...	Cutting ...	15	15·36	Right...	30 chains.
	Level	...	6	Cutting ...	6	13·27	...	...
	1 in 100 ...	D	6	Bank ...	6	15·49	...	...
120	Level	...	18	Bank ...	8	16·88	...	...
	...	...	...	Cutting ...	10	10·09	...	...
121	1 in 100 ...	D	22	Cutting ...	9	10·90	...	...
to	...	...	...	Bank ...	13	17·28	...	...
	Level	...	10	Bank ...	10	7·75	...	...
	1 in 100 ...	D	47	Cutting ...	21	10·32	...	...
	...	...	...	Bank ...	26	15·92	...	...
	Level	...	13	Bank ...	13	9·73	...	...
	1 in 100 ...	U	18	Bank ...	11	13·85	...	...
122	...	...	...	Cutting ...	7	3·20	...	...
	Level	...	6	Cutting ...	6	2·76	...	...
123	1 in 100 ...	D	61	Cutting ...	8	2·29	...	...
	...	...	...	Bank ...	8	4·08	...	...
	...	...	...	Cutting ...	22	9·48	...	...
	...	...	...	Bank ...	23	25·69	...	...
124	Level	...	33	Bank ...	12	18·64	Left ...	30 chains.
to	Tiptur station.	...	...	...	...	...	...	...
	...	...	...	Cutting ...	21	5·48	...	...
	1 in 100 ...	D	40	Cutting ...	13	4·31	...	...
	...	...	...	Bank ...	27	18·37	Left ...	30 chains.
125	Level	...	32	Bank ...	18	15·15	...	...
to	...	...	...	Cutting ...	14	5·29	Right...	30 chains.
126	1 in 100 ...	U	21	Bank ...	11	11·13	...	...
to	...	...	...	Cutting ...	10	6·12	...	...
	Level	...	8	Cutting ...	8	11·57	...	...
127	1 in 100 ...	D	31	Cutting ...	16	11·48	...	...
	...	...	...	Bank ...	15	12·83	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ...	...	7	Bank ...	7	12·87	...	...
	1 in 100 ...	U	24	Bank ...	9	8·25	Right...	30 chains
	...	...	...	Cutting ...	15	7·19	...	...
128	Level ...	...	8	Bank ...	8	5·27	...	...
	1 in 100 ...	U	16	Bank ...	16	12·89	...	...
	Level ...	...	7	Cutting ...	7	1·08	...	...
	1 in 100 ...	D	8	Bank ...	8	3·84	...	...
	Level ...	...	6	Bank ...	6	13·29	...	...
129	1 in 100 ...	U	20	Bank ...	17	20·22	...	...
to	...	...	...	Cutting ...	3	5·03	...	...
	Level ...	...	5	Cutting ...	5	15·07	...	...
	1 in 100 ...	D	62	Cutting ...	13	16·44	...	..
130	...	...	...	Bank ...	49	19·96	...	...
	Level ...	...	6	Bank ...	6	21·15	...	...
	1 in 100 ...	U	14	Bank ...	8	19·58	...	...
	...	...	...	Cutting ...	6	5·45	...	...
	Level ...	..	7	Cutting ...	7	6·57	...	...
	1 in 100 ...	D	6	Bank ...	6	9·91	...	...
131	Level ...	...	24	Bank ...	24	15·52	...	...
to	Kuppal station	...	...	...	...	...	...	...
	1 in 100 ...	U	91	Bank ...	39	14·67	Right...	30 chains.
132	...	...	...	Cutting ..	18	9·70	...	...
133	...	...	...	Bank ...	16	18·67	...	...
to	...	...	...	Cutting ...	87	14·63	Right...	30 chains.
	Level ...	...	2	Cutting ...	2	11·33	...	...
	1 in 100 ...	D	92	Cutting ...	10	10·29	...	...
	...	...	...	Bank ...	5	3·55	...	...
	...	...	...	Cutting ...	5	2·96	...	...
	...	...	...	Bank ...	23	10·23	...	...
	...	...	...	Cutting ...	18	7·13	...	...
134	...	...	...	Bank ...	31	23·85	...	...
135	Level ...	...	13	Bank ...	6	15·84	...	...
to	...	...	...	Cutting ...	7	5·04	...	...
	1 in 100 ...	D	42	Bank ...	42	20·63	...	...
	Level ...	...	15	Bank ...	10	16·27	...	...
	...	...	...	Cutting ...	5	3·00	Right...	30 chains.
136	1 in 100 ...	D	25	Cutting ...	12	5·19	...	...
	...	...	...	Bank ...	13	7·25	...	...
137	Level ...	...	20	Bank ...	20	18·70	...	...
	1 in 600 ...	D	18	Bank ...	18	17·56	...	...
	Bansandra station.		...	...	...	...	...	...
	Level ...	...	26	Bank ...	18	8·62	...	...
	..	...	...	Cutting ...	8	15·03	...	...
138	1 in 100 ...	D	42	Cutting ...	13	18·78	...	...
to	...	...	...	Bank ...	29	15·98	...	...
139	Level ...	...	41	Bank ...	41	16·54	...	...
	1 in 100 ...	U	12	Bank ...	12	9·70	...	...
140	Level ...	...	37	Bank ...	2	4·34	...	...
	...	...	..	Cutting ...	9	2·81	...	...
	...	...	...	Bank ...	26	17·18	...	...
	1 in 100 ...	U	21	Bank ...	13	12·21	...	...
	...	...	...	Cutting ...	8	6·72	...	...
141	Level ...	...	36	Cutting ...	8	10·86	...	...
	...	...	...	Bank ...	10	8·07	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	10	8·98	...	...
	...	...	...	Bank ...	8	17·22	...	...
	1 in 100 ...	U	15	Bank ...	8	20·33	...	...
	...	...	...	Cutting ...	7	7·33	Left ...	30 chains.
	Level ...	...	2	Cutting ...	2	3·58	...	...
142	1 in 100 ...	D	10	Cutting ...	5	5·26	...	...
to	...	...	...	Bank ...	5	6·51	...	...
	Level ...	...	16	Bank ...	16	19·91	...	...
	1 in 100 ...	U	50	Bank ...	33	15·45	...	...
143	...	...	...	Cutting ...	17	14·56	...	...
	Level ...	...	2	Cutting ...	2	16·40	...	...
	1 in 100 ...	D	28	Cutting ...	10	14·73	Right...	30 chains.
	...	...	...	Bank ...	11	14·24	...	...
	...	...	...	Cutting ...	1	5·59	...	...
	...	...	...	Bank ...	6	9·93	...	...
144	Level ...	...	20	Bank ...	7	13·88	...	...
to	...	...	...	Cutting ...	4	2·97	...	...
	...	...	...	Bank ...	7	17·26	...	...
	...	...	...	Cutting ...	2	5·08	Right...	30 chains.
	1 in 100 ...	D	19	Cutting ...	9	5·22	...	...
	...	...	...	Bank ...	10	23·43	...	...
	Yelladbaggi station.	...	...	...	...	...	...	...
	Level ...	...	19	Bank ...	5	23·13	...	...
	...	...	...	Cutting ...	9	5·46	...	...
145	...	...	...	Bank ...	5	15·04	...	...
	1 in 500 ...	D	10	Bank ...	7	19·85	...	...
	...	...	...	Cutting ...	3	6·91	...	...
	Level ...	...	6	Cutting ...	6	10·28	...	...
	1 in 100 ...	D	27	Cutting ...	10	10·26	...	...
	...	...	...	Bank ...	17	30·46	Left ...	30 chains.
	Level ...	...	6	Bank ...	6	23·63	...	..
146	1 in 100 ...	U	47½	Bank ...	19	24·09	...	...
	...	...	...	Cutting ...	28½	7·59	Right...	30 chains.
	Level ...	...	...	Cutting ...	2	8·40	...	...
147	1 in 100 ...	D	18½	Cutting ...	12½	9·71	...	...
	...	...	...	Bank ...	6	20·94	...	...
	Level ...	...	2	Bank ...	2	22·98	...	...
	1 in 100 ...	U	10	Bank ...	6	22·44	...	...
	...	...	...	Cutting ...	4	10·90	...	...
	Level ...	...	2	Cutting ...	2	8·23	...	...
	1 in 100 ...	D	37	Cutting ...	17	15·54	Right...	30 chains.
	...	...	...	Bank ...	20	19·83	Left ...	30 chains.
148	Level ...	...	21	Bank ...	8	18·60	...	...
to	...	...	...	Cutting ...	13	8·74	...	...
149	1 in 100 ...	D	26	Bank ...	26	12·58	...	...
	Level ...	...	3	Bank ...	3	10·99	...	...
	1 in 100 ...	U	38	Bank ...	17	16·52	...	...
	...	...	...	Cutting ...	7	3·22	...	...
	...	...	...	Bank ...	4	2·31	...	...
	...	...	...	Cutting ...	10	7·01	Right...	30 chains.
	Level ...	...	2½	Cutting ...	2½	8·72	...	...
150	1 in 100 ...	D	12	Cutting ...	8	9·58	...	...
to	...	...	...	Bank ...	4	18·5	...	...
	Level ...	...	25	Bank ...	20	15·83	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	5	0·58	...	...
	1 in 100 ...	D	42	Bank ...	42	9·40	...	...
	Nettur station.		...	...	...	...	...	...
151	Level ...	...	26	Cutting ...	26	1·74	...	...
152	1 in 200 ...	D	16	Bank ...	16	8·32	...	...
to	1 in 100 ...	D	50	Bank ...	4	5·04	...	...
	...	...	...	Cutting ...	26	3·52	...	...
153	...	...	...	Bank ...	20	15·25	...	...
	Level ...	...	18	Bank ...	18	16·87	Right...	30 chains.
	1 in 100 ...	U	23	Bank ...	11	12·97	...	...
	...	...	...	Cutting ...	12	1·30	...	...
154	Level ...	...	12	Bank ...	12	6·70	...	...
	1 in 100 ...	U	10	Bank ...	5	9·16	...	...
	...	...	...	Cutting ..	5	9·38	...	...
	Level ...	...	5	Cutting ...	5	12·51	...	...
	1 in 100 ..	D	21	Cutting ...	15	8·81	...	...
	...	...	...	Bank ...	6	5·75	...	...
	Level ...	...	15	Bank ...	15	13·34	...	...
155	1 in 100 ...	U	18	Bank ...	18	9·88	...	...
	1 in 150 ...	U	9	Bank ...	9	9·35	...	...
	Level ...	...	9	Cutting ...	9	6·93	...	...
156	1 in 100 ...	D	29	Bank ...	29	12·00	Left ...	30 chains.
	Level ..	...	13	Bank ...	13	12·28	...	...
	1 in 200 ...	U	6	Bank ...	6	15·29	..	...
	Level ...	...	7	Bank ...	7	14·63	...	...
	1 in 100 ...	U	24	Bank ...	12	5·82	...	...
	...	...	...	Cutting ...	12	7·80	...	...
	Level ...	Gubbi station.		...	...	...	...	...
	Gubbi station.	...	...	...	...	...	...	...
156½	Level ...	...	10	Cutting ...	6	2·55	...	...
	...	...	...	Bank ...	4	7·10	...	...
	1 in 100 ...	D	7	Bank ...	7	11·18	...	...
	Level ...	...	5	Bank ...	5	11·75	...	...
157	1 in 100 ...	U	14	Bank ...	14	8·38	...	...
	Level ...	...	7	Bank ...	1	1·79	...	...
	...	...	...	Cutting ...	6	6·43	...	...
	1 in 100 ...	D	18	Cutting ...	11	11·05	...	...
	...	...	...	Bank ...	7	10·49	...	...
	Level ...	...	6	Bank ...	6	14·02	...	...
	1 in 100 ...	U	9	Bank ...	9	8·59	...	...
158	Level ...	...	9	Cutting ...	9	7·83	...	...
	1 in 100 ...	D	32	Cutting ...	18	12·63	...	...
	...	...	...	Bank ...	14	16·35	...	...
159	Level ...	...	51½	Bank ...	51½	11·75	...	...
160	1 in 100 ...	U	30	Bank ...	30	18·8	...	...
161	1 in 150 ...	U	60	Bank ...	60	6·19	...	...
	Level ...	...	24½	Bank ...	24½	1·49	...	...
	1 in 100 ...	D	5	Bank ...	5	1·26	...	...
162	Level ...	...	8	Bank ...	8	6·79	...	...
	1 in 100 ...	U	30	Bank ...	9	11·74	...	...
	...	...	...	Cutting ...	21	10·10	Right...	3,000 feet.
	Level ...	...	5	Cutting ...	1	1·32	...	...
	...	...	...	Bank ...	4	3·01	...	...
163	1 in 100 ...	D	38	Bank ...	38	8·62	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ...	...	2	Bank ...	2	5·76	...	...
	1 in 100 ...	U	16	Bank ...	6	4·55	...	...
	...	...	...	Cutting ...	10	2·58	...	...
164	Level ...	...	11	Bank ...	11	3·35	...	...
	1 in 100 ...	D	13	Bank ...	13	2·08	...	...
	Level ...	...	20	Bank ...	20	7·74	...	...
165	1 in 100 ...	U	26	Bank ...	11	7·09	...	...
	...	...	...	Cutting ...	15	6·34	...	...
	Level ...	...	2	Cutting ...	2	4·63	...	...
	1 in 100 ...	D	11	Cutting ...	6	4·14	Right...	3,000 feet.
	...	...	...	Bank ...	5	1·29	...	...
166	Level ...	...	39	Bank ...	39	12·82	...	...
167	1 in 100 ...	U	69	Bank ...	69	18·62	Left ...	3,000 feet.
	Tumkur station yard.			...	...	...	...	...
	Level ...	...	28	Bank ...	5	3·47	...	...
	...	...	...	Cutting ...	14	5·98	...	...
	...	...	...	Bank ...	9	8·36	...	...
168	1 in 150 ...	U	27	Bank ...	8	10·35	Right...	3,000 feet.
	...	...	...	Cutting ...	19	8·79	...	...
	1 in 100 ...	U	22	Bank ...	22	1·88	...	...
169	Level ...	...	51	Cutting ...	17	9·66	...	...
	...	...	...	Bank ...	8	6·03	...	...
	...	...	...	Cutting ...	12	10·65	...	...
	...	...	...	Bank ..	14	13·27	...	...
170	1 in 300 ...	U	33	Bank ...	8	8·91	...	...
	...	...	...	Cutting ...	6	4·85	...	...
	...	...	...	Bank ...	13	11·52	...	...
	...	...	...	Cutting ...	6	10·51	...	...
	1 in 100 ...	U	5	Cutting ...	4	8·92	...	...
	...	...	...	Bank ...	1	3·88	...	...
	Level ...	...	10	Bank ...	10	9·21	...	...
171	1 in 300 ...	U	24	Bank ...	2	2·39	...	...
	...	...	...	Cutting ...	7	6·87	...	...
	...	...	...	Bank ...	11	7·36	...	...
	...	...	...	Cutting ...	4	5·60	...	...
	Level ...	...	2	Cutting ...	2	6·12	...	...
	1 in 100 ...	D	15	Cutting ...	11	10·29	...	...
	...	...	...	Bank ...	4	5·33	Right...	3,000 feet.
172	Level ...	...	54	Bank ...	54	18·07	...	...
173	1 in 100 ...	U	78	Bank ...	25	24·45	Right...	3,000 feet.
174	...	...	...	Cutting ...	14	12·13	...	...
	...	...	...	Bank ...	14	7·70	...	...
	...	...	...	Cutting ...	15	22·49	...	...
	...	...	...	Bank ...	10	12·43	...	...
	Level ...	...	3	Cutting ...	3	6·92	...	...
	1 in 100 ...	D	20	Cutting ...	3	7·86	...	...
	...	...	...	Bank ...	10	9·22	...	...
	...	...	...	Cutting ...	7	11·61	...	...
	Herchulli station yard.			...	...	...	...	...
	Level ...	...	18	Cutting ...	6	7·20	Left ...	3,000 feet.
	...	...	...	Bank ...	2	3·42	...	...
	...	...	...	Cutting ...	8	1·62	...	...
	...	...	...	Bank ...	2	4·49	...	...
	1 in 100 ...	D	6	Bank ...	6	12·88	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
175	Level ...	...	16	Bank ...	6	14·03	...	...
	...	...	...	Cutting ...	7	6·91	...	...
	...	...	...	Bank ...	3	3·30	...	...
	1 in 100 ...	U	28	Bank ...	26	15·28	Right...	3,000 feet.
	...	...	...	Cutting ...	2	2·37	...	...
176	Level ...	...	30	Cutting ...	20	9·62	...	...
	...	...	...	Bank ...	10	8·27	...	...
176	1 in 200 ...	U	16	Bank ...	16	6·59	...	...
177, 178, 179	1 in 100 ...	U	169	Bank ...	132	19·56	Left ...	3,000 feet.
	...	...	...	Cutting ...	32	25·14	...	...
	...	...	...	Bank ...	5	6·02	...	...
180	Level ...	...	13	Bank ...	7	4·84	Left...	3,000 feet.
	...	...	...	Cutting ...	6	3·65		
	1 in 100 ...	D	30	Bank ...	17	3·76	...	...
	...	...	...	Cutting ...	13	4·37	...	...
181, 182	Level ...	...	89·40	Bank ...	35·4	9·78	Left ...	3,000 feet.
	Nidvandu station yard.			...	...	...	...	...
	...	...	...	Cutting ...	28	8·29	Right...	3,000 feet.
	...	...	...	Bank ...	12	3·86	...	...
	...	...	...	Cutting ...	14	4·34	Right.	3,000 feet.
	1 in 100 ...	D	29·86	Bank ...	3	1·81		
	...	...	...	Cutting ...	20·86	14·44	...	...
	...	...	...	Bank ...	6	10·00	Right...	3,000 feet.
183	Level ...	...	28	Bank ...	22	14·00	...	...
	...	...	...	Cutting ...	6	3·25	...	...
	1 in 100 ...	D	26	Cutting ...	12	10·08	...	...
	...	...	...	Bank ...	14	10·41	Right...	3,000 feet.
184	Level ...	...	3	Bank ...	3	8·97	...	...
	1 in 100 ...	D	48	Bank ...	21	16·44	...	...
	...	...	...	Cutting ...	21	4·45	...	...
	...	...	..	Bank ...	6	4·20	...	...
185	Level ...	...	16	Bank ...	2	6·62	...	...
	...	...	...	Cutting ...	10	9·66	Right...	3,000 feet.
	...	...	...	Bank ...	4	5·19	...	...
	1 in 100 ...	...	17	Bank ...	2	2·97	...	...
	...	...	...	Cutting ...	15	6·83	...	...
	Level ...	...	3	Cutting ...	3	3·26	Left ...	3,000 feet.
186	1 in 100 ..	D	40	Bank ...	4	0·92	...	...
	...	...	...	Cutting ...	19	15·80	...	...
	...	...	...	Bank ...	17	16·21	...	...
	Level ..	...	2	Bank ...	2	13·86	...	...
187	1 in 100 ..	U	35	Bank ...	8	12·42	Left ...	3,000 feet.
	...	...	...	Cutting ...	27	15·34	...	...
	Level ...	...	3	Bank ...	3	1·90	...	...
	1 in 100 ...	D	19	Bank ...	19	7·57	...	...
	Dodbeli station yard		...	...	...	...	...	...
188	Level ...	...	33	Bank ...	33	9·11	...	...
	1 in 100 ...	U	26	Bank ...	17	9·22	...	...
	...	...	...	Cutting ...	9	7·01	...	...
	Level ...	...	2	Cutting ...	2	8·12	Right.	3,000 feet.
	1 in 100 ...	D	14	Cutting ...	9	10·71		
	...	...	...	Bank ...	5	10·82		
	Level ...	...	3	Bank ...	3	12·25		

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
189	1 in 100 ...	U	6	Bank ...	3	9·71	...	...
	...	...	...	Cutting ...	3	3·41	...	...
	Level ...	...	6	Cutting ...	6	10·58	...	...
	1 in 100 ...	D	42	Cutting ...	18	26·39	...	...
	...	...	...	Bank ...	24	28·14	...	...
190	Level ...	...	2	Bank ...	2	20·80	...	...
	1 in 100 ...	U	14	Bank ...	6	18·03	...	...
	...	...	...	Cutting ...	8	19·29	...	...
	Level ...	...	33	Cutting ...	6	18·65	...	...
	...	...	...	Bank ...	8	11·36	...	...
	...	...	...	Cutting ...	14	12·89	...	...
	...	...	...	Bank ...	5	11·74	...	...
191	1 in 100 ...	U	22	Bank ...	5	13·87	...	...
	...	...	...	Cutting ...	17	9·89	...	...
	Level ...	...	7	Cutting ...	7	4·66	...	...
	1 in 100 ...	U	11	Bank ...	9	11·81	...	...
	...	...	...	Cutting ...	2	3·98	Right.	3,000 feet.
	Level ...	...	2	Cutting ...	2	5·17		
	1 in 100 ...	D	15	Cutting ...	12	14·04	...	...
	...	...	...	Bank ...	3	3·49	...	...
192	Level ...	...	2	Bank ...	2	7·96	...	...
	1 in 100 ...	U	27	Bank ...	14	17·67	...	...
	...	...	...	Cutting ...	13	16·81	Left...	3,000 feet.
	Level ...	...	2	Cutting ...	2	13·87		
	1 in 100 ...	D	9	Cutting ...	7	13·19	...	...
	...	...	...	Bank ...	2	3·23	...	...
193	Level ...	...	19	Bank ...	9	12·50	...	...
	...	...	...	Cutting ...	10	10·44	...	...
	1 in 100 ...	D	23	Cutting ...	14	8·99	...	...
	...	...	...	Bank ...	9	14·73	...	...
	Level ...	...	3	Bank ...	1	6·16	...	...
	...	...	...	Cutting ...	2	2·51	...	...
194	1 in 100 ...	D	36	Cutting ...	20	17·90	Left ...	3,000 feet.
	...	...	...	Bank ...	16	17·86	...	...
	Golhulli station yard		...	...	...	...	...	...
	Level ...	...	22½	Bank ...	3	2·65	...	...
	...	...	...	Cutting ...	9	6·29	...	...
	...	...	...	Bank ...	10½	12·26	...	...
195	1 in 100 ...	D	19½	Bank ...	6½	4·03	...	...
	...	...	...	Cutting ...	3	3·35	...	...
	...	...	...	Bank ...	10	6·44	...	...
	Level ...	...	3½	Cutting ...	3½	0·30	...	...
	1 in 100 ...	D	23½	Cutting ...	7	4·17	Left...	3,000 feet.
	...	...	...	Bank ...	16½	0·92		
	Level ...	...	8	Bank ...	8	13·74	...	...
	1 in 100 ...	U	14	Bank ...	9	13·50	...	...
	...	...	...	Cutting ...	5	4·55	...	...
196	Level ...	...	6	Cutting ...	6	8·43	...	...
197	1 in 100 ...	D	60	Cutting ...	23	13·68	...	...
	...	...	...	Bank ...	19	17·61	...	...
	...	...	...	Cutting ...	18	13·36	...	...
	Level ...	...	15	Cutting ...	1	1·55	...	...
	...	...	...	Bank ...	7	12·85	...	...
	...	...	...	Cutting ...	7	5·54	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	1 in 100 ...	D	10	Cutting ...	6	3·49	...	...
	...	...	...	Bank ...	4	3·08	...	...
	Level ...	...	2	Bank ...	2	5·71	...	...
198	1 in 100 ...	U	20	Bank ...	19	8·45	...	...
	...	...	...	Cutting ...	1	2·47	...	...
	Level ...	...	2	Cutting ...	2	5·72	Right...	3,000 feet.
199	1 in 100 ...	D	65	Cutting ...	19	20·86	...	...
	...	...	...	Bank ...	2	1·26	...	...
	...	...	...	Cutting ...	15	3·65	...	...
	...	...	...	Bank ...	29	29·83	...	...
	Level ...	...	30	Bank ...	4	10·60	...	...
	...	...	...	Cutting ...	17	9·32	Left ...	3,000 feet
	...	...	...	Bank ...	9	12·27	...	...
200 & 201	1 in 100 ...	U	55	Bank ...	30	7·18	Right...	3,000 feet.
	...	...	...	Cutting ...	12	6·40	...	...
	...	...	...	Bank ...	5	14·63	...	...
	...	...	...	Cutting ...	8	19·81	...	...
	Level ...	...	13	Cutting ...	3	9·41	...	...
	...	...	...	Bank ...	10	17·31	...	...
	1 in 100 ...	U	13	Cutting ...	11	14·71	...	...
	...	...	...	Bank ...	2	4·79	...	...
	Level ...	...	13	Bank ...	5	9·05	...	...
	...	...	...	Cutting ...	8	11·61	...	...
202	1 in 100 ...	U	20	Bank ...	10	10·23	...	...
	...	...	...	Cutting ...	10	5·52	...	...
	Banawar station yard.			...	...	...	...	...
	Level ...	...	21½	Bank ...	2	2·18	...	...
	...	...	...	Cutting ...	1	0·80	...	...
	...	...	...	Bank ...	2	10·37	...	...
	...	...	...	Cutting ...	2	1·21	...	...
	...	...	...	Bank ...	3	0·79	...	...
	...	...	...	Cutting ...	10	5·72	...	...
	...	...	...	Bank ...	1½	4·80	...	...
203 & 204	1 in 100 ...	U	127	Cutting ...	3	3·43	...	...
	...	...	...	Bank ...	24	23·71	...	...
	...	...	...	Cutting ...	3	0·49	...	...
	...	...	...	Bank ...	22	27·38	...	...
	...	...	...	Cutting ...	17	18·91	...	...
	...	...	...	Bank ...	7	10·49	Right..	3,000 feet.
	...	...	...	Cutting ...	20	15·67		
	...	...	...	Bank ...	10	13·30	...	...
	...	...	...	Cutting ...	21	23·70	Left ...	3,000 feet.
	Level ...	...	39	Cutting ...	10	11·83	...	...
205	...	...	...	Bank ...	12	2·68	...	...
	...	...	...	Cutting ...	14	2·07	...	...
	...	...	...	Bank ...	3	0·26	...	...
	1 in 200 ...	D	12	Bank ...	9	2·85	Right ...	3,000 feet.
	...	...	...	Cutting ...	3	1·34	...	...
206	1 in 100 ...	D	27	Cutting ...	16	4·38	...	...
	...	...	...	Bank ...	11	3·08	...	...
	Level ...	...	2	Bank ...	2	4·38	...	...
207	1 in 100 ...	U	35	Bank ...	18	11·98	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	17	3·93	...	...
	Level ...	...	16	Cutting ...	10	1·69	...	...
	...	...	...	Bank ...	6	4·31	...	...
	1 in 100 ...	U	22½	Bank ...	13	7·47	Left...	3,000 feet.
	...	...	...	Cutting ...	9½	8·14		
208	Level ...	...	23	Cutting ...	8	7·18	Right..	3,000 feet.
	...	...	...	Bank ...	10	13·94		
	...	...	...	Cutting ...	4	3·76	...	...
	...	...	...	Bank ...	1	1·80	...	...
209 & 210	1 in 100 ...	D	92	Bank ...	4	7·00	...	...
	...	...	...	Cutting ...	10	15·88	...	...
	...	...	...	Bank ...	4	8·00	...	...
	...	...	...	Cutting ...	5	4·35	...	...
	...	...	...	Bank ...	10	15·06	...	...
	...	...	...	Cutting ...	20	29·84	...	...
	...	...	...	Bank ...	1	3·91	...	...
	...	...	...	Cutting ...	6	15·31	...	...
	...	...	...	Bank ...	32	25·54	Right...	3,000 feet.
	Level ...	...	3½	Bank ...	3½	19·89	Right...	3,000 feet.
	1 in 100 ...	U	15	Bank ...	15	37·91	Left ...	300 feet.
	Bangalore city station yard.			...	...	...	...	...
	Level ...	...	12	Cutting ...	12	1·59	...	...
	1 in 500 ...	D	11½	Bank ...	11½	8·66	Left ...	700 feet.
211	1 in 70 ...	D	41½	Bank ...	41½	25·76	Right...	660 feet.
	Level ...	...	2	Bank ...	24	1·64	Right...	903 feet. 656 feet.
212	1 in 70 ...	D	55·62	Cutting ...	2	1·27	...	...
	...	...	...	Bank ...	1·62	2·43	Left ...	1,000 feet.
	...	...	...	Cutting ...	16	9·55	Left ...	1,000 feet.
	...	...	...	Bank ...	10	20·77	...	...
	...	...	...	Cutting ...	3	9·57	Left ...	800 feet.
	...	...	...	Bank ...	1	1·60	...	...
	...	...	...	Cutting ...	4	5·48	...	...
	...	...	...	Bank ...	4	15·75	Right...	1,000 feet.
	...	...	...	Cutting ...	5	5·60	...	...
	...	...	...	Bank ...	8	7·23	Right...	1,000 feet.
	...	...	...	Cutting ...	1	2·39	...	...
	Level ...	...	11	Bank ...	2	44	Right ...	990 feet.
	...	...	...	Cutting ...	3	3·04	...	...
	...	...	...	Bank ...	4	28·91	Left ...	660 feet.
	...	...	...	Cutting ...	2	7·02	...	...
213	1 in 75 ...	D	35	Cutting ...	7	10·68	...	...
	...	...	...	Bank ...	9	16·94	...	...
	...	...	...	Cutting ...	7	7·44	Right...	1 mile.
	...	...	...	Bank ...	12	13·84	...	...
	Level ...	...	...	Bank ...	4½	9·16	...	...
214	1 in 75 ...	D	35½	Cutting ...	9½	10·28	Right.	1,980 feet.
	...	...	...	Bank ...	5	2·18		
	...	...	...	Cutting ...	2	4·44	...	...
	...	...	...	Bank ...	5	16·01	...	...
	...	...	...	Cutting ...	6	7·42	Left ...	1,000 feet.
	...	...	...	Bank ...	8	17·49	Left ...	660 feet.
	Level ...	...	3	Bank ...	1½	3·00	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	1½	2·90	...	...
	1 in 70 ...	D	33·70	Cutting ...	2	4·35	...	...
	...	...	...	Bank ...	10·70	6·68	Left ...	2,000 feet.
	...	...	...	Cutting ...	7	5·46	Right...	1,000 feet.
	...	...	...	Bank ...	1	4·70	...	...
	...	...	...	Cutting ...	1	2·35	...	...
	...	...	...	Bank ...	11	15·82	...	...
215	1 in 125 ...	D	26	Bank ...	3	4·10	Right...	1,200 feet.
	...	...	...	Cutting ...	2	0·70	...	...
	...	...	...	Bank ...	3	2·51	...	...
	...	...	...	Cutting ...	9	3·32	Left ...	1,200 feet.
	...	...	...	Bank ...	9	5·50	...	...
	1 in 70 ...	D	10·55	Cutting ...	5	3·74	...	...
	...	...	...	Bank ...	5·55	10·40	...	...
	Level ...	...	3·50	Bank ...	3·50	22·03	...	...
	1 in 70 ...	U	8·05	Bank ...	3	5·72	...	...
	...	...	...	Cutting ...	5·05	3·54	...	...
	Level ...	...	2	Cutting ...	2	1·91	...	...
216	1 in 70 ...	D	19·90	Cutting ...	7·40	8·47	Right...	2,000 feet.
	...	...	...	Bank ...	1½	1·95	Left ...	660 feet.
	...	...	...	Cutting ...	2	2·44	...	...
	...	...	...	Bank ...	2	7·07	Right..	660 feet.
	...	...	...	Cutting ...	1	1·81	...	...
	...	...	...	Bank ...	6	13·39	...	...
	1 in 223¾ ...	D	9	Cutting ...	6½	7·01	...	...
	...	...	...	Bank ...	2½	17·34	...	...
	Level ...	...	2	Bank ...	2	7·58	...	...
	1 in 80 ...	U	8	Bank ...	4	6·85	Left	1,200 feet.
	...	...	...	Cutting ...	4	3·19		
	Level ...	...	7·90	Cutting ...	2	4·56	...	...
	...	...	...	Bank ...	5·90	4·25	Right...	1,200 feet.
	1 in 90 ...	U	8·10	Bank ...	4·10	2·71	...	...
	...	...	...	Cutting ...	4	2·20	...	...
	Level ...	...	2·0	Cutting ...	2	19·0	Right...	4,000 feet.
	1 in 90 ...	D	8·10	Cutting ...	2·10	4·85	...	...
	...	...	...	Bank ...	6	11·85	...	...
217	1 in 125 ...	D	16·90	Bank ...	2·40	3·74	...	...
	...	...	...	Cutting ...	1	3·99	...	...
	...	...	...	Bank ...	2	2·95	...	...
	...	...	...	Cutting ...	5	1·03	...	...
	...	...	...	Bank ...	3½	4·44	...	...
	...	...	...	Cutting ...	3	4·70	...	...
	1 in 80 ...	D	6·52	Cutting ...	3	4·63	...	...
	...	...	...	Bank ...	3·52	6·70	...	...
	Level ...	...	2·48	Bank ...	2·48	6·55	...	...
	1 in 150 ...	U	19	Bank ...	3	4·33	...	...
	...	...	...	Cutting ...	7	3·18	...	...
	...	...	...	Bank ...	6	5·09	...	...
	...	...	...	Cutting ...	3	3·62	Left ...	1,500 feet.
	Kengerry station yard.			...	...	...	...	...
218	Level ...	...	21·11	Cutting ...	5	4·42	...	...
	...	...	...	Bank ...	3	1·45	...	...
	...	...	...	Cutting ...	5	3·57	...	...
	...	...	...	Bank ...	4	5·09	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	4·11	3·78	Left	700 feet.
	1 in 70 ...	D	26	Cutting ...	19½	9·72	Right	700 feet.
	...	...	...	Bank ...	6½	36·30	...	...
	Level ...	...	4½	Bank ...	1	4·20	...	...
	...	...	...	Cutting ...	3½	3·58	Left ...	700 feet.
219	1 in 100 ...	U	6½	Cutting ...	1	1·64	...	...
	...	...	...	Bank ...	3	5·85	...	...
	...	...	...	Cutting ...	2½	3·22	...	...
	Level ...	...	2·40	Cutting ...	2·40	10·34	...	...
	1 in 80 ...	D	11·60	Cutting ...	2·60	8·95	...	...
	...	...	...	Bank ...	9	13·30	Left ...	1,200 feet.
	Level ...	...	5·40	Bank ...	540	8·89	...	...
	1 in 80 ...	D	13·60	Bank ...	60	3 36	...	...
	...	...	...	Cutting ...	7	10·48	Right...	1,200 feet.
	...	...	...	Bank ...	6	14·23	...	...
	Level ...	...	...	Bank ...	1	8·74	...	...
	...	...	...	Cutting ...	5	12·6	Left ...	1,000 feet.
220	1 in 70 ...	D	10½	Cutting ...	4½	11·61	...	...
	...	...	...	Bank ...	6	14·18	...	...
	Level ...	...	3	Cutting ...	3	5·74	Left ...	1,000 feet.
	1 in 70 ...	D	22	Cutting ...	16	6·09	Right...	1,000 feet.
	...	...	...	Bank ...	6	21·80	...	...
	Level ...	...	2	Bank ...	2	14·55	...	...
	1 in 200 ...	U	8·86	Bank ...	1·50	3·54	...	...
	...	...	...	Cutting ...	5	3·56	...	...
	...	...	...	Bank ...	2·36	0·18	...	...
	Level ...	...	1·76	Cutting ...	1·76	0·40	Left ...	1,000 feet.
	1 in 125 ...	D	6·88	Cutting ...	2·88	3·22	...	...
	...	...	...	Bank ...	4	11·33	...	...
	Level ...	...	5·50	Bank ...	2·50	4·59	...	...
	...	...	...	Cutting ...	3	5 50	...	...
221	1 in 75 ...	D	16·12	Cutting ...	13½	3·60	Right...	1,500 feet.
	...	...	...	Bank ...	2·62	4·49	...	...
	Level ...	...	2	Bank ...	2·0	16·26	...	...
	1 in 70 ...	U	16·80	Bank ...	4·38	17·25	...	...
	...	...	...	Cutting ...	12·42	8·15	Right .	1,200 feet.
	Level ...	...	1·58	Cutting ...	1·58	2·56	Right...	1,500 feet.
	1 in 100 ...	D	4	Cutting ...	2·50	2·66	...	...
	...	...	...	Bank ...	1·50	0·89	...	...
	Level ...	...	2	Bank ...	2	2·69	...	...
222	1 in 75 ...	U	15·75	Bank ...	13	3·31	Left ...	660 feet.
	...	...	...	Cutting ...	2·75	7·97	...	...
	Level ...	...	2	Cutting ...	2	10·32	Right...	1,000 feet.
	1 in 80 ...	D	6·25	Cutting ...	3	5·88	...	...
	...	...	...	Bank ...	3·25	10·01	...	...
	1 in 200 ...	U	5·50	Bank ...	3	5·66	...	...
	...	...	...	Cutting ...	2·50	4·06	...	...
	1 in 75 ...	D	9·14	Cutting ...	6·50	4·43	...	...
	...	...	...	Bank ...	3·64	1·27	...	...
	Level ...	...	2	Bank ...	2	18·61	...	...
223	1 in 70 ...	U	29·22	Bank ...	2·36	11·35	...	...
	...	...	...	Cutting ...	8	2·34	...	...
	...	...	...	Bank ...	10	16·75	Left ...	800 feet.
	...	...	...	Cutting ...	8·86	16·34	Right...	1,500 feet.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ...	...	2·14	Cutting ...	2·14	7·53	...	...
	1 in 100 ...	D	12·50	Cutting ...	4·50	3·41	...	...
	...	...	...	Bank ...	2·50	4·78	...	...
	...	...	...	Cutting ...	4·50	5·61	...	...
	...	...	...	Bank ...	1·0	1·63	...	...
	Level ...	...	3	Bank ...	3	17·23	...	...
	1 in 75 ...	U	12·75	Bank ...	6·50	17·10	...	...
	...	...	...	Cutting ...	6·25	4·90	...	...
	Level ...	...	1·75	Cutting ...	1·75	12·56	...	...
224	1 in 75 ...	D	21·50	Cutting ...	6·00	13·95	...	...
	...	...	...	Bank ...	4	4·80	Left ...	1,000 feet.
	...	...	...	Cutting ...	7	4·21	...	...
	...	...	...	Bank ...	4·50	17·88	...	...
	Level ...	...	2	Bank ...	2	20·25	...	...
	1 in 75 ...	U	14·75	Bank ...	3·50	13·06	...	...
	...	...	...	Cutting ...	11·25	10·61	...	...
	Level ...	...	5·05	Cutting ...	2·80	5·17	...	...
	...	...	...	Bank ...	1·50	2·13	} Right.	1,000 feet.
	...	...	...	Cutting ...	0·75	2·29		
	1 in 70 ...	D	18·20	Cutting ...	9·70	11·12	...	...
	...	...	...	Bank ...	8·50	15·35	Left ...	1,000 feet.
225	1 in 500 ...	D	8·75	Bank ...	5	14·64	...	...
	...	...	...	Cutting ...	3·75	7·88	...	...
	Level ...	...	1·00	Cutting ...	1·00	4·85	...	...
	1 in 100 ...	D	11·75	Cutting ...	1·75	3·11	...	...
	...	...	...	Bank ...	4	5·09	...	...
	...	...	...	Cutting ...	6	6·01	...	...
	Level ..	...	2·00	Bank ...	2	7·55	...	...
	1 in 75 ...	U	8·25	Bank ...	3	9·92	...	...
	...	...	...	Cutting ...	5·25	7·26	...	...
	Level ...	...	2·50	Cutting ...	2·50	4·44	...	...
	1 in 75 ...	D	9·00	Cutting ...	7·00	7·63	...	...
	...	...	...	Bank ...	2·00	8·33	...	...
	Level ...	...	2·25	Bank ...	2·25	13·62	...	...
	1 in 75 ...	...	11·25	Bank ...	5·0	11·37	...	...
	...	...	...	Cutting ...	6·25	10·46	Left ...	1,200 feet.
	Level ...	...	2	Bank ...	2	9·25	...	...
226	1 in 75 ...	D	39·57	Cutting ...	1·90	4·40	} Right.	1,200 feet.
	...	...	...	Bank ...	5·0	2·75		
	...	...	...	Cutting ...	7	2·27	...	...
	...	...	...	Bank ...	4·50	7·74	...	...
	...	...	...	Cutting ...	2·00	1·50	...	...
	...	...	...	Bank ...	4·50	7·90	...	...
	...	...	...	Cutting ...	5·75	2·44	..	...
	...	...	...	Bank ...	10	13·44	...	...
	Level ...	...	1·25	Bank ...	1·25	1·36	...	...
227	1 in 70 ...	D	29·75	Cutting ...	17	5·71	Left ...	1,000 feet.
	...	...	...	Bank ...	3	10·12	...	...
	...	...	...	Cutting ...	1	0·91	...	...
	...	...	...	Bank ...	8·75	10·0	...	...
	1 in 100 ...	D	5·0	Cutting ...	5·0	5·74	} Right.	1,000 feet.
	Level ...	...	3·32	Cutting ...	2	1·13		
	...	...	...	Bank ...	1·32	3·54	...	...
	1 in 75 ...	D	25·12	Bank ...	14·68	7·33	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	8	3·26	...	...
	...	...	...	Bank ...	2·54	3·44	...	...
228	Level ...	...	8·56	Bank ...	2·56	1·82	...	...
	...	...	...	Cutting ...	3	2·67	...	...
	...	...	...	Bank ...	3	5·25	Right...	1,000 feet.
	1 in 75 ...	D	19·50	Cutting ...	7	6·44	...	...
	...	...	...	Bank ...	12·50	7·18	...	...
	1 in 125 ...	D	6·50	Bank ...	3	3·76	...	...
	...	...	...	Cutting ...	3·50	2·72	...	...
	Biddadi station yard.		...	...	...	...	...	...
229	Level ...	...	28	Bank ...	21	8·60	...	...
	...	...	...	Cutting ...	5	3·07	Left ...	3,000 feet.
	...	..	...	Bank ...	2	1·75	...	...
	1 in 200 ...	D	4	Bank ...	4	4·11	...	...
	1 in 300 ...	U	7	Bank ...	3	10·64	...	...
	...	...	...	Cutting ...	4	5·58	...	...
	1 in 70 ...	D	12	Cutting ...	9	11·22	...	...
	...	...	...	Bank ...	3	20·73	...	...
	Level ...	...	5	Bank ...	5	28·0	Right...	1,200 feet.
230	1 in 70 ...	U	38·79	Bank ...	14	11·52	...	...
	...	...	...	Cutting ...	5	2·21	...	...
	...	...	...	Bank ...	9	8·39	Right...	1,600 feet.
	...	...	...	Cutting ...	10·79	16·50	Left ...	1,000 feet.
	1 in 300 ...	D	7·21	Cutting ...	3·21	16·10	...	...
	...	...	...	Bank ...	4·0	12·36	...	...
	1 in 70 ...	U	20	Bank ...	5·50	15·49	...	...
	...	...	...	Cutting ...	5·50	7·41	} Right	1,200 feet.
	...	...	...	Bank ...	6	14·87		
	...	...	...	Cutting ...	3	8·07	Left ...	800 feet.
	Level ...	...	2	Cutting ..	2	7·98	...	...
231	1 in 70 ...	D	9·92	Cutting ...	4	5·87	...	...
	...	...	...	Bank ...	5·92	12·77	Right ...	1,000 feet.
	Level ...	...	2·72	Bank ...	2·72	8·02	...	...
	1 in 70 ...	U	33·95	Bank ...	11·45	9·49	Left ...	5,000 feet.
	...	...	...	Cutting ...	12·	7·20	Right ...	2,500 feet.
	...	...	...	Bank ...	4	5·06	...	...
	...	...	...	Cutting ...	5	5·31	} Left	1,200 feet.
	...	...	...	Bank ...	1·50	7·54		
	Level ...	...	4·19	Bank ...	4·19	3·39	...	...
232	1 in 70 ...	U	25·90	Bank ...	2·21	3·58	...	...
	...	...	...	Cutting ...	2·	0·90	...	...
	...	...	...	Bank ...	13	8·14	Right ...	2,000 feet.
	...	...	...	Cutting ...	8·69	0·17	Right ...	1,200 feet.
	Level ...	...	2·25	Cutting ...	2·25	9·77	...	...
	1 in 70 ...	D	11·90	Cutting ...	3·00	7·61	...	...
	...	...	...	Bank ...	0·75	5·19	...	...
	...	...	..	Cutting ...	0·75	1·37	...	...
	...	...	...	Bank ...	0·50	5·19	...	...
	...	...	...	Cutting ...	1·00	2·19	...	...
	...	...	...	Bank ...	5·90	10·61	Left ...	800 feet.
	Level ...	...	4·16	Cutting ...	0·66	3·01	...	...
	...	...	...	Bank ...	·50	1·55	} Right	1,000 feet.
	...	...	...	Cutting ...	2·00	1·40		
	...	...	...	Bank ...	1·00	4·23	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
233	1 in 70 ...	D	15·40	Bank ...	3·00	4·52	...	...
	...	...	...	Cutting ...	6·00	11·42	...	...
	...	...	...	Bank ...	6·40	30·12	Left	1,000 feet,
	Level ...	...	2·20	Bank ...	2·20	19·90		
	1 in 80 ...	U	8·80	Bank ...	2·40	10·20	...	...
	...	...	...	Cutting ...	6·40	4·16	...	...
	Level ...	...	3·04	Cutting ...	3·04	4·76	...	...
	1 in 70 ...	D	21·35	Cutting ...	1·56	4·03	...	...
	...	...	...	Bank ...	1·50	2·48	...	...
	...	...	...	Cutting ...	7·50	6·26	Right ...	5,000 feet.
	...	...	...	Bank ...	6·00	11·01	...	...
	...	...	...	Cutting ...	3·50	7·63	...	...
	...	...	...	Bank ...	1·29	6·10	...	...
	Level ...	...	3·46	Bank ...	3·46	5·50	...	...
234	1 in 75 ...	D	23·00	Cutting ...	5·00	4·56	...	...
	...	...	...	Bank ...	3·00	9·08	...	...
	...	...	...	Cutting ...	1·50	4·20	...	...
	...	...	...	Bank ...	1·50	0·39	...	...
	...	...	...	Cutting ...	7·00	4·41	...	...
	...	...	...	Bank ...	5·00	21·30	...	...
	1 in 400 ...	U	6·17	Bank ...	3·75	4·74	...	...
	...	...	...	Cutting ...	2·42	6·54	...	...
	1 in 70 ...	D	33·28	Cutting ...	7·58	4·67	Right ...	1,500 feet.
	...	...	...	Bank ...	4·00	8·40	...	...
	...	...	...	Cutting ...	15·00	8·31	...	...
	...	...	...	Bank ...	6·70	14·41	...	...
235	Level ...	...	13·30	Bank ...	13·30	6·66	Left Right	1,166 feet. 1,000 feet.
	1 in 70 ...	D	11·64	Bank ...	1·0	3·09	...	...
	...	...	...	Cutting ...	6·0	8·07	Right ...	2,500 feet.
	...	...	...	Bank ...	4·64	10·79	...	...
	1 in 300 ...	U	9·47	Bank ...	1·86	7·50	...	...
	...	...	...	Cutting ...	1·70	2·96	...	...
	...	...	...	Bank ...	0·70	0·50	...	...
	...	...	...	Cutting ...	4·21	2·90	...	...
	1 in 90 ...	D	11·04	Cutting ...	1·00	0·21	...	...
	...	...	...	Bank ...	3·00	5·31	...	...
	...	...	...	Cutting ...	1·00	2·27	...	...
	...	...	...	Bank ...	6·04	8·13	Right ...	1,200 feet.
	1 in 125 ...	U	6·49	Bank ...	4·75	9·57	Left	1,500 feet.
	...	...	...	Cutting ...	1·74	3·62		
236	1 in 250 ...	D	4·47	Cutting ...	1·26	3·66	...	...
	...	...	...	Bank ...	3·00	4·61	Left...	2,640 feet.
	...	...	...	Cutting ...	0·21	2·00		
	1 in 70 ...	D	19·25	Cutting ...	2·79	4·46		...
	...	...	...	Bank ...	16·46	9·83	...	...
	1 in 400 ...	D	5·39	Bank ...	1·54	4·11	Right ...	2,610 feet.
	...	...	...	Cutting ...	3·85	3·77	...	...
	1 in 100 ...	D	8·65	Cutting ...	2·65	2·38	...	...
	...	...	...	Bank ...	1·50	1·43	...	...
	...	...	...	Cutting ...	3·00	1·56	...	...
	...	...	...	Bank ...	1·50	7·81	...	...
	1 in 400 ...	D	12·50	Bank ...	0·70	2·59	...	...
	...	...	...	Cutting ...	0·80	0·12	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Bank ...	1·00	1·81	...	...
	...	...	...	Cutting ...	5·00	2·96	Right ...	2,640 feet.
	...	...	...	Bank ...	2·50	2·63	...	...
	...	...	...	Cutting ...	2·50	1·64	...	...
237	1 in 70 ...	D	7·00	Bank ...	1·00	0·06	...	...
	...	...	...	Cutting ...	0·75	2·12	...	...
	...	...	...	Bank ...	5·25	9·81	...	...
	Level ...	...	2·79	Bank ...	1·50	0·11	...	...
	...	...	...	Cutting ...	1·29	0·07	...	...
	1 in 70 ...	D	6·56	Cutting ...	0·71	0·37	...	...
	...	...	...	Bank ...	0·60	0·27	...	...
	...	...	...	Cutting ...	4·40	4·62	...	...
	...	...	...	Bank ...	0·70	5·32	...	...
	...	...	...	Cutting ...	0·10	1·50	...	...
	Level ...	...	5·44	Cutting ...	0·10	1·50	...	...
	...	...	...	Bank ...	2·10	2·41	...	...
	...	...	...	Cutting ...	3·24	2·22	...	...
	1 in 70 ...	D	11·55	Cutting ...	3·80	1·93	...	...
	...	...	...	Bank ...	7·75	6·29	...	...
	Level ...	...	14·16	Bank ...	2·90	3·47	...	...
	...	...	...	Cutting ...	1·50	0·52	...	...
	...	...	...	Bank ...	2·50	1·44	Left ...	2,640 feet.
	...	...	...	Cutting ...	1·80	3·50	...	...
	...	...	...	Bank ...	5·46	12·81	...	...
	1 in 250 ...	U	7·96	Bank ...	2·30	3·78	...	...
	...	...	...	Cutting ...	5·66	2·45	...	...
238	1 in 80 ...	D	10·54	Cutting ...	5·00	2·75	...	...
	...	...	...	Bank ...	3·50	0·81	...	...
	...	...	...	Cutting ...	0·80	0·04	...	...
	...	...	...	Bank ...	1·24	0·35	...	...
	Closepet station yard		...	...	...	...	...	...
238	Level ..	...	7·52	Bank ...	7·52	2·83	...	...
	1 in 400 ...	U	10·56	Bank ...	2·00	1·00	...	...
	...	...	...	Cutting ...	8·55	4·72	Right ...	1,200 feet.
	1 in 300 ...	D	7·90	Cutting ...	4·45	1·98	...	...
	...	...	...	Bank ...	2·50	0·37	...	...
	...	...	...	Cutting ...	0·95	0·07	...	...
	1 in 70 ...	D	18·55	Cutting ...	13·00	6·32	...	...
	...	...	...	Bank ...	5·55	18·10	Right.	1,500 feet.
239	Level ...	...	7·00	Bank ..	6·70	18·10	...	...
	...	...	...	Cutting ...	0·30	1·19	...	...
	1 in 70 ...	U	20·00	Cutting ...	2·00	0·41	...	...
	...	...	...	Bank ...	11·90	4·07	Right ...	2,000 feet.
	...	...	...	Cutting ...	5·70	3·60	Left ...	1,500 feet.
	...	...	...	Bank ...	0·40	1·08	...	...
	Level	...	2·00	Bank ...	0·90	1·08	...	...
	...	...	...	Cutting ...	0·30	1·14	...	...
	...	...	...	Bank ...	0·80	0·21	...	...
	1 in 100 ...	D	4·50	Bank ...	1·80	0·89	...	...
	...	...	...	Cutting ...	8·30	0·88	...	...
	...	...	...	Bank ...	2·40	4·89	...	...
	Level ...	.	2·25	Bank ...	2·25	4·41	...	...
	1 in 70 ...	U	6·25	Bank ...	6·25	8·06	...	...
240	1 in 111 ...	U	16·07	Bank ...	8·80	5·61	Left ...	2,000 feet.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	7·27	3·67	...	...
	1 in 400 ...	D	7·20	Cutting ...	4·60	3·05	...	...
	...	...	...	Bank ...	260	3·82	...	...
	1 in 70 ...	U	13·05	Bank ...	4·80	7·82	...	...
	...	...	...	Cutting ...	8·25	3·77	Right ...	1,500 feet.
	Level ...	...	1·18	Cutting ...	1·18	1·64	...	...
	1 in 70 ...	U	24·65	Bank ...	6·20	7·84	...	...
	...		...	Cutting ...	14·20	5·32	...	...
	...		...	Bank ...	0·50	0·99	...	...
	...		...	Cutting ...	3·75	3·85	Left ...	1,500 feet.
241	1 in 500 ...	D	4·85	Cutting ...	2·60	3·05	...	...
	...	...	...	Bank ...	2·25	7·87	...	...
	1 in 70 ...	U	22·00	Bank ...	8·00	17·09	Right ...	1,500 feet.
	...	...	...	Cuttirg ...	14·00	10·09	Left ...	3,000 feet.
	Level ...	...	4·00	Cutting ...	4·00	11·34	...	...
	1 in 70 ...	D	19·60	Cutting ...	13·00	8·79	...	...
	...	...	...	Bank ...	6·60	13·94	...	...
	Level ...	...	3·40	Cutting ...	3·40	5·74	...	...
242	1 in 70 ...	D	16·10	Cutting ...	6·75	9·05	Right ...	5,000 feet.
	...	...	...	Bank ...	9·35	10·54	...	...
	Level ...	...	3·90	Bank ...	1·75	6·83	...	...
	...	...	...	Cutting ...	2·15	7·39	...	...
	1 in 80 ...	D	10·67	Cutting ...	1·00	7·39	...	...
	...	...	...	Bank ...	1·90	7·93	...	...
	...	...	...	Cutting ...	3·60	6·15	...	...
	...	...	...	Bank ...	2·00	3·68	...	...
	...	...	...	Cutting ...	0·75	0·28	...	...
	...	...	...	Bank ...	1·42	3·57	...	...
	1 in 400 ...	U	5·33	Bank ...	3·20	4·44	...	...
	...	...	...	Cutting ...	2·13	7·64	...	...
	1 in 80 ...	D	6·00	Cutting ...	3·00	6·39	...	...
	...	...	...	Bank ...	3·00	7·73	Left ...	1,500 feet.
	Level ...	...	4·10	Bank ...	4·10	7·65	...	...
	1 in 100 ...	U	4·50	Bank ...	1·70	7·04	...	...
	...	...	...	Cutting ...	2·80	3·51	...	...
	Level ...	...	2·89	Cutting ...	2·89	4·35	...	...
243	1 in 70 ...	D	25·55	Cutting ...	10·50	5·70	...	...
	...	...	...	Bank ...	15·05	6·60	Left ...	3,000 feet.
	1 in 150 ...	D	6·96	Bank ...	6·96	5·45	Right ...	1,500 feet.
	1 in 250 ...	D	9·65	Bank ...	9·65	6·74	Left ...	5,000 feet.
244	1 in 70 ...	D	11·70	Cutting ...	4·00	1·57	...	...
	...	...	...	Bank ...	7·70	2·80	...	...
	1 in 300 ...	D	24·15	Bank ...	8·50	3·29	...	...
	...	...	...	Cutting ...	4·00	1·97	...	...
	...	...	...	Bank ...	6·00	5·01	...	...
	...	...	...	Cutting ...	5·65	3·06	...	...
	1 in 70 ...	D	13·12	Bank ...	0·75	0·06	...	...
	...	...	...	Cutting ...	2·00	2·30	...	...
	...	...	...	Bank ...	10·37	4·48	...	...
	Level ...	...	4·40	Bank ...	4·40	2·60	Right	2,000 feet.
	1 in 150 ...	U	5·25	Bank ...	1·60	1·54		
	...	...	...	Cutting ...	3·65	1·58	...	...
	Level ...	...	2·80	Bank ...	1·00	0·71	...	...
	...	...	...	Cutting ...	1·80	2·03	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up and down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
245	1 in 80 ...	D	7·20	Cutting ...	3·50	1·82	Right.	2,000 feet.
	...	...	...	Bank ...	3·00	2·04		
	...	...	...	Cutting ...	70	2·90	...	...
	Chennopatna station yard.			...	...	...	...	...
	Level ...	...	20·10	Cutting ...	0·75	2·90	...	...
	...	...	...	Bank ...	5·25	2·13	...	...
	...	...	...	Cutting ...	14·10	2·71	Right.	1,200 feet.
	1 in 120 ...	D	11·00	Bank ...	11·00	2·41		
	Level ...	...	2·65	Bank ...	2·65	0·64	...	...
246	1 in 70 ...	D	22·35	Bank ...	1·25	0·73	...	...
	...	...	...	Cutting ...	6·80	7·11	...	...
	...	...	...	Bank ...	14·30	6·85	...	...
	1 in 400 ...	U	5·60	Bank ...	5·60	2·29	...	...
	Level ...	...	12·65	Bank ...	12·65	5·89	...	...
	1 in 125 ...	U	6·25	Bank ...	6·25	10·32	...	...
	Level ...	...	3·00	Bank ...	3·00	10·40	...	...
	1 in 125 ...	D	6·87	Bank ...	6·87	9·82	...	...
247	Level ...	...	15·63	Bank ...	15·63	9·61	...	...
	1 in 400 ...	D	11·00	Bank ...	11·00	6·79	...	...
	Level ...	...	26·00	Bank ...	26·00	7·36	...	...
	1 in 200 ...	U	10·00	Bank ...	10·00	6·39	...	...
248	1 in 70 ...	U	12·50	Bank ...	4·75	3·06	...	...
	...	...	...	Cutting ...	8·75	2·91	...	...
	Level ...	...	8·50	Cutting ...	2·50	0·69	...	...
	...	...	...	Bank ...	6·00	4·93	...	...
	1 in 80 ...	U	11·17	Bank ...	7·00	1·57	...	...
	...	...	...	Cutting ...	4·17	1·27	...	...
	Level ...	...	3·83	Cutting ...	3·83	3·16	...	...
	1 in 100 ...	D	9·50	Cutting ...	4·00	2·65	...	...
	...	...	...	Bank ...	5·50	5·50	...	...
	Level ...	...	5·20	Bank ...	5·20	12·20	...	...
249	1 in 70 ...	U	6·30	Bank ...	6·30	13·15	...	...
	Level ...	...	6·50	Bank ...	6·50	8·87	...	...
	1 in 80 ...	U	10·00	Bank ...	10·00	2·06	...	...
	Mudgeri station yard.			...	..	...	...	...
	Level ...	...	3·50	Cutting ...	3·50	3·92	...	...
	1 in 400 ...	D	7·00	Cutting ...	5·00	3·76	...	...
	...	...	...	Bank ...	2·00	3·50	...	...
	Level ...	...	4·00	Bank ...	4·00	4·84	...	...
250	1 in 250 ...	U	20·00	Bank ...	16·00	3·77	...	...
	...	...	...	Cutting ...	4·00	2·61	...	...
	Level ...	...	2·00	Cutting ...	2·00	3·76	Right ...	2,000 feet.
	1 in 80 ...	D	10·60	Cutting ...	3·50	2·46	...	...
	...	...	...	Bank ...	7·10	5·22	...	...
	Level ...	...	4·20	Bank ...	1·50	4·68	...	...
	...	...	...	Cutting ...	2·70	0·37	...	...
	1 in 100 ...	D	13·20	Cutting ...	1·20	0·82	...	...
	...	...	...	Bank ...	9·80	2·67	...	...
	...	...	...	Cutting ...	2·20	5·27	Left ...	1,200 feet.
251	1 in 70 ...	D	23·17	Cutting ...	5·80	5·41	...	...
	...	...	...	Bank ...	17·37	8·09	...	...
	Level ...	...	4·83	Bank ...	4·83	2·99	...	...
	1 in 100 ...	D	8·00	Cutting ...	1·50	1·23	Right.	2,500 feet.
	...	...	...	Bank ...	6·50	2·62		

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	1 in 667 ...	D	28·00	Bank ...	28·00	5·08	Left ...	3,000 feet.
	Level ...	...	13·00	Bank ...	13·00	4·78	Left ...	1,200 feet.
252	1 in 111 ...	U	7·98	Bank ...	1·30	5·66	...	...
	...	...	...	Cutting ...	3·00	1·79	...	...
	...	...	...	Bank ...	1·75	6·80	...	...
	...	...	...	Cutting ...	1·93	1·04	...	...
	1 in 333 ...	U	16·02	Cutting ...	4·20	1·77	...	...
	...	...	...	Bank ...	0·80	6·00	...	...
	...	..	...	Cutting ...	3·20	1·43	Right.	1,600 feet.
	...	...	...	Bank ...	6·30	9·11		
	...	...	...	Cutting ...	1·52	1·30	Right.	3,960 feet.
	Level ...	...	5·00	Cutting ...	5·00	2·40		
	1 in 70 ...	D	17·15	Cutting ...	10·75	2·79	...	...
	...	...	...	Bank ...	640	6·43	...	...
253	Level ...	...	9·85	Bank ...	9·85	6·08	...	...
	1 in 125 ...	U	13·12	Bank ...	7·50	3·03	...	...
	...	...	...	Cutting ...	5·62	2·15	...	...
	Level ...	...	3·38	Cutting ...	3·38	2·01	...	...
	1 in 100 ...	D	10·00	Cutting ...	4·50	4·65	...	...
	...	...	...	Bank ...	5·50	4·65	...	...
	Level ...	...	4·50	Bank ...	4·50	4·18	...	...
	1 in 125 ...	U	8·13	Bank ...	5·20	1·53	...	...
	...	...	...	Cutting ...	2·93	0·96	...	...
	Level ...	...	3·87	Cutting ...	3·87	1·25	...	...
254	1 in 100 ...	D	13·00	Cutting ...	7·00	2·31	...	...
	...	...	...	Bank ...	6·00	3·91	...	...
	1 in 500 ...	U	600	Bank ...	4·00	4·20	...	...
	..	...	...	Cutting ...	2·00	1·82	...	...
	1 in 90 ...	D	11·16	Cutting ...	7·00	2·90	...	...
	...	...	..	Bank ...	4·16	4·74	...	...
	1 in 1,000 ...	U	10·80	Bank ...	10·80	4·37	...	...
255	1 in 64 ...	D	18·55	Cutting ...	4·75	0·78	...	...
	...	...	...	Bank ...	8·00	6·17	Left ...	1,400 feet.
	...	...	...	Cutting ...	5·80	2·75	...	...
	1 in 70 ...	D	31·55	Cutting ..	11·50	5·25	...	..
	...	...	...	Bank ...	2,005	7·30	...	...
	Level ...	...	7·35	Bank ...	735	3·49	...	...
	1 in 87 ...	U	6·09	Bank ...	6·09	8·61	Right...	2,000 feet.
256	Level ...	...	6·50	Bank ...	6·50	2·6	...	...
	1 in 87 ...	D	6·09	Bank ...	6·09	6·71	Left.	1,000 feet.
	Level ...	...	4·91	Bank ...	4·91	4·76		
	1 in 87 ...	U	10·00	Bank ...	10·00	1·86	...	...
	Maddur station yard.		...	...	...	...	...	
	1 in 500 ...	U	10·15	Bank ...	1·00	0·02	...	...
	...	...	...	Cutting ...	9·15	3·25	...	...
	1 in 500 ...	D	11·56	Cutting ...	11·56	3·25	Left ...	3,000 feet.
257	1 in 70 ...	D	8·50	Bank ...	8·50	4·38	...	...
	Level ...	...	16·50	Bank ...	16·50	16·14	...	...
	1 in 70 ...	U	5·00	Bank ...	5·00	7·61	...	...
	1 in 80 ...	U	17·72	Bank ...	17·72	2·68	Right...	1,200 feet.
	1 in 60 ...	U	9·28	Bank ...	5·28	2·13	...	...
	...	...	...	Cutting ...	4·00	0·82	...	...
	Level ...	...	2·50	Cutting ...	2·50	0·48	...	...
	1 in 250 ...	D	4·50	Bank ..	4·50	4·91	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
258	1 in 400 ...	U	25·92	Bank ...	4·0	4·23	...	...
	...	...	...	Cutting ...	7·0	1·71	...	...
	...	...	...	Bank ...	9·0	2·37	Right ...	1,000 feet.
	...	..	...	Cutting ...	2·0	0·36	...	...
	...	...	...	Bank ...	3·92	4·07	...	...
	1 in 70 ...	U	7·08	Bank ...	4·08	5·94	...	...
	...	...	...	Cutting ...	3·00	1·07	Right.	3,960 feet.
	Level ...	...	2·00	Cutting ...	2·00	0·67		
	1 in 182 ...	D	11·83	Bank ...	1·00	0·85	...	...
	...	...	...	Cutting ...	2·50	2·67	...	...
	...	...	...	Bank ...	1·00	0·62	...	...
	...	...	..	Cutting ...	1·00	0·55	...	...
	...	...	...	Bank ...	6·33	2·26	...	...
	Level ...	...	4·76	Bank ...	4·76	3·95	...	...
259	1 in 84 ...	U	7·35	Bank ...	1·41	0·46	...	...
	...	..	...	Cutting ...	2·00	3·08	...	...
	...	...	...	Bank ...	1·50	2·46	...	...
	...	...	...	Cutting ...	0·50	0·55	...	...
	...	...	...	Bank ...	1·94	1·28	...	...
	1 in 64 ...	U	12·71	Bank ...	12·71	1·88	...	...
	1 in 73 ...	U	21·35	Bank ...	14·35	4·80	...	...
	...	...	...	Cutting ...	6·00	0·45	...	...
	...	...	...	Bank ...	1·00	0·26	...	...
	1 in 200 ...	U	5·00	Bank ...	5·00	0·45	...	...
260	1 in 73 ...	U	7·48	Bank ...	4·50	3·88	...	...
	...	...	...	Cutting ...	2·98	3·05	...	...
	Level ...	...	5·52	Cutting ...	1·53	1·17	...	...
	...	...	...	Bank ...	4·00	6·58	...	...
	1 in 73 ...	U	6·67	Bank ...	3·00	4·32	...	...
	...	...	...	Cutting ...	3·57	3·17	...	...
	Level ...	...	3·43	Cutting ...	3·43	4·71	Left ...	5,280 feet.
	1 in 70 ...	D	14·00	Cutting ...	6·0	4·19	...	...
	...	...	...	Bank ...	8·0	3·64	...	...
261	Level ...	...	21·00	Bank ...	21·00	4·95	...	...
	1 in 70 ...	U	25·00	Bank ...	14·00	6·10	...	...
	...	...	...	Cutting ...	11·00	5·03	...	...
	Level ...	...	2·30	Cutting ...	2·30	6·42	Left ...	5,280 feet.
	1 in 70 ...	D	18·00	Cutting ...	6·70	7·22	...	...
	...	...	...	Bank ...	11·30	5·62	...	...
	Level ...	...	5·40	Bank ...	5·40	5·22	...	...
262	1 in 70 ...	U	11·16	Bank ...	11·16	4·69	Right.	5,280 feet.
	1 in 300 ...	U	6·14	Cutting ...	6·14	3·83		
	1 in 300 ...	D	6·00	Cutting ...	3·00	1·24	...	...
	...	...	...	Bank ...	3·00	3·03	...	...
	1 in 82 ...	D	9·84	Bank ...	9·84	6·19	...	...
	Level ...	...	11·90	Bank ...	11·91	6·17	...	...
263	1 in 73 ...	U	10·98	Bank ...	10·98	3·83	...	...
	Level ...	...	2·27	Bank ...	2·27	0·42	...	...
	1 in 70 ...	U	29·00	Bank ...	19·00	7·84	...	...
	...	...	...	Cutting ...	10·00	8·54	...	...
	Level ...	...	2·00	Cutting ...	2·00	6·39	...	...
264	1 in 70 ...	D	20·60	Cutting ...	10·00	5·05	Left ...	2,000 feet.
	...	...	...	Bank ...	10·60	4·23	...	...
	Level ...	...	8·40	Bank ...	8·40	4·55	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	1 in 100 ...	U	8·00	Bank ...	5·00	1·28	...	...
	...	...	...	Cutting ...	3·00	1·08	Left ...	2,500 feet.
	Level ...	...	3·00	Cutting ...	3·00	2·16	...	...
	1 in 80 ...	D	8·80	Cutting ...	5·00	4·03	...	...
	...	...	...	Bank ...	3·80	5·36	...	...
	Level	...	7·83	Bank ...	7·83	6·26	...	...
	1 in 73. ...	U	11·68	Bank ...	7·37	3·89	...	...
	...	...	...	Cutting ...	4·31	2·66	...	...
265	Level ...	...	2·69	Cutting ...	2·69	3·84	...	...
	1 in 73 ...	D	10·75	Cutting ...	4·50	3·73	...	...
	...	...	...	Bank ...	6·25	6·02	...	...
	Level ...	...	12·25	Bank ...	12·25	5·03	...	...
	1 in 84 ...	U	16·97	Bank ...	11·00	3·68	...	...
	...	...	...	Cutting ...	5·97	1·35	...	...
	Level ...	...	3·03	Bank ...	3·03	3·86	...	...
	1 in 70 ...	U	8·05	Bank ...	7·00	4·66	...	...
	...	...	...	Cutting ...	1·05	2·52	...	...
266	Level ...	...	11·95	Cutting ...	4·95	4·61	...	...
	...	...	...	Bank ...	3·50	4·63	...	...
	...	...	...	Cutting ...	3·50	3·94	...	...
	1 in 70 ...	D	35·09	Cutting ...	6·00	7·24	...	...
	...	...	...	Bank ...	5·00	4·54	...	...
	...	...	...	Cutting ...	5·00	3·00	...	...
	...	...	...	Bank ...	1·00	0·30	...	...
	...	...	...	Cutting ...	3·00	0·65	...	...
	...	...	...	Bank ..	15·09	9·25	...	...
	1 in 300 ...	U	5·00	Bank ...	5·00	6·93	...	...
267	1 in 100 ...	U	6·00	Bank ...	6·00	5·00	...	...
	Level ...	...	15·00	Bank ...	15·00	25·63	...	...
	1 in 200 ...	U	16·00	Bank ...	16·10	6·00	Right...	1,500 feet.
	1 in 70 ...	U	15·88	Bank ...	15·88	0·74	...	...
268	1 in 500 ...	U	9·12	Cutting ...	9·12	2·48	...	...
	1 in 80 ...	D	7·86	Cutting ...	4·50	2·47	...	...
	...	...	...	Bank ...	3·36	4·79	...	...
	Level ...	...	3·39	Bank ...	3·39	8·24	Right...	1,600 feet.
	1 in 125 ...	...	3·75	Bank ...	3·75	3·66	...	...
	Mandya station yard.			...	...	...	...	...
	1 in 500 ...	D	15·00	Cutting ...	10·00	4·01	...	...
	...	...	...	Bank ...	5·00	3·47	...	...
	Level ...	...	2·00	Bank ...	2·00	4·84	Right...	1,600 feet.
	1 in 70 ...	U	11·20	Bank ...	7·00	3·68	...	...
	...	...	...	Cutting ...	4·20	3·29	...	...
269	Level ...	...	3·80	Cutting ...	2·30	2·87	...	...
	...	...	...	Bank ...	1·50	2·63	...	...
	1 in 125 ...	D	4·40	Bank ...	4·40	4·26	Right...	2,000 feet.
	Level ...	..	5·90	Bank ...	5·98	6·68	...	...
	1 in 70 ...	U	12·26	Bank ...	6·70	5·30	...	...
	...	...	...	Cutting ...	5·56	4·84	...	...
	Level ...	...	1·94	Cutting ...	1·94	4·80	Left ...	1,200 feet.
	1 in 100 ...	D	10·00	Cutting ...	3·00	3·48	...	...
	...	...	...	Bank ...	7·00	2·40	...	...
	Level ...	...	9·10	Bank ...	9·10	4·17	...	...
270	1 in 70 ...	U	11·20	Bank ...	11·20	4·80	...	...
	1 in 1,000 ...	U	9·20	Bank ...	9·20	1·63	Left ...	1,600 feet.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	1 in 250 ...	D	4·80	Cutting ...	2·00	0·67	...	...
	...	...	...	Bank ...	2·80	0·70	...	...
	Level ...	...	11·20	Bank ...	11·20	8·11	...	...
	1 in 200 ...	U	3·00	Bank ...	3·00	7·30	...	...
	Level ...	...	2·00	Bank ...	2·00	7·07	...	...
	1 in 200 ..	D	3·00	Bank ...	3·00	5·68	...	...
	Level ...	...	11·50	Bank ...	11·50	4·82	...	...
271	1 in 250 ...	U	8·50	Bank ...	8·50	1·82	...	...
	1 in 100 ...	U	21·00	Bank ...	21·00	4·40	Right...	2,640 feet.
	1 in 250 ...	U	5·75	Bank ...	5·75	1·75	...	...
	1 in 70 ...	U	24·01	Bank ...	15·25	6·34	Right...	2,000 feet.
	...	..	...	Cutting ...	8·76	4·09	...	...
272	Level ...	..	2·24	Cutting ...	2·24	1·46	...	...
	1 in 150 ...	D	12·00	Cutting ...	1·50	1·28	...	...
	...	...	...	Bank ...	4·50	4·89	...	...
	...	...	...	Cutting ...	3·00	1·50	...	...
	...	..	...	Bank ...	3·00	0·52	Left ...	2,500 feet.
	Level ...	...	15·00	Bank ...	15·00	4·97	...	...
	1 in 200 ...	U	6·00	Bank ...	6·00	2·61	...	...
	1 in 75 ...	U	9·90	Bank ...	9·90	3·65	...	...
273	1 in 111 ...	U	10·10	Bank ...	10·10	8·19	...	...
	1 in 160 ...	U	19·20	Bank ...	19·20	4·94	Right...	2,000 feet.
	Yelleyur station yard.			...	...	...	...	...
	1 in 400 ...	U	10·80	Bank ...	4·80	2·04	...	...
	...	...	...	Cutting ...	6·00	1·78	...	...
	Level ...	...	3·85	Bank ...	3·85	4·76	...	...
274	1 in 70 ...	U	39·55	Bank ...	24·15	8·51	...	...
	...	...	...	Cutting ...	14·50	5·53	...	...
	...	...	...	Bank ...	0·90	1·16	...	...
	1 in 400 ...	U	26·60	Bank ...	2·60	1·05	...	...
	...	...	...	Cutting ...	7·00	1·86	Left ...	1,600 feet.
	...	...	...	Bank ..	8·00	6·63	...	...
	...	...	...	Cutting ...	2·00	1·63	...	...
	...	...	...	Bank ...	2·00	1·83	...	...
	...	...	...	Cutting ...	5·00	1·56	...	...
275 & 276	1 in 70 ...	U	55·19	Cutting ...	1·00	1·49	Right...	1,200 feet.
	...	...	...	Bank ...	42·00	10·96	Right...	3,000 feet.
	...	...	...	Cutting ...	12·19	8·65	...	...
	Level ...	...	6·46	Cutting ...	4·31	2·69	...	...
	...	...	...	Bank ...	2·15	6·11	...	...
	1 in 70 ...	U	16·10	Bank ...	4·35	10·15	...	...
	...	...	...	Cutting ...	3·50	2·69	Left ...	990 feet.
	...	...	...	Bank ...	5·0	7·18	...	...
	...	...	...	Cutting ...	2·75	8·37	...	...
	Level ...	...	2·00	Cutting ...	2·00	10·76	...	...
	1 in 70 ...	D	4·20	Cutting ...	1·75	6·87	...	...
	...	...	...	Bank ...	2·45	9·70	...	...
	Level ...	...	5·05	Bank ...	3·55	5·80	...	...
	...	...	...	Cutting ...	1·50	4·18	Right...	1,320 feet.
	1 in 70 ...	D	6·30	Cutting ...	3·50	7·25	...	...
	...	...	...	Bank ...	2·80	11·66	...	...
	Level ...	...	2·00	Bank ...	2·00	13·02	...	...
277	1 in 70 ...	U	7·00	Bank ...	1·00	1·89	...	...
	...	...	...	Cutting ...	6·00	6·07	Right...	990 feet.

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	Level ...	...	2·35	Bank ...	2·35	5·55	...	...
	1 in 70 ...	U	14·35	Bank ...	8·35	4·40	...	...
	...	...	...	Cutting ...	3·00	0·98	...	...
	...	...	...	Bank ...	1·50	2·71	...	...
	...	...	...	Cutting ...	1·50	2·87	...	..
	Level ...	...	2·65	Cutting ...	2·65	9·96	...	...
278	1 in 70 ...	D	43·75	Cutting ...	3·35	11·95	...	...
	...	...	...	Bank ...	3·00	2·91	Left ...	990 feet.
	...	...	...	Cutting ...	4·00	3·73	...	...
	...	...	...	Bank ...	15·07	13·93	Right...	1,100 feet.
	...	...	...	Cutting ...	3·00	0·95	...	...
	...	...	...	Bank ...	12·33	6·12	Right...	1,200 feet.
	Level ...	...	3·67	Bank ...	1·67	1·18	...	...
	...	...	...	Cutting ...	2·0	1·36	...	...
	1 in 115 ...	D	18·00	Cutting ...	0·50	1·30	...	...
	...	...	...	Bank ...	2·00	4·18	...	...
	...	...	...	Cutting ...	2·00	0·67	...	...
	...	...	...	Bank ...	1·50	3·14	...	...
	...	...	...	Cutting ...	3·00	3·04	...	...
	...	...	...	Bank ...	6·00	5·87	Left ...	1,200 feet.
	...	...	...	Cutting ...	3·00	4·44	...	...
	1 in 70 ...	D	8·00	Cutting ...	2·00	2·90	...	...
	..	..	...	Bank ...	6·00	6·36	...	...
	1 in 200 ...	D	14·50	Bank ...	3·50	5·35	...	...
	...	...	...	Cutting ...	3·25	3·40	...	...
	...	...	...	Bank ...	6·25	5·90	...	...
	...	...	...	Cutting ...	1·50	1·47	...	...
	1 in 111 ...	D	13·50	Cutting ...	1·00	0·73	...	...
	...	...	...	Bank ...	12·50	4·34	Left ...	2,500 feet.
279	1 in 400 ...	D	8·90	Bank ...	8·90	1·62	Right...	1,200 feet.
	1 in 84 ...	D	4·10	Bank ...	4·10	3·96	Left ...	1,000 feet.
	1 in 300 ...	D	12·90	Bank ...	12·00	2·30	...	...
	...	...	...	Cutting ...	0·90	0·56	...	...
280	1 in 70 ...	D	42·40	Cutting ...	1·10	1·34	...	...
	...	...	...	Bank ...	8·00	4·19		...
	...	...	...	Cutting ...	2·50	1·86	...	...
	...	...	...	Bank ...	3·00	3·48	...	...
	...	...	...	Cutting ...	7·50	4·37	...	...
	...	..	...	Bank ...	3·50	0·74	...	...
	...	...	...	Cutting ...	3·0	1·18	} Left	1,200 feet.
	...	...	...	Bank ...	14·30	4·98		
	Level ...	...	6·04	Bank ...	6·04	11·98	...	...
281	1 in 533 ...	D	18·43	Bank ...	4·50	7·30	} Right	1,600 feet.
	...	...	...	Cutting ...	9·50	3·85		
	...	...	...	Bank ...	4·43	4·77	...	...
	1 in 84 ...	D	6·27	Bank ...	6·27	9·01	Right...	600 feet.
	1 in 70 ...	D	22·00	Bank ...	22·00	8·87	{ Right { Right	1,265 feet. 2,000 feet.
	1 in 250 ...	U	4·80	Bank ...	4·80	12·10	...	...
	Level ...	...	3·15	Bank ...	3·00	18·96	...	...
	...	...	...	Cutting ...	0·15	5·53	...	...
282	1 in 70 ...	U	10·50	Cutting ...	8·35	12·07	Left ...	1,000 feet.
	...	...	...	Bank ...	2·15	1·26	...	...
	Level ...	...	3·07	Bank ...	3·07	1·23	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	1 in 84 ...	...	3·78	Bank ...	3·78	1·57	...	...
	Level ...	...	5·00	Bank ...	5·00	11·84	...	...
	1 in 70 ...	U	11·20	Bank ...	7·00	6·60	...	...
	...	...	...	Cutting ...	4·20	0·78	...	...
	Level ...	...	2·80	Bank ...	2·80	0·22	...	...
	1 in 70 ...	D	13·65	Bank ...	13·65	19·06	Right...	1,000 feet.
	Level ...	...	10·35	Bank ...	10·35	5·22	...	...
283	1 in 70 ...	U	45·85	Bank ...	2·90	7·23	Left ...	1,600 feet.
	...	...	...	Cutting ...	16·85	5·54	...	...
	Level ...	...	2·00	Cutting ...	2·00	0·65	...	...
	1 in 90 ...	D	7·20	Bank ...	7·20	5·77	...	...
284	Level ...	...	6·95	Bank ...	6·95	5·67	...	...
	1 in 73 ...	U	8·00	Bank ...	4·00	9·10	...	...
	...	...	...	Cutting ...	4·00	4·16	...	...
	Level ...	...	3·00	Cutting ...	2·00	2·71	} Left..	3,000 feet.
	...	...	...	Bank ...	1·00	3·36		
	1 in 84 ...	D	11·52	Bank ...	5·00	4·58	...	...
	...	...	...	Cutting ...	4·00	1·70	...	...
	...	...	...	Bank ...	2·52	4·05	...	...
	1 in 200 ...	D	5·24	Bank ...	5·24	8·73	...	...
	French Rocks station yard.			...	...	...	...	...
	1 in 200 ...	U	5·24	Bank ...	5·24	7·28	Left ...	896 feet.
285	1 in 400 ...	U	26·60	Bank ...	6·00	3·38	...	..
	...	...	...	Cutting ...	10·00	3·61	...	...
	...	...	...	Bank ...	5·00	3·45	...	...
	...	...	...	Cutting ...	5·60	5·47	...	...
	1 in 70 ...	D	16·70	Cutting ...	4·50	6·59	} Right.	1,000 feet.
	...	...	...	Bank ...	12·20	12·15		
	Level ...	...	3·00	Bank ...	3·00	1·05	} Left...	800 feet.
	1 in 70 ...	D	26·98	Cutting ...	0·75	1·59		
	...	...	...	Bank ...	1·25	1·90	...	...
	...	...	...	Cutting ...	1·50	3·96	...	...
	...	...	...	Bank ...	23·48	6·00	...	...
286	1 in 84 ...	D	9·24	Bank ...	9·24	5·10	Right...	2,000 feet.
	Level ...	...	7·48	Bank ...	7·48	1·65	...	...
	1 in 115 ...	D	16·50	Bank ...	16·50	2·05	...	...
	1 in 100 ...	D	7·82	Bank ...	7·82	1·60	...	...
	1 in 70 ...	D	10·38	Bank ...	10·38	6·61	} Left...	1,320 feet.
287	Level ...	...	3·80	Bank ...	3·80	3·61		
	1 in 100 ...	U	4·87	Bank ...	4·87	8·96		
	Level ...	...	11·63	Bank ...	1·60	20·46	...	...
	...	...	...	Bank ...	9·93	...	...	...
	...	...	...	Cutting ...	0·10	12·55	...	...
	Seringapatam station yard			...	...	...	...	...
	1 in 125 ...	U	5·00	Cutting ...	0·40	12·55	...	...
	...	...	...	Bank ...	2·00	4·17	...	...
	...	...	...	Cutting ...	2·60	5·05	} Right.	967 feet.
	Level ...	...	2·90	Cutting ...	2·90	2·65		
	1 in 125 ...	D	6·71	Cutting ...	1·80	1·18		
	...	...	...	Bank ...	0·30	1·57	...	...
	...	...	...	Cutting ...	1·90	0·79	...	...
	...	...	...	Bank ...	2·71	2·90	...	...
	Level ...	...	15·92	Bank ...	0·25	7·63	...	...
	...	...	...	Bank ...	15·67	...	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
288	1 in 100 ...	D	2·80	Bank ...	2·80	6·95	...	...
	Paschimanahini station yard. ...				...	...	...	...
	Level ...	...	8·50	Bank ...	8·50	6·66	...	...
	1 in 70 ...	U	30·80	Bank ...	26·00	17·37	Left ...	2,640 feet.
	...	...	...	Cutting ...	4·80	3·34	...	...
	Level ...	...	3·70	Bank ...	3·70	1·31	...	...
289	1 in 70 ...	U	26·25	Bank ...	9·50	16·18	Left ...	1,000 feet.
	...	...	...	Cutting ...	0 60	3·17	...	...
	...	...	...	Bank ...	3·00	7·66	Left ...	1,000 feet.
	...	...	...	Cutting ...	13·15	9·87	...	...
	Level ...	..	24·25	Cutting ...	0·80	1·01	...	...
	...	...	...	Bank ...	5·50	3·28	Right...	1,000 feet.
	...	...	...	Cutting ...	6·50	1·84	...	...
	...	...	...	Bank ...	3·50	0·84	...	...
	...	...	...	Cutting ...	2·50	1·08	...	...
	...	...	...	Bank ...	5·45	6·74	...	...
290	1 in 70 ...	U	14·35.	Bank ...	9·50	9·98	...	...
	...	...	...	Cutting ...	4·05	1·18	...	...
	Level ...	...	1·95	Cutting ...	1·00	0·19	Left	1,320 feet.
	...	...	...	Bank ...	0·95	2·25		
	1 in 70 ...	U	15·75	Bank ...	6·75	6·51	...	...
	Level ...	...	2·60	Cutting ...	2·60	6·00	Left...	1,320 feet.
	1 in 70 ...	D	22·05	Cutting ...	9·00	5·51		
	...	...	...	Bank ...	13·05	5·40	...	...
	Level ...	...	5·42	Bank ...	5·42	5·82	...	...
291	1 in 75 ...	U	10·88	Bank ...	5·38	5·50	...	...
	...	...	...	Cutting ...	5·50	5·31	...	...
	Level ...	...	3·00	Cutting ...	3·00	6·68	...	...
	1 in 70 ...	D	6·30	Cutting ...	4·00	5·16	...	...
	...	...	...	Bank ...	2·30	8·22	...	...
	Level ...	...	2·35	Bank ...	2·35	10·12	...	...
	1 in 70 ...	U	14·55	Bank ...	4·75	15·82	...	...
	...	...	...	Cutting ...	6·80	9·57	Left ...	6,600 feet.
	Level ...	...	1·10	Cutting ...	1·10	10·40	...	...
	1 in 70 ...	D	15·05	Cutting ...	3·00	8·10	...	...
	...	...	...	Bank ...	12·05	10·83	...	...
292	Level ...	...	13·65	Cutting ...	0·75	4·50	...	...
	...	...	...	Bank ...	1·40	12·46	...	...
	...	...	...	Cutting ...	8·50	6·34	Right...	2,000 feet.
	...	...	...	Bank ...	3·00	13·54	Left ...	1,000 feet.
	1 in 70 ...	U	13·00	Bank ...	8·50	7·71	Right...	1,000 feet.
	...	...	...	Cutting ...	4·50	6·50	...	...
	Level ...	...	6·00	Cutting ...	1·75	4·04	...	...
	...	...	...	Bank ...	4·25	6·31	...	...
	1 in 280 ...	U	15·00	Bank ...	3·00	2·86	Right...	1,200 feet.
	...	...	...	Cutting ...	4·00	2·83	...	...
	...	...	...	Bank ...	3·00	4·51	...	...
	...	...	...	Cutting ...	3·50	2·34	...	...
	...	...	...	Bank ...	1·50	4·87	...	...
	1 in 70 ...	U	9·12	Bank ...	4·75	15·82	Left ...	792 feet.
	...	...	...	Cutting ...	4·37	11·20	...	...
	Level ...	...	2·88	Cutting ...	2·88	11·29	...	...
293	1 in 75 ...	D	7·70	Cutting ...	0·75	3·37	...	...
	...	...	...	Bank ...	0·25	0·97	...	...

Working Section—Harihar to Mysore—cont.

Mile.	Gradient.	Up or down.	Length in chains.	Formation.	Length in chains.	Maximum height or depth.	Curves. Direction.	Curves. Radius.
	...	...	...	Cutting ...	0·75	0·21	...	...
	...	...	...	Bank ...	5·75	3·86	Right.	792 feet.
	Level ...	...	5·26	Bank ...	5·26	2·47		
	1 in 70 ...	D	4·20	Cutting ...	0·75	1·67		
	...	...	...	Bank ...	3·45	4·79	...	...
	Level ...	...	2·05	Bank ...	2·05	8·08	...	...
	1 in 70 ...	U	5·95	Bank ...	3·00	2·77	...	...
	...	...	...	Cutting ...	2·95	1·35	...	...
	Level ...	...	693	Cutting ...	4·75	1·90	...	...
	...	...	...	Bank ...	2·18	1·83	...	...
	1 in 200 ...	U	5·72	Bank ...	5·72	12·31	Left ...	1,320 feet.
294	1 in 70 ...	U	51·21	Bank ...	16·50	16·09	Right...	792 feet.
	...	...	...	Cutting ...	8·50	4·73	...	...
	...	...	...	Bank ...	9·75	10·19	...	...
	...	...	...	Cutting ...	8·30	11·60	Left ...	1,056 feet.
	...	...	...	Bank ...	7·00	9·00	...	...
	...	...	...	Cutting ...	1·16	6·57	...	...
	1 in 200 ...	D	4·31	Cutting ...	1·50	6·60	Left ...	660 feet.
	...	...	...	Bank ...	2·81	11·10	...	...
	Level ...	...	2·03	Bank ...	2·03	8·71	...	...
295	1 in 90 ...	U	11·45	Bank ...	1·50	1·67	...	...
	...	...	...	Cutting ...	3·50	4·60	Right...	1,000 feet.
	...	...	...	Bank ...	3·50	3·00	...	...
	...	...	...	Cutting ...	0·75	1·17	...	...
	...	...	...	Bank ...	1·50	9·53	...	...
	...	...	...	Cutting ...	0·70	3·72	...	...
	1 in 200 ...	U	9·00	Cutting ...	0·50	3·72	...	...
	...	...	...	Bank ...	3·50	1·11	...	...
	...	...	...	Cutting ...	2·50	1·11	...	...
	...	...	...	Bank ...	2·50	0·27	...	...
	Level ...	...	1·71	Cutting ...	1·71	0·52	...	...
	1 in 73 ...	D	5·64	Cutting ...	5·00	3·76	...	...
	...	...	...	Bank ...	0 65	0·99	Left...	2,000 feet.
	Level ...	..	2·30	Bank ...	2·30	11·18		
	1 in 73 ...	U	20·71½	Bank ...	2·50	7·28	...	...
	...	...	...	Cutting ...	6·00	6·13	...	...
	...	...	...	Bank ...	6·00	11·92	...	...
	...	...	...	Cutting ...	3·50	3·97	...	...
	...	...	...	Bank ...	1·50	1·49	...	...
	...	...	...	Cutting ...	4·21½	2·63	...	...
	Level ...	...	3·98½	Cutting ...	3·00	4·38	...	...
	...	...	...	Bank ...	·98½	2·03	...	...
296	1 in 70 ...	U	14·13	Bank ...	3·00	15·79	...	...
	...	...	...	Cutting ...	11·13	4·84	Left ...	792 feet.
296	1 in 200 ...	U	7·87	Cutting ...	1·50	0·71	...	...
	...	...	...	Bank ...	6·37	12·74	Left ...	1,400 feet.
	Mysore station yard.		...	...	...	...	...	...
	Level ...	...	10·00	Bank ...	1·50	2·45	...	...
2,587 ft.	...	...	...	Cutting ...	6·00	2·00	...	...
	...	...	...	Bank ...	2·50	5·00	...	...

Mysore State Branch—Harihar to Mysore—Bridges.

Mile from Harihar.	Name.	Openings.	Description.	Rise of flood-water above low-water level. Feet.	Maximum velocity in flood. Feet per second.	Flood area of openings Feet.	Height of under side of girders or soffit of arch. Above flood level.	Height of under side of girders or soffit of arch. Above river-bed.	Remarks.
	Harihar station.	...	...	...	...	...	...	...	.....
4	.....	3 20′	Arches ...	3′ 6″	...	732	7′ 6″	11′	Nature of stream, "Annual," width at flood level 115′.
8	.....	2 20′	Do. ...	...	...	...	...	...	
9	.....	2 20′	Do. ...	...	...	...	...	...	
11	.....	1 40′	Girder ...	...	...	...	...	...	
12	.....	1 40′	Do. ...	...	...	...	...	...	
16	.....	2 20′	Arches ...	...	...	...	...	...	
17	.....	5 10′	Do. ...	...	...	...	...	...	
19	.....	5 10′	Do. ...	...	...	...	...	...	
20	.....	5 20′	Do. ...	6′ 6″	...	1,440	8′	14′ 6″	Stream, "Annual," width at flood level 125′.
22	.....	1 40′	Girder ...	22′	...	1,400	16′	38′	Stream, "Annual," width at flood level 205′.
22	.....	3 40′	Girders ...	8′	...	1,800′	8′ 6″	18′ 6″	Stream, "Annual," width at flood level 115′.
24	.....	1 20′	Arch ...	...	...	...	...	...	
25	.....	2 10′	Do. ...	...	...	...	...	...	
25	.....	2 10′	Do. ...	...	...	...	...	...	
26	.....	2 20′	Do. ...	...	...	...	...	...	
26¼	.....	3 20′	Do. ...	7′ 6″	...	984′	7′ 6″	15′	Stream, "Annual," width at flood level 190′.
29	.....	2 40′	Girders ...	12′	...	1,360′	5′	17′	Stream, "Annual," width at flood level 320′.
30	.....	3 20′	Arches ...	6′ 6″	...	1,446	16′ 1″	23′	Stream, "Constant," width at flood level 150′.
31	.....	5 20′	Do. ...	13′	...	1,920′	4′	17′	Stream, "Constant," width at flood level 270′.
35	.....	1 20′	Do. ...	...	...	...	...	...	
36	.....	9 10′	Do. ...	3′	...	691	3′	6′	Stream, "Annual," width at flood level 160′.
36¼	.....	5 10′	Do. ...	...	...	...	...	...	
37	.....	4 10′	Do. ...	...	...	...	...	...	

39	.....	1 20′	Do. ...	...	...	...	...	...	
39	.....	1 30′	Do. ...	...	...	...	...	...	
40	.....	3 20′	Do. ...	6′	...	1,104	12′	18′	Stream, "Annual," width at flood level 152′.
41	.....	1 20′	Do. ...	...	...	...	...	...	
42	.....	4 10′	Do. ...	...	...	...	...	...	
42½	.....	5 20′	Do. ...	5′ 6″	...	1,310	5′ 6″	12″	Stream, "Annual," width at flood level 253′.
43	.....	2 40′	Do. ...	5′ 6″	...	690	4′	9′ 6″	Stream, "Annual," width at flood level 230′.
45	.....	4 10′	Do. ...	...	...	...	...	...	
46	.....	2 10′	Do. ...	...	...	...	...	...	
48	.....	5 20′	Do. ...	4′	...	1,260	7′ 6″	11′ 6″	Stream, "Constant," width at flood level 263′.
50	.....	3 10′	Do. ...	...	...	...	...	...	
51	.....	2 40′	Girders ...	7′	...	840	3′ 6″	10′ 6″	Stream, "Annual," width at flood level 210′.
53	.....	3 40′	Do. ...	4′ 6″	...	681	2′ 6″	7′	Stream, "Annual," width at flood level 250′.
53½	.....	3 10′	Arches ...	...	...	...	...	...	
54	.....	1 30′	Do. ...	...	...	...	...	...	
56	.....	1 20′	Arch ...	...	...	...	...	...	
57	.....	1 30′	Do. ...	...	...	...	...	...	
58	.....	2 10′	Do. ...	...	...	...	...	...	
60	.....	1 20′	Do. ...	...	...	...	...	...	
63½	.....	5 40′	Girders ...	9′	...	4,800	16′	25′	Stream, "Constant," width at flood level 361′.
64½	.....	2 10′	Arches ...	...	...	...	...	...	
68	.....	1 60′	Girder ...	9′6″	...	920	13′	23′ 6″	Stream, "Constant," width at flood level 195′.
69	.....	2 20′	Arches ...	...	...	...	...	...	
75	.....	1 20′	Do. ...	...	...	...	...	...	
77½	.....	1 20′	Do. ...	...	...	...	...	...	
	Beeruru station...	...	...	...		...	...	...	
	In addition to the foregoing bridges, there are twenty-two small arches of 1-10′ span each between Harihar and Beeruru.								
82	Kadur	5 30′	Arches ...	18′	10	2,700′	...	26′	Nálá. Width of bridge 12′ 6″.
85	Vedavati ...	7 40′	Do. ...	22′	10	6,160	...	29′	River. Do. 15′.
88	.....	2 10′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
92	.....	2 20′	Do. ...	...	...	...	...	19′	Nálá. Do. 12′.
92	Vedavati ...	5 40′	Do. ...	27′ 6″	10	5,500	...	31′	River. Do. 15′.
94	Devanoro ...	5 20′	Do. ...	11′ 6″	10	1,975	...	9′ 6″	Tank discharge. Width of bridge 12′.
102¾	.....	1 20′	Do. ...	...	...	...	...	...	Dry nálá. Width of bridge 12′.
103	.....	1 30′	Do. ...	...	...	...	...	...	Swamp. Do. 12′.

Mysore State Branch—Harihar to Mysore—Bridges—cont.

Mile from Harihar.	Name.	Openings.	Description.	Rise of flood-water above low-water level. Feet.	Maximum velocity in flood. Feet per second.	Flood area of openings Feet.	Height of under side of girders or soffit of arch. Above flood level.	Height of under side of girders or soffit of arch. Above river-bed.	Remarks.
104	.....	1 30′	Arches ...	...	...	...	...	...	Swamp. Width of bridge 12′.
105½	.....	2 20′	Do. ...	...	...	...	...	...	Swamp. Do. 12′.
106	.....	1 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
109	Arsikere ...	5 30′	Do. ...	12′ 6″	14	2,100	...	16′	Tank discharge. Do. 13′ 6″.
110	.....	2 30′	Do. ...	...	...	...	...	...	Dry nálá. Do. 13′ 6″.
112	Adihalli ...	1 20′	Do. ...	...	...	...	...	...	Tank. Do. 12′.
123	.....	1 20′	Do. ...	...	...	...	...	21′	Swamp. Do. 12′.
123¼	.....	1 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
124	.....	3 10′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
124½	.....	3 20′	Do. ...	...	...	...	...	...	Swamp. Do. 12′
125	.....	3 10′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
126	Hindasgere ...	3 20′	Do. ...	...	...	...	...	...	Tank. Do. 12′.
127	.....	2 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
129	.....	3 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
130	Koppalu ...	5 10′	Do. ...	...	...	...	...	...	Top of tank. Do. 12′.
133	.....	1 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
134	.....	1 30′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
135	.....	1 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
136	.....	4 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
138	Shimsha ...	10 20′	Do. ...	11′	10	2,200	...	12′	River. Do. 12′.
139	Shimsha ...	9 20′	Do. ...	7′	6	2,115	...	14′	River. Do. 12′.
140	.....	1 20′	Do. ...	...	...	...	...	...	Dry nálá. Do. 12′.
141	Amsandra ...	3 20′	Do. ...	...	...	...	...	...	Tank. Do. 12′.
142	.....	2 10′	Do. ...	...	...	...	...	...	Top of tank. Do. 12′.
144	Virsagar ...	3 20′	Do. ...	...	...	...	...	27′ 6″	Tank. Do. 12′.
148	.....	2 20′	Do. ...	...	...	...	...	...	Tank feeder. Do. 12′.

152½	Haranhalli ...	11 20′	Do. ...	9′	10′	2,365	...	12′	Swamp. Foundation hard moorum.
154¼	.....	3 10′	Do. ...	...	...	...	...	...	Small dry nálá. Width of bridge 12′.
155½	Heroor	8 10′	Do. ...	...	...	...	...	...	Dry Nálá. Width of bridge 12′.
156½	Gubbi Station.	...	...	...	...	...	...	...	
	In addition to the foregoing there are 46 arches of 1-10′span each between Beeruru and Gubbi.								
159½	.....	3 12′	Arches ...	...	...	...	...	...	
159¾	.....	3 12′	Do. ...	...	...	...	...	...	
160½	.....	3 30′	Do. ...	...	...	...	...	...	
162½	.....	1 12′	Do. ...	...	...	...	...	...	
163½	.....	1 12′	Do. ...	...	...	...	...	...	Also 3-6′, and 18 smaller culverts.
165½	.....	4 20′	Do. ...	...	...	...	...	...	
166½	.....	1 12′	Do. ...	...	...	...	...	...	
167	.....	1 12′	Do. ...	...	...	...	...	...	
167½	.....	1 12′	Do. ...	...	...	...	...	...	
167½	Tumkur station.	...	...	...	...	...	...	...	
170½	.....	1 12′	Arch ...	...	...	...	...	...	
172½	.....	1 12′	Do. ...	...	...	...	...	...	Also 5-6′, and 13 smaller culverts.
173½	.....	2 30′	Do. ...	...	...	...	...	...	
174½	.....	1 12′	Do. ...	...	...	...	...	...	
174½	Hirehalli station.	...	...	...	...	...	...	...	
175½	.....	1 12′	Arch ...	...	...	...	...	...	
178½	.....	1 20′	Do. ...	...	...	...	...	...	Also 4-6′, and 9 smaller culverts.
178¾	.....	1 12′	Do. ...	...	...	...	...	...	
179½	.....	1 12′	Do. ...	...	...	...	...	...	
179¾	.....	1 20′	Do. ...	...	...	...	...	...	
182	Nidvauda station.	...	...	...	...	...	...	...	
183½	.....	1 12′	Arch ...	...	...	...	...	...	
184½	.....	1 20	Do. ...	...	...	...	...	...	Also 3-6′, and 8 smaller culverts.
186½	.....	1 12′	Do. ...	...	...	...	...	...	
186¾	.....	1 12′	Do. ...	...	...	...	...	...	
186¾	.....	2 12′	Do. ...	...	...	...	...	...	
187½	Dodbelli station.	...	...	...	...	...	...	...	
188½	.....	1 12′	Arch ...	...	...	...	...	...	
188¾	.....	1 12′	Do. ...	...	...	...	...	...	
189½	.....	1 12′	Do. ...	...	...	...	...	...	Also 2-6′, and 3 smaller culverts.
190½	.....	1 30′	Do. ...	...	...	...	...	...	
191½	.....	1 12′	Do. ...	...	...	...	...	...	
191¾	.....	1 12′	Do. ...	...	...	...	...	...	

Mysore State Branch—Harihar to Mysore—Bridges—cont.

Mile from Harihar.	Name.	Openings.	Description.	Rise of flood-water above low-water level. Feet.	Maximum velocity in flood. Feet per second.	Flood area of openings. Feet.	Height of under side of girders or soffit of arch. Above flood level.	Height of under side of girders or soffit of arch. Above river-bed.	Remarks.
192½	.....	1 12′	Arch ...	...	...	...	...	...	
193½	.....	1 12′	Do. ...	...	...	...	...	...	
193¾	.....	1 20′	Do. ...	...	...	...	...	...	
194½	.....	1 12′	Do. ...	...	...	...	...	...	
194½	Golhalli station.	...	...	...	...	...	...	...	
194¾	.....	1 12′	Arch ...	...	...	...	...	...	
196½	.....	1 12′	Do. ...	...	...	...	...	...	
197½	.....	1 20′	Do. ...	...	...	...	...	...	
197¾	.....	1 12′	Do. ...	...	...	...	...	...	
198½	.....	1 12′	Do. ...	...	...	...	...	...	
199½	Arkavati ...	4 30′	Do. ...	...	...	...	...	...	River.
200½	.....	2 20′	Do. ...	...	...	...	...	...	
201½	.....	1 12′	Do. ...	...	...	...	...	...	
...	.....	1 12′	Do. ...	...	...	...	...	...	Also 3-6′, and 9 smaller culverts.
201¾	.....	1 12′	Do. ...	...	...	...	...	...	
202	.....	1 20′	Do. ...	...	...	...	...	...	
202½	.....	1 12′	Do. ...	...	...	...	...	...	
...	Banavar station.	...	...	...	...	...	...	...	
203½	.....	1 30′	Arch ...	...	...	...	...	...	
203¾	.....	1 30′	Do. ...	...	...	...	...	...	
204½	.....	1 12′	Do. ...	...	...	...	...	...	
204¾	.....	1 12′	Do. ...	...	...	...	...	...	
208½	.....	8 12′	Do. ...	...	...	...	...	...	
209¼	.....	1 12′	Do. ...	...	...	...	...	...	Also 2-6′, and 10 smaller culverts.
209½	.....	1 12′	Do. ...	...	...	...	...	...	
209¾	.....	1 12′	Do. ...	...	...	...	...	...	

210	.....	4 30′	Do. ...	...	...	...	...	...	
210½	.....	2 30′	Do. ...	...	...	...	...	...	
210½	Bangalore station.	...	...	...	...	...	...	...	

The Arkavati river is the only waterway of any consequence between Gubbi and Bangalore. It is crossed 5 miles from Nelamangala by a bridge of 5 arches carrying the main road for ordinary traffic.

211¼	.....	1 20′	Arch ...	...	...	...	...	...	
212	Kothapalli ...	4 10′	Beams ...	...	...	...	...	...	
212¾	.....	1 30′	Arch ...	...	...	...	...	...	
212¾	.....	1 10′	Do. ...	...	...	...	...	...	
213	.....	1 12′	Do. ...	...	...	...	...	...	Also two 2-6′, 1-7′, 11-6′, and 15 smaller culverts.
214	.....	1 10′	Do. ...	...	...	...	...	...	
214½	.....	1 12′	Do. ...	...	...	...	...	...	
215½	Malagal	2 30′	Arches ...	...	...	...	...	...	
216	.....	1 12′	Do. ...	...	...	...	...	...	
218½	Kengeri station ...	...	...	...	...	...	...	...	
218¾	.....	2 20′	Arches ...	...	...	...	...	...	
220	.....	1 20′	Do. ...	...	...	...	...	...	
221¼	Kumbal	2 30′	Do. ...	...	...	...	...	...	
222½	.....	1 30′	Do. ...	...	...	...	...	...	
222¾	.....	1 12′	Do. ...	...	...	...	...	...	Also 5-8′, 7-6′, and 18 smaller culverts.
223¼	.....	1 12′	Do. ...	...	...	...	...	...	
224½	.....	1 12′	Do. ...	...	...	...	...	...	
227½	.....	1 10′	Beam ...	...	...	...	...	...	
228	.....	2 8′	Arches ...	...	...	...	...	...	
229	Bidadi station ...	...	...	...	...	...	...	...	
229½	Bidadi	2 30′	Arches ...	...	...	...	...	...	
230	.....	1 10′	Arch ...	...	...	...	...	...	
231½	.....	1 10′	Beam ...	...	...	...	...	...	Also 3-8′, 4-6′, and 24 smaller culverts.
233	.....	1 30′	Arch ...	...	...	...	...	...	
234	.....	1 12′	Do.	...	...	...	...	...	
234½	.....	1 20′	Do.	...	...	...	...	...	
	Closepet station.	...	...	...	...	...	...	...	
239	Arkavati ...	7 30′	Arches ...		See drawing "A."				River.
240½	.....	1 10′	Arch ...	...	...	...	...	...	
240¾	.....	1 12′	Do. ...	...	...	...	...	...	Also 2-8′, 6-6, and 11 smaller culverts.
241½	.....	1 10′	Do. ...	...	...	...	...	...	
...	.....	1 12′	Do. ...	...	...	...	...	...	

Mysore State Branch—Harihar to Mysore—Bridges—cont.

Mile from Harihar.	Name.	Openings.	Description.	Rise of flood-water above low-water level. Feet.	Maximum velocity in flood. Feet per second.	Flood area of openings. Feet.	Height of under side of girders or soffit of arch. Above flood level.	Height of under side of girders or soffit of arch. Above river-bed.	Remarks.
243½	.....	1 12′	Beam ...	...	...	...	...	...	
245¼	Chennapatna station ...	...	...	...	...	...	...	...	
246	.....	1 10′	Beam ...	...	...	...	...	...	
	.....	1 10′	Do. ...	...	...	...	...	...	
	.....	1 10′	Do. ...	...	...	...	...	...	
	.....	2 12′	Do. ...	...	...	...	...	...	
246½	Mallur ...	4 25′	Arches ...	See drawing "B."					River.
		4 27′ 6″	Do. ...						
246¾	.....	1 12′	Beam ...	...	...	...	...	...	Also 2-8′, 4-6′, and 6 smaller culverts.
	.....	1 12′	Do. ...	...	...	...	...	...	
247	.....	1 10′	Do. ...	...	...	...	...	...	
247½	.....	1 40′	Girder ...	See drawing "C."					
248½	.....	1 12′	Beam ...	...	...	...	...	...	
249½	Mudageri station.	...	...	...	...	...	...	...	
250½	.....	2 8′	Arches ...	...	...	...	...	...	
250¾	Kolur	9 12′	Do. ...	...	...	...	...	...	
251½	.....	2 12′	Beams ...	...	...	...	...	...	Also 2-8′, 5-6′, and 6 smaller culverts.
252½	.....	2 12′	Do. ...	...	...	...	...	...	
252¾	.....	2 12′	Do. ...	...	...	...	...	...	
	.....	1 10′	Arch ...	...	...	...	...	...	
255¾	Shimsha ...	7 62′	Arches ...	See drawing "C."					River.
256½	Muddur station...	...	...	...	...	...	...	...	
257¼	.....	2 10′	Arches ...	See drawing "C."					
		2 40′	Girders ...						

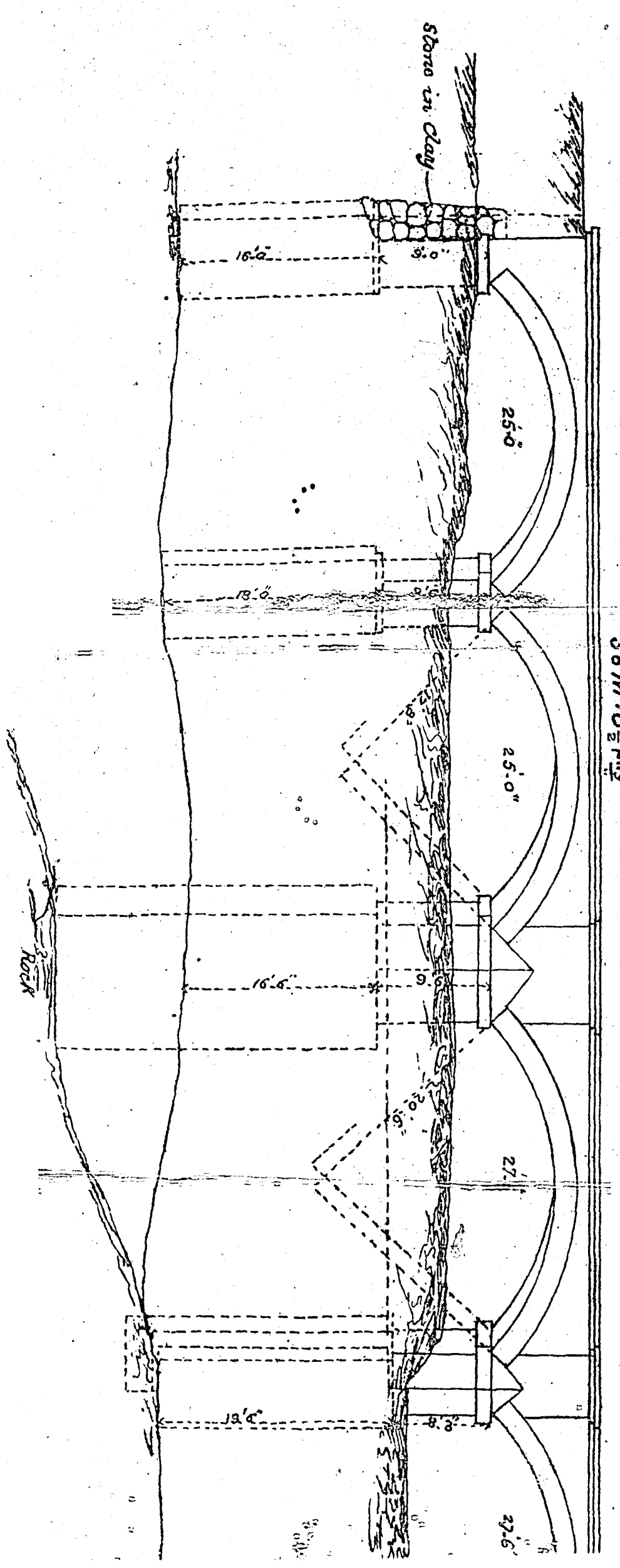
258¾	.....	2 10′	Beams ...	...	...	...	...	...	
260½	.....	3 10′	Do. ...	...	...	...	...	...	
261½	.....	2 12′	Do. ...	...	...	...	...	...	
262¼	.....	2 10′	Do. ...	...	...	...	...	...	
263½	.....	3 12′	Do. ...	...	...	...	...	...	Also 3-8′, 7-6′, and 8 smaller culverts.
264½	.....	3 12′	Do. ...	...	...	...	...	...	
264¾	.....	2 10′	Do. ...	...	...	...	...	...	
265	.....	3 12′	Do. ...	...	...	...	...	...	
267½	Hebbala ...	3 60′	Girders ...	See drawing "D."					
267¾	.....	2 8′	Beams ...	...	...	...	...	...	
268½	Mandya station...	...	...	...	...	...	...	...	
268½	.....	1 10′	Beam ...	...	...	...	...	...	
269½	.....	3 10′	Do. ...	...	...	...	...	...	
269½	.....	3 10′	Do. ...	...	...	...	...	...	Also 3-6′, and 2 smaller culverts.
270	Konahalli ...	5 24′	Arches ...	...	...	...	...	...	
272	.....	1 12′	Beam ...	...	...	...	...	...	
272¾	.....	2 24′	Arches ...	...	...	...	...	...	
273¼	Yelleyur station.	...	...	...	...	...	...	...	
273½	.....	4 12′	Beams ...	...	...	...	...	...	
274	.....	1 10′	Arch ...	...	...	...	...	...	
275½	.....	1 12′	Do. ...	...	...	...	...	...	
276½	.....	1 12′	Do. ...	...	...	...	...	...	
277½	.....	1 10′	Do. ...	...	...	...	...	...	
280	Carrigahulla ...	3 24′	Arches ...	...	...	...	...	...	
281	Chikdevarey Sagar No. 1 ...	3 24′	Girders ...	...	...	...	...	...	Also 7-6′, and 23 smaller culverts.
281½	Locani ...	4 30′	Arches ...	See drawing "E."					River.
		4-27′ 6″	...						
281¾	.....	1 10′	Arch ...	...	...	...	...	...	
282¼	.....	1 20′	Do. ...	...	...	...	...	...	
283	Chikdevaray Sagar No. 2. ...	6 12′	Beams ...	...	...	...	...	...	
284	.....	1 24′	Arch ...	...	...	...	...	...	
284½	French Rocks station	...	...	...	...	...	...	...	
285	Chikdevaray Sagar No. 3 ...	3 24′	Arches ...	...	...	...	...	...	Also 1-8′, and 13 smaller culverts.
286½	.....	1 10′	Beam ...	...	...	...	...	...	
286¾	.....	1 10′	Arch ...	...	...	...	...	...	

Mysore State Branch—Harihar to Mysore—Bridges—cont.

Mile from Harihar.	Name.	Openings.	Description.	Rise of flood-water above low-water level Feet.	Maximum velocity in flood. Feet per second.	Flood area of openings. Feet.	Height of under side of girders or soffit of arch. Above flood level.	Height of under side of girders or soffit of arch. Above river-bed.	Remarks.
287	Cauvery No. 1	9 30′	Arches ...		See drawing "F."				River.
		24–27′ 6″	Do. ...	...	...	...	...	...	
287¼	Seringapatam station	...	...	...	...	...	...	...	
287½	Cauvery No. 2	13 30′	Arches ...		See drawing "F."				River.
		16-27′ 6″	Do. ...	...	...	...	...	...	
	.....	1 12′	Beam ...	...	...	...	...	...	
	Cauvery No. 3	2 25′	Arches ...		See drawing "F."				River.
		4–27′ 6″	Do. ...	...	...	...	...	...	
	Paschinavahini station	...	...	...	...	...	...	...	
288¼	.....	1 10′	Arch ...	...	...	...	...	...	
288¾	Viziyanadi ...	5 12′	Beam ...	...	...	...	...	...	
289½	.....	2 8′	Do. ...	...	...	...	...	...	
	.....	1 10′	Do. ...	...	...	...	...	...	
290½	.....	2 10′	Do. ...	...	...	...	...	...	Also 1-8′, 13-6′, and 15 smaller culverts.
291½	Naganahalli ...	10 12′	Arches ...	...	...	...	...	...	
293½	.....	1 30′	Do. ...	...	...	...	...	...	
294½	.....	1 20′	Do. ...	...	...	...	...	...	
295½	.....	2 8′	Do. ...	...	...	...	...	...	
296	Mysore station (Present terminus)		...	...	...	...	...	...	

NOTE.—From Bangalore to Mysore all rivers are bridged by road, as well as by rail. All are fordable except during the rains. Local means to repair damaged bridges are plentiful.

B



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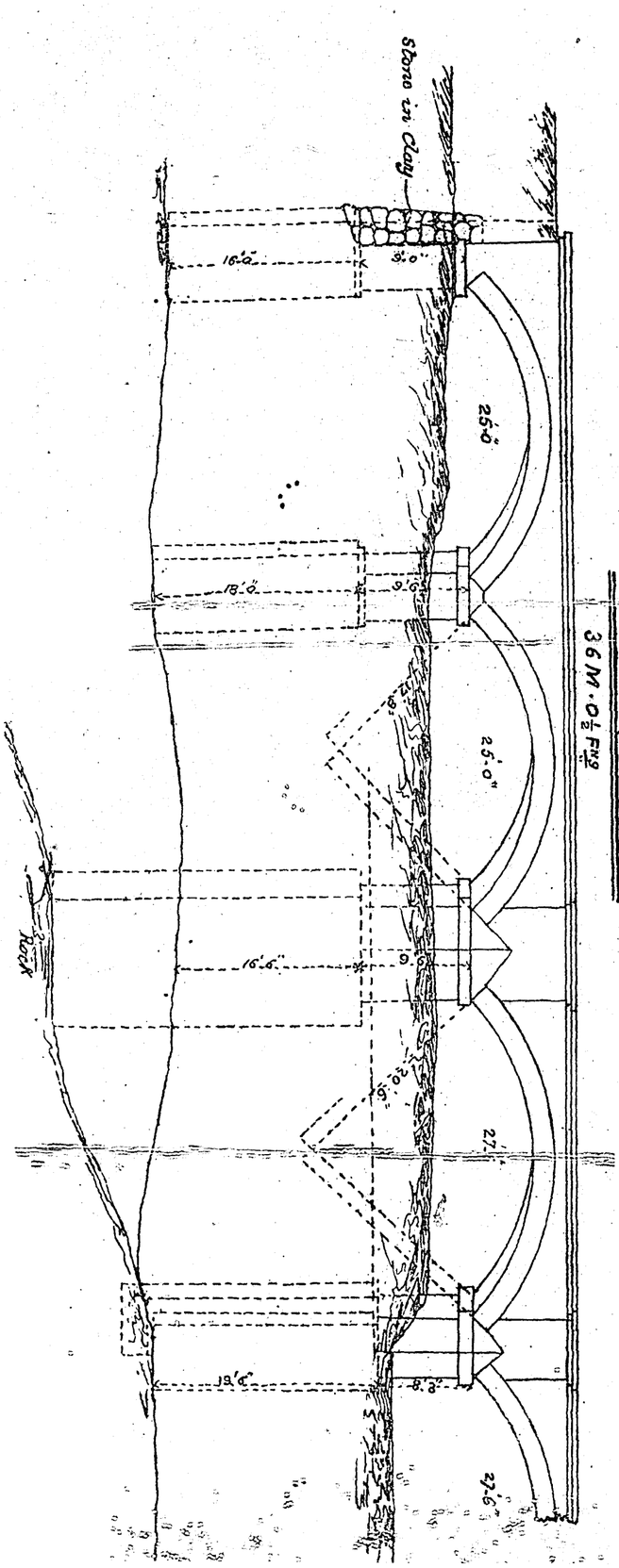
1890

Mysore State Branch—Harihar to Mysore—Bridges—cont.

Mile from Harihar.	Name.	Openings.	Description.	Rise of flood-water above low-water level Feet.	Maximum velocity in flood. Feet per second.	Flood area of openings. Feet.	Height of under side of girders or soffit of arch. Above flood level.	Height of under side of girders or soffit of arch. Above river-bed.	Remarks.
287	Cauvery No. 1	9 30′ 24-27′ 6″	Arches ... Do. ...	...	See drawing "F."		...	...	River.
287¼	Seringapatam station	...	...	...	...	...	...	...	
287½	Cauvery No. 2	13 30′ 16-27′ 6″	Arches ... Do. ...	...	See drawing "F."		...	...	River.
	.....	1 12′	Beam ...	...	...	...	...	...	
	Cauvery No. 3	2 25′ 4-27′ 6″	Arches ... Do. ...	...	See drawing "F."		...	...	River.
	Paschinavahini station	...	...	...	...	...	...	...	Also 1-8′, 13-6′, and 15 smaller culverts.
288¼	.....	1 10′	Arch ...	...	...	...	...	...	
288¾	Viziyanadi ...	5 12′	Beam ...	...	...	...	...	...	
289¼	.....	2 8′	Do. ...	...	...	...	...	...	
	.....	1 10′	Do. ...	...	...	...	...	...	
290¼	.....	2 10′	Do. ...	...	...	...	...	...	
291½	Naganahalli ...	10 12′	Arches ...	...	...	...	...	...	
293½	.....	1 30′	Do. ...	...	...	...	...	...	
294½	.....	1 20′	Do. ...	...	...	...	...	...	
295½	.....	2 8′	Do. ...	...	...	...	...	...	
296	Mysore station (Present terminus)		...	...	...	...	...	...	

NOTE.—From Bangalore to Mysore all rivers are bridged by road, as well as by rail. All are fordable except during the rains. Local means to repair damaged bridges are plentiful.



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A

Bridge over the Arkavati River

7-30 feet arches

28M 3½F

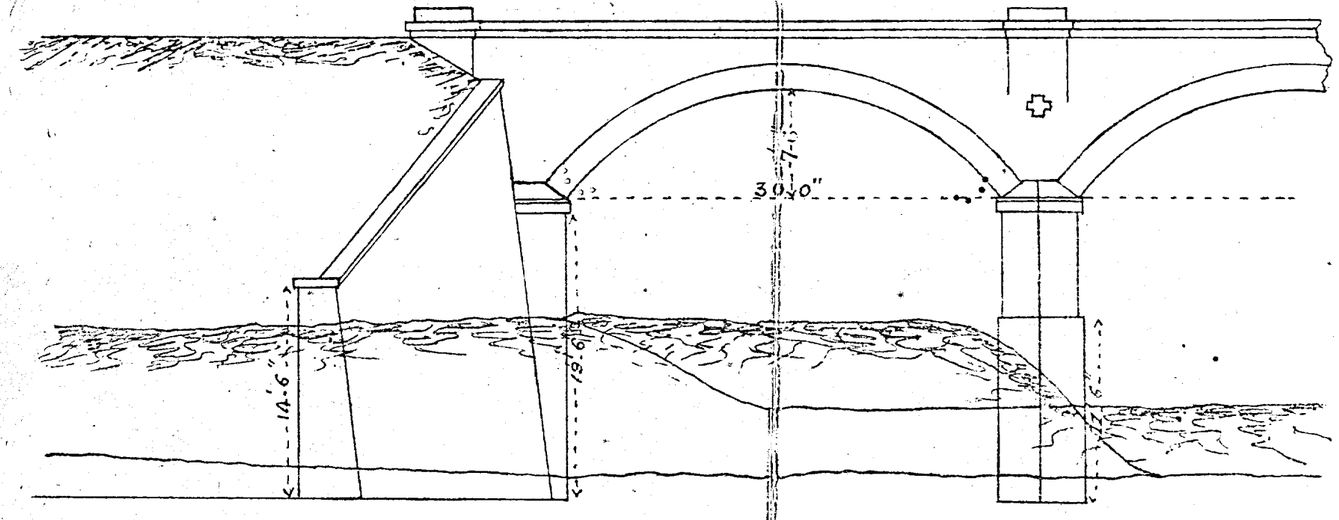
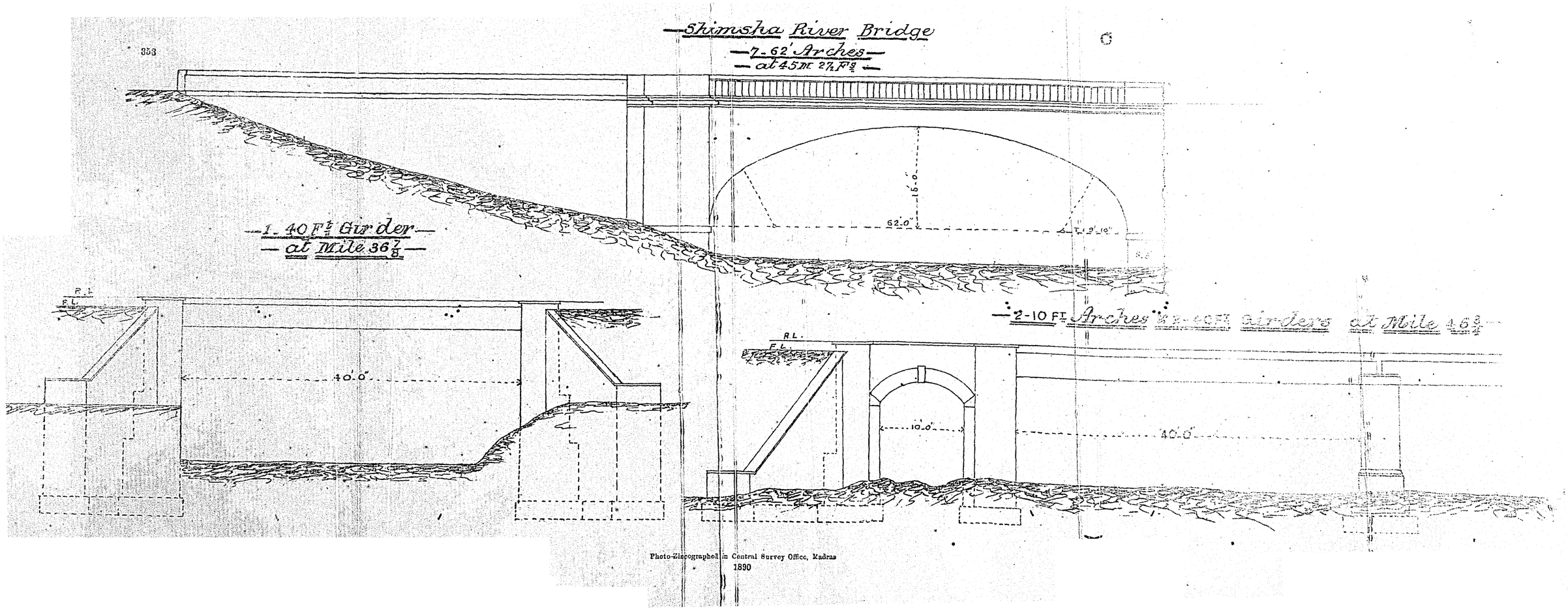


Photo Zincographed in Central Survey Office, Madras.
1890



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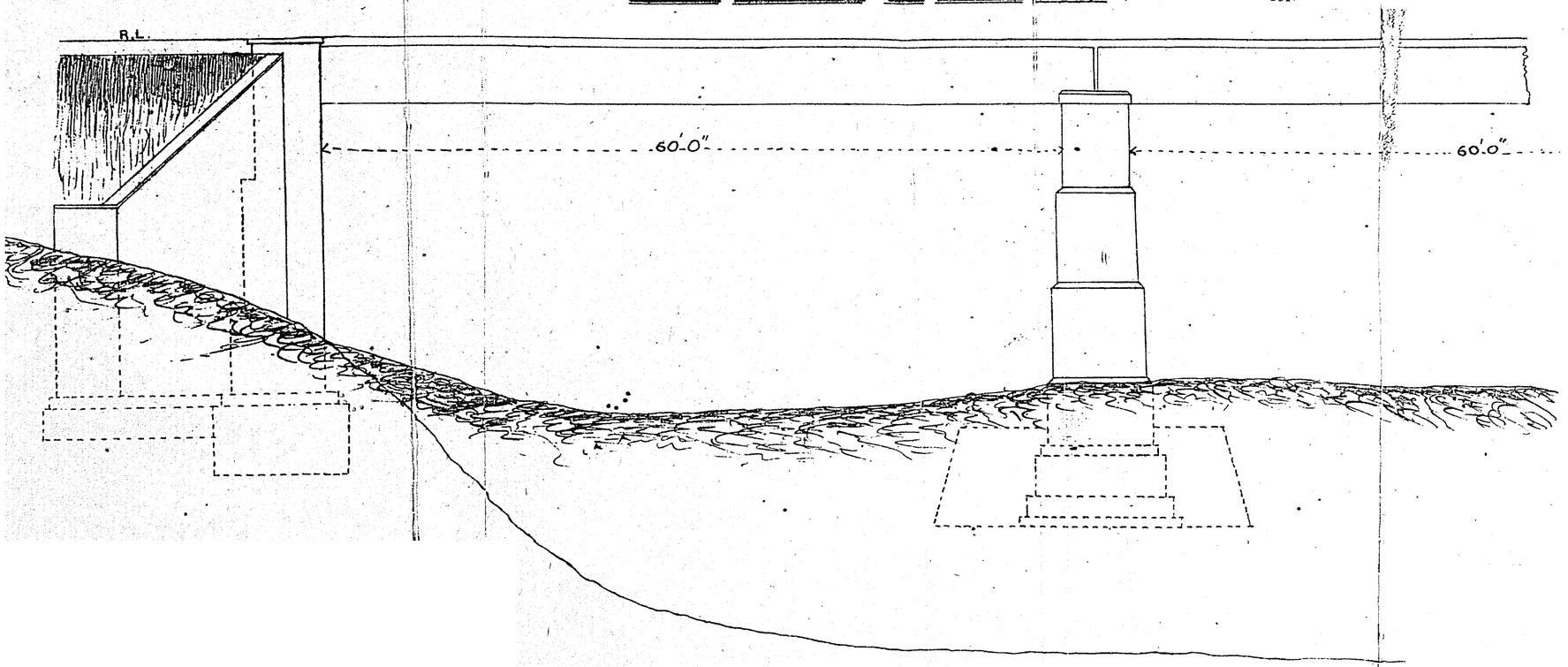
3-60 FT Girders at Mile 56 3/4



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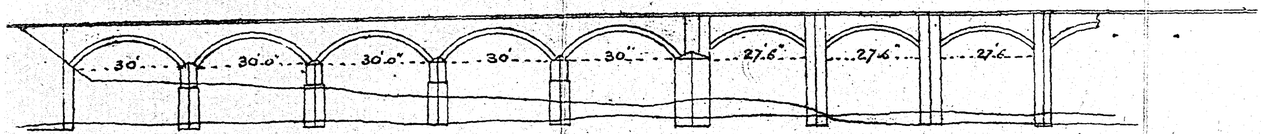
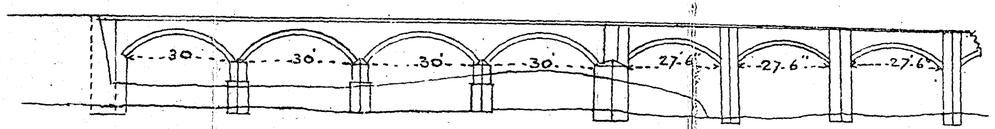
1890

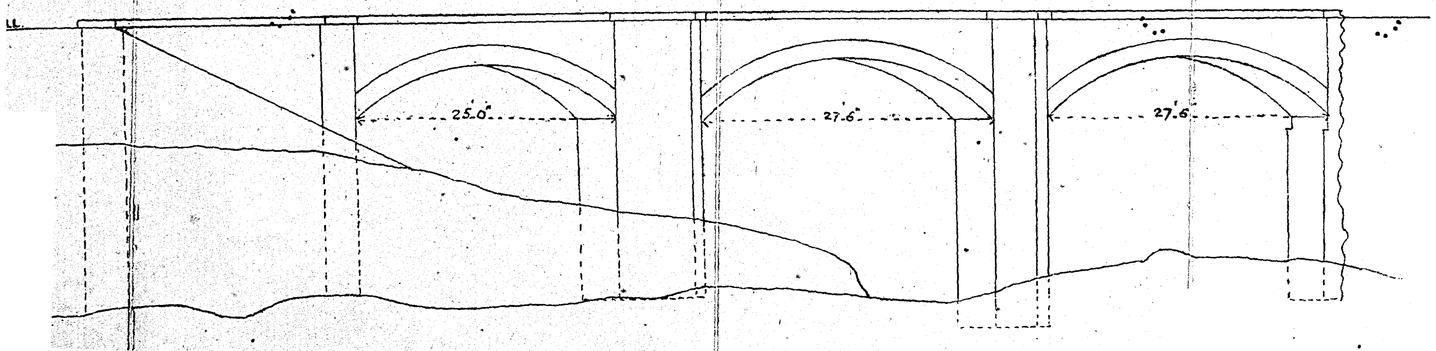
Cauvery River Bridge No. 1
30 Ft. & 24-27.6 Ft. Arches



Cauvery River Bridge No. 2
13-30 Ft. & 16-27.6" Arches



Cauvery River Bridge No. 3 or Paschimavahini
2-25 Ft. & 4-27.6" Ft. Arches



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Locani River Bridge
at 70 Mile 7 5/8 Frg
4 - 30' & 4 - 27½ Ft Arches

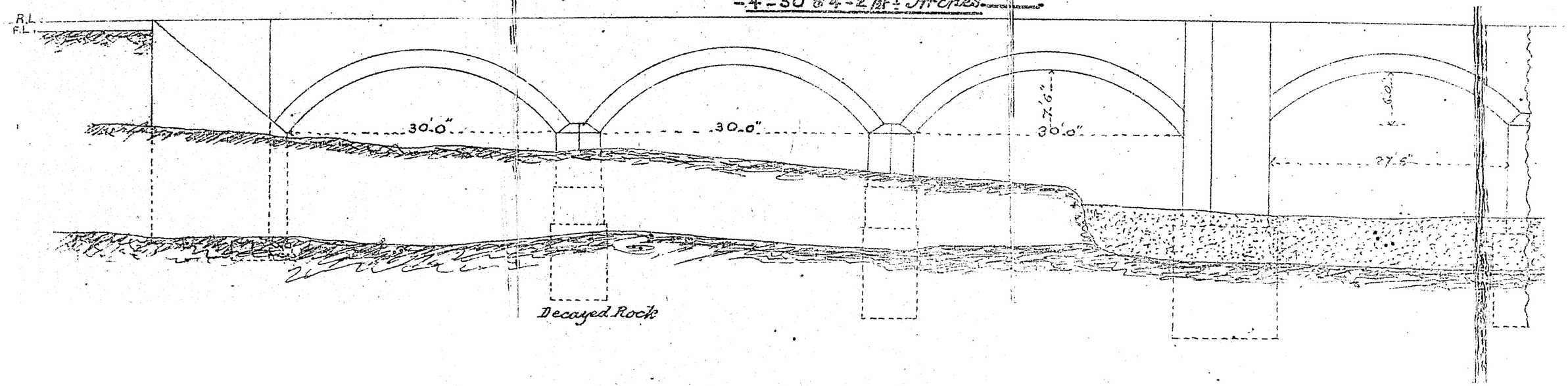


Photo-Zincographed in Central Survey Office, Madras.
1890

STATIONS.

Stations.	Class and Description. W = watering. A W = auxiliary watering. E = engine. F = fuel.	Situation. Mileage. From Harihar.	Situation. Mileage. Between stations.	Situation. Curve or gradient.	Nature of soil.
Harihar	2 W.F.E. class ...	½	...	L. S. ...	Black.
Davangeri	3	8½	8	L. S. ...	Red.
Tholhousi	4	14¼	5¾	L. S. ...	Do.
Kodagnur	4 W.	21	6¾	L. S. ...	Do.
Mayakonda ...	4	26	5	11½ chains Radi 3,000.	Black.
Sasalee	4	31	5	L. and S.	Do.
Jajive	4	37	6	L. and S.	Red.
Holalkeri	4 W.	43	6	L. and S.	Black.
Ramgeri	4 A.W.	49¼ / 51¼	6¼	L. and S.	½ Do. ½ Red.
Bidarkeri	4	55½	6¼	L. and S.	Red.
Sivani	2 W.F.E. ...	61¾	6¼	L. and S.	Do. murum.
Ajampur	3	68¼	6½	L. and S.	Black.
Beeruru	3	79¾	...	L. and S.	Do.
Kaduru	4 W.	83½	3¾	3 chains L. and R. 3,000	Red.
Devanur	4	94	10½	L. and S.	Do.
Banavaru	4	98	4	L. and S.	Rocky red.
Arsikere	2 W.E.F. ...	107¾	9¾	L. and S.	Red.
Konehalli	4	116¼	8½	L. and S.	Black.
Tipturu	3 A.W.	123¾	7½	4 chains L. and R. 3,000.	Red.
Kopalu or Kardi ...	4	130¼	6½	L. and S.	Do.
Bansandra	4 W.	136¾	6½	L. and S.	Do.
Yelladbagi	4	143¾	7	L. and S.	Do.
Nitturu	4	150¾	7	L. and S.	Do.
Gubbi *	4	156½	5¾	L. and S.	Do.
Tumkur	3 W.F.	167¾	11	L. and S.	Do.
Hirehalli	4	174½	7	L. and S.	Do.
Nidvanda	4 W.F.	182	7½	L. and S.	Do.
Dodbelli	4	187¼	5½	L. and S.	Do.
Golhalli	4	194½	7	L. and S.	Do.
Banavar	4	202½	8	L. and S.	Do.
Bangalore	1 W.E.F. ...	210½	8	L. and S.	Do.
Kengeri	3	218¼	7¾	L. and S.	Do.
Bidadi	3 W.	229	10¾	L. and S.	Do.
Closepet	3 F.	238¼	9¼	L. and S.	Do.
Chennapatna ...	3 W.	245¼	7	L. and S.	Black.
Mudgire	4	249½	4¼	L. and S.	Do.
Maddur	4 W.F.	256½	7	L. and S.	Do.
Mandya	4	268½	12	L. and S.	Do.
Yelliyur	4	273¼	4¾	L. and S.	Red.
French Rocks ...	3	284½	11¼	L. and S.	Do.
Seringapatam ...	3	287¼	2¾	L. and S.	Do.
Paschimavahini ...	3 W.	287¾	½	L. and S.	Black.
Mysore	1 W.E.F. ...	296¼	8½	L. and S.	Red.

* Between Beeruru and Gubbi one type exists comprising waiting room 20′ × 16′, booking office 12′ × 16′ and small store room. The verandah 8′ wide is a cantelever (see type). Beeruru, Arsikere and Tipturu excepted.

STATIONS—*cont.*

Stations.	Buildings.			
	Passenger.		Goods.	
	Nature.	Size.	Nature.	Size.
Harihar	Teak timber in roof, &c., masonry in lime, Mangalore tiled roof.	35′ 9″ × 34′ 6″	Teak in posts, &c., corrugated walling, Mangalore tiled roof.	* 84′ × 24′
Davangeri	Do. ...	35′ 9″ × 34′ 6″	Do. ...	* 84′ × 24′
Tholhousi	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Kodagaur	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Mayakonda ...	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Sasalee	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Jajive	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Holalkeri	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Ramgeri	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Bidarkeri	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Sivani	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Ajampur	Do. ...	35′ 9″ × 34′ 6″	Teak in posts, &c., corrugated walling, Mangalore tiled roof.	* 84′ × 24′
Beeruru	Stone M. tiles...	* 63′ × 34′ 6″ This includes 8′ covered platform.	Cor. iron. M.T.	84′ × 24′
Kaduru	Do. ...	35′ 9″ × 34′ 6″ This includes 8′ covered platform.	.....	.....
Devanur	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Banavaru	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Arsikere	Do. ...	84′ × 34′ 6″	Stone ...	84′ × 24′
Konehalli	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Tipturu	Do. ...	*63′ × 34′ 6″	Stone ...	84′ × 24′
Kopalu or Kardi ...	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Bansandra	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Yelladbagi	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Nitturu	Do. ...	35′ 9″ × 34′ 6″	.....	.....
Gubbi	Do. ...	63½′ × 30′	.....	.....
Tumkur	Do. ...	131½′ × 44′	Brick M. T. ...	85′ × 25′
Hirehalli	Do. ...	53′ × 44′	.....	.....
Nidvanda	Do. ...	90′ × 49′	.....	.....
Dodbelli	Do. ...	53′ × 44′	.....	.....
Golhalli	Do. ...	53′ × 44′	.....	.....
Banavar	Do. ...	53′ × 44′	.....	.....
Bangalore	Stone P. T. ...	175′ × 42′	Stone M. T. ...	231′ × 23′
Kengeri	Do. ...	45′ × 35′	Stone and P.T.	1 = 29′ × 25′
Bidadi	Do. ...	40′ × 23′	Do. ...	29′ × 25′
Closepet	Do. ...	50′ × 28′	Do. ...	29′ × 25′
Chennapatna ...	Brick P. T. ...	102′ × 35′	Stone P. T. ...	60′ × 25′
Mudgire	Brick B terraces.	30′ × 25′	.....	.....
Maddur	Brick P. T. ...	90′ × 20′	.....	.....
Mandya	Do. ...	60′ × 25′	.....	.....
Yelliyur	Do. ...	45′ × 35′	.....	.....
French Rocks ...	Do. ...	90′ × 20′	Stone M. T. ...	70′ × 23′
Seringapatam ...	Stone terrace ...	85′ × 30′	Stone P. T. ...	60′ × 15′
Paschimavahini ...	Brick B. T. ...	45′ × 35′	Stone M. T. ...	60′ × 23′
Mysore	Brick P. T. ...	127′ × 39′	Do. ...	100′ × 25′

* Buildings marked * are sanctioned but not yet built.

NOTE.—All stations from Harihar to Beeruru are similar to those on "Mysore state" from Beeruru to Gubbi (see type).

STATIONS—*cont.*

Stations.	Buildings—*continued.*			
	Engine.		Workshops.	
	Size.	Capacity.	Nature.	Size.
Harihar	101′ × 42′	4 *	Locomotive for repairs (in engine shed).	
Davangeri	.....	.....	...	...
Tholhousi	.....	.....	...	...
Kodagnur	.....	.....	...	...
Mayakonda ...	.....	.....	...	...
Sasalee	.....	.....	...	...
Jajive	.....	.....	...	...
Holalkeri	.....	.....	...	...
Ramgeri	.....	.....	...	...
Bidarkeri	.....	.....	...	...
Sivani	101′ × 42′	4	...	...
Ajampur	.....	.....	...	...
Beeruru	.....	.....	...	...
Kaduru	.....	.....	...	...
Devanur	.....	.....	...	...
Banavaru	.....	.....	...	...
Arsikere	144′ × 39′ 6″	6 engines.	Locomotive for repairs (in engine shed).	
Konehalli	.....	.....	...	...
Tipturu	.....	.....	...	...
Kopalu or Kardi ...	.....	.....	...	...
Bansandra ...	.....	.....	...	...
Yelladbagi ...	.....	.....	...	...
Nitturu	.....	.....	...	...
Gubbi	.....	.....	...	...
Tumkur	.....	.....	...	...
Hirehalli	.....	.....	...	...
Nidvanda	.....	.....	...	...
Dodbelli	.....	.....	...	...
Golhalli	.....	.....	...	...
Banavar	.....	.....	...	...
Bangalore	2=75′ × 34½′	8	Stone M.T. Locomotive for repairs (in engine shed).	1=120′ × 39′ 1=130′ × 30′ 1=90′ × 29′ Stone 55′ × 55′ C. shed 145′ × 53′
Kengeri	.....	.....	...	...
Bidadi	.....	.....	...	...
Closepet	.....	.....	...	...
Chennapatna ...	.....	.....	...	...
Mudgire	.....	.....	...	...
Maddur	.....	.....	...	...
Mandya	.....	.....	...	...
Yelliyur	.....	.....	...	...
French Rocks ...	.....	.....	...	...
Seringapatam ...	.....	.....	...	...
Paschimavahini ...	.....	.....	...	...
Mysore	110′ × 35′	4	...	...

* Buildings marked are sanctioned but not yet built.

NOTE.—The mileage of Harihar-Beerur section is distant signal of Harihar station.

STATIONS—*cont.*

Stations.	Buildings—*continued.* Other staff quarters and bungalows. Number.	Size.	Latrines number.
Harihar	1	* 5 — 16′×19′	
	2	* 2 — 14′×14′	
	2	* 1 — 14′12′	
	1	* 4 — 12′×8′	
	1	* 1 — 16′×19′	
	1	* 2 — 16′×10′	
	2	* 8 — 10′×10′	
		*22 — 12′×8′	
Davangeri	2	* 1 — 14′×12′	
	1	* 4 — 12′×8′	
Tholhousi	2	* 1 — 14′×12′	
	1	* 2 — 12′×8′	Native 6
Kodagnur	1	* 2 — 12′×8′	
Mayakonda ...	1	* 2 — 12′×8′	
Sasalee	1	* 2 — 12′×8′	
Jajive	1	* 2 — 12′—8′	
Holalkeri	1	* 2 — 12′—8′	
Ramgeri	1	* 2 — 12′—8′	
Bidarkeri	1	* 2 — 12′—8′	
Sivani	1	* 2 — 12′×8′	
	2	* 2 = 14′×14′	
Ajampur	2	* 1 = 14′×12′	
	1	* 4 = 12′×8′	
Beeruru	3	2 = 23′ × 20′6″ 1=27′ 9″ × 19′9″	1 Eur. with 6 units 1 = 6 units.
Kaduru	3	Do. do. ...	1 = 6 „
Devanur	3	Do. do. ...	1 = 6 „
Banavaru	3	Do. do. ...	1 = 6 „
Arsikere	25	1=175′×40′ 1 = 30′×28′ 1=46′× 20.′ 2 = 110′×40′ 1=91′×48′6″ 7 = 70×33′ 2 = 44′×42′ 1=140′×38′ 1 = 105′×38′ 2 = 40′×24′ 1=37′×31′ 2 = 28′×22′ 1 = 23′×20′6″ 2=70′×28.	1 Er. = 6, 25 = 150 „
Konehalli	3	2=23′ × 20′6″ 1=27′9″ × 19′9″ ...	1 = 6 „
Tipturu	3	Do. do.	1 Eur. 6 units. 1 = 6 „
Kopalu or Kardi ...	3	Do. do. ...	1 = 6 „
Bansandra	* 3	Do. do. ...	1 = 6 „
Yelladbagi	3	Do. do. ...	1 = 6 „
Nitturu	3	Do. do. ...	1 = 6 „
Gubbi	2	1=33′×20′ ... ... 1=53′×10′	1 Eur. = 5 „ 1 Nat. = 2 „
Tumkur	1	1=23′9″ × 20′6″	1 Eur. = 5 „ 1 Nat. = 2 „
Hirehalli	1	1=23′9″ × 20′6″	1 Eur. = 5 „ 1 Nat. = 2 „
Nidvanda	2	1=45′ × 15′ 1=60′ × 25′ ...	1 Eur. = 5 „ 1 Nat. = 2 „
Dodbelli	2	1=23′9″ × 20′6″ 1=53′ × 13′	1 Eur. = 5 „ 1 Nat. = 2 „
Golhalli	...	.....	1 Eur. = 5 „ 1 Nat. = 2 „
Banavar	2	1=23′9″ × 20′6″ 1=40′ × 8′	1 Eur. = 5 „ 1 Nat. = 2 „
Bangalore	8	2=117′ × 33′6″ 6=64′ × 45′	12 Eur. = 1 „ 3 Nat. = 12 „
Kengeri	1	10′6″ × 20′9″	1 = 2 „
Bidadi	2	15′6″×12′9″ ... ... 20′9″×10′6″	1 = 2 „
Closepet	1	15′6″ × 12′9″	1 = 2 „
Chennapatna ...	1	10′6″ × 20′9″	1 = 2 „
Mudgire	1	23′9″ × 20′6″	1 = 2 „
Maddur	4	1 = 30′×28′ 1 = 45′×20′ 1 = 9′×9′ 1 = 25′×10′	2 = 2 „
Mandya	...	.....	1 = 2 „
Yelliyur	1	23′9″ × 20′ × 6″	1 = 2 „
French Rocks ...	1	20′9″ × 30′ × 6″	1 = 2 „
Seringapatam ...	1	20′ × 12′	1 = 2 „
Paschimavahini ...	1	23′9″ × 20′6″	1 = 2 „
Mysore	2	1=117′ × 33½′ 1=64′ × 45′ ...	1 = 2 „

* These figures show number and size of rooms.

STATIONS—*cont.*

Stations.	Platforms. Passenger. Covered.	Passenger. Uncovered.	Goods. Covered.	Goods. Uncovered.
Harihar	...	600′ × 20′	...	84′ × 6′
Davangeri	...	350′ × 20′	...	* 84′ × 6′
Tholhousi	...	350′ × 20′	...	...
Kodagnur	...	350′ × 20′	...	...
Mayakonda	...	350′ × 20′	...	...
Sasalee	...	350′ × 20′	...	...
Jajive	...	350′ × 20′	...	...
Holalkeri	...	350′ × 20′	...	...
Ramgeri	...	350′ × 20′	...	...
Bidarkeri	...	350′ × 20′	...	...
Sivani	...	350′ × 20′	...	...
Ajampur	...	350′ × 20′	...	* 84′ × 6′
Beeruru	... *	350′ × 20′ There is a horse and carriage dock at end of platform.	84′ × 24′	100′ × 20′
Kaduru	... *	Ditto minus horse dock.	...	...
Devanur	... *	Do.	...	...
Banavaru	... *	Do.	...	...
Arsikere	... *	350′ × 20′ There is a horse dock and carriage dock.	84′ × 24	100′ × 20′
Konehalli	... *	350′ × 20′	...	...
Tipturu	... *	350′ × 20′ Horse and carriage dock.	84′ × 24′	100′ × 20′
Kopalu or Kardi ...	... *	350′ × 20′	...	...
Bansandra	... *	350′ × 20′	...	...
Yelladbagi	... *	350′ × 20′	...	...
Nitturu	... †	350′ × 20′	...	...
Gubbi	... †	600′ × 26′	...	...
Tumkur	... †	600′ × 26′	...	100′ × 20′
Hirehalli	... †	538′ × 26′	...	...
Nidvanda	... †	598′ × 26′	...	...
Dodbelli	... †	600′ × 26′	...	...
Golhalli	... †	600′ × 26′	...	...
Banavar	... †	586′ × 26′	...	...
Bangalore	219 × 25	181′ × 25′ Horse and carriage dock.	T.P. 200′ × 25′	720′ × 20′ T.P. 750′ × 40′ 600′ × 50′
Kengeri	... ‡	600′ × 25′	...	280′ × 20′
Bidadi	... ‡	600′ × 25′	...	340′ × 20′
Closepet	... ‡	600′ × 25′	...	170′ × 15′
Chennapatna	... ‡	600′ × 25′	...	400′ × 20′
Mudgire	... ‡	600′ × 25′	...	185′ × 20′
Maddur	... ‡	712′ × 25′	...	...
Mandya	... ‡	500′ × 30′	...	...
Yelliyur	... ‡	585′ × 25′	...	...
French Rocks	... ‡	600′ × 25′	...	180′ × 20′
Seringapatam	... ‡	500′ × 30′	...	220′ × 15′
Paschimavahini	... ‡	615′ × 25′	...	235′ × 20′
Mysore	... ‡	600′ × 25′	...	460′ × 15′

* Eight feet of the width of platform is covered by the overhanging portion of roof of passenger buildings.

† Gubbi to Bangalore. The height of platforms is 3′ 6″.

‡ Bangalore to Mysore. The height of platforms is 2′ 2″.

STATIONS—*cont.*

Stations.	Water.							
	Wells.		Tanks.			Pumps.	Hydrants.	Water columns.
	Number.	Nature.	Size.	Capacity gallons.	Time to refill.			
Harihar ...	1′ 15″ dia.	Steined.	1=13′ 3″×13′ 3″× 4′ 6″.	5,000	6 hours.	1	...	2*
Davangeri ...	...	.....	...	...	...	...	...	...
Tholhousi ...	...	.....	...	...	...	...	...	...
Kodagnur ...	1′ 11″ dia.	Steined.	1=13′ 3″× 13′ 3″× 4′ 6″.	5,000	6 hours.	1	...	1
Mayakonda	...	.....	...	...	...	...	...	...
Sasalee ...	...	.....	...	...	...	...	...	...
Jajive ...	...	.....	...	...	...	...	...	...
Holalkeri ...	1′ 11″ dia.	Steined.	1=13′ 3″×13′ 3″× 4′ 6″.	5,000	6 hours.	1	...	1
Ramgeri ...	1′ 11″ dia. miles 1¼.	.....	1=13′3″×13′×3″× 4′ 6″.	5,000	do.	1	...	1
Bidarkeri ...	...	.....	...	...	...	...	...	...
Sivani ...	1′ 15″ dia.	Steined.	...	...	...	...	...	2*
Ajampur ...	...	...	...	...	...	...	...	...
Beeruru	1′ 11″ dia. Steined.	To be built ...	...	...	...	...	...	...
Kaduru	1¼ mile distant north.	Steined 12′ diameter	15′ × 15′ × 5′	5,000	6 hours.	1 steam.	...	1
Devanur ...	...	.....	...	...	...	...	...	...
Banavaru ...	...	.....	...	...	...	...	...	...
Arsikere ...	2	Steined 1 15′ diam. Steined 1 = 9′ diam.	30′ × 15′ × 5′	...	...	1 steam.	1	1
Konehalli ...	...	.....	...	...	...	...	...	...
Tipturu ...	1	Steined 11′ diameter 35′ deep.	16′ × 16′ × 4′ (4 iron together)	...	...	1	...	...
Kopalu or Kardi.	...	.....	...	...	...	...	...	...
Bansandra...	1	Steined 11′ diameter.	15′ × 15′ × 5′	5,000	6 hours.	1	...	1
Yelladbagi	...	.....	...	...	...	...	...	...
Nitturu ...	...	.....	...	...	...	...	...	...
Gubbi ...	1	Steined 10′ diam. 27′ deep.	10′ × 8′ × 3½′	1,730	4 hours.	...	...	...
Tumkur ...	1	Steined 10′ diam. 57′ deep.	10′ × 8′ × 3½′	1,730	Do.	...	...	...
Hirehalli ...	1	Steined 10′ diam. 34′ deep.	10′ × 8′ × 3½′	1,730	Do.	...	...	...
Nidvanda ...	1	Steined 10′ diam. 34½′ deep.	10′ × 8′ × 3½′	1,730	Do.	...	...	...
Dodbelli ...	1	Steined 10′ diam. 20′ deep.	10′ × 8′ × 3½′	1,730	Do.	...	...	...
Golhalli ...	1	Steined 10′ diam. 33′ deep.	10′ × 8′ × 3½′	1,730	Do.	...	...	...
Banavar ...	1	Steined 9′ diam. 21½′ deep.	10′ × 8′ × 3½′	1,730	Do.	...	...	...
Bangalore ...	...	Water pumped from well 9′ diam. 21½′ deep.	25′ × 10′ × 5′	7,790	6 hours.	1 steam.	...	...
Kengeri ...	1	Steined 10′ diam. 36′ deep.	10½′ × 8½′ × 3¾′	2,112	4 hours.	Twin buckets.	...	...
Bidadi ...	1	Steined 9½ diam. 20′ deep.	10′ × 8′ × 3½′	1,730	Do.		...	...
Closepet ...	...	.....	...	...	...		...	...
Chennapatna	1	Steined 9′ diam. 20′ deep.	10′ × 8′ × 3½′	1,730	4 hours.		...	...
Mudgire ...	...	.....	...	...	...		...	...
Maddur ...	2	Steined 18′ diam. 30′ deep 1=18 diam. 10′ diam.	15′ × 10′ × 3½′	2=3,255	7 hours.		...	...
Mandya ...	1	Steined 6½ diameter 25′ deep.	10′ × 8′ × 3½′	1,730	4 hours.		...	...
Yelliyur ...	...	.....	...	...	...		...	...
French Rocks.	...	.....	...	...	...		...	...
Seringapatam.	...	.....	...	...	...		...	...
Paschimavahini.	...	Water pumped from river.	10½′ × 9′ × 3½′	2,067	3 hours.	1	...	1
Mysore ...	1	6′ × 6′ × 100′.	15¾′ × 11′ × 3½′	3,790	6 hours.	1	...	...

* Sanctioned 2, of which 1 is not erected.

STATIONS—*cont.*

Stations.	Fuel.			Sidings.		Dead ends.	
	Stage.	Kind.	Where stored.	No.	Total length.	No.	Total length.
Harihar	3	Wood ...	In yard ...	7	7,400′	4	1,200′
Davangeri	...	...	...	4	3,800′	2	900′
Tholhousi	...	...	...	2	1,960′	2	1,100′
Kodagnur	...	...	...	2	1,960′	2	1,100′
Mayakonda	...	...	...	2	1,960′	2	1,100′
Sasalee	...	...	...	2	1,960′	2	1,100′
Jajive	...	...	...	2	1,960′	2	1,100′
Holalkeri	...	...	...	2	1,865′	2	1,100′
Ramgeri	...	...	...	2	1,960′	2	1,100′
Bidarkeri	...	...	...	2	1,960′	2	1,100′
Sivani	1	Wood ...	Yard ...	2	1,960′	2	950′
Ajampur	...	...	Do. ...	3	3,600′	3	1,300′
Beeruru	...	...	...	2	1,950′	2	670′
				These are to be increased and goods yard added.			
Kaduru	...	...	...	1	1,050′	2	1,150′
Devanur	...	...	...	1	1,050′	2	1,150′
Banavaru	...	...	...	1	1,050′	2	1,150′
Arsikere	1	Wood ...	Arsikere ...	8	6,850′	4	1,500′
				3 loco. sidings = 1,700′ and 3 dead end 900′—6 points.			
Konehalli	...	Wood ...	Konehalli...	1	1,050′	2	1,150′
Tipturu	...	...	...	1	800′	3	1,400′
Kopalu or Kardi ...	...	...	...	1	1,050′	2	1,150′
Bansandra	...	...	...	1	1,050′	2	1,150′
Yelladbagi	...	...	...	1	1,050′	2	1,150′
Nitturu	...	...	...	1	1,050′	2	1,150′
Gubbi	...	...	...	2	2,846′	1	219′
Tumkur	1	Wood ...	T. K. ...	2	3,143′	3	2,200′
Hirehalli	...	...	...	1	1,293′	1	200′
Nidvanda	...	...	...	1	1,440′	...	...
Dodbelli	...	...	...	1	1,657′	...	...
Golhalli	...	...	...	1	1,610′	...	...
Banavar	...	...	...	1	1,597′	...	...
Bangalore	1	Wood and coal.	Bangalore...	15 including loco. sidings.	16,764′	19 added loco. D. E.	6,408′
Kengeri	...	...	...	1	1,250′	...	...
Bidadi	1	Wood ...	Bidadi ...	2	1,860′	...	...
Closepet	2	Do. ...	Closepet ...	2	2,270′	1	420′
Chennapatna	...	...	...	2	2,150′	...	...
Mudgire	...	...	...	1	800′	...	...
Maddur	2	Wood ...	Maddur ...	2	2,610′	...	...
Mandya	...	...	...	2	2,020′	...	...
Yelliyur	...	...	...	1	980′	...	...
French Rocks ...	...	...	...	2	2,550′	...	...
Seringapatam ...	...	...	...	1	1,200′	1	310′
Paschimavahini ...	...	...	...	1	2,000′	2	580′
Mysore	1	Wood ...	Mysore ...	9	7,170′	8	1,360′

NOTE.—From Harihar to Gubbi all tanks, latrines, platforms and stations generally are of one type.

STATIONS—*cont.*

Stations.	Cross overs.	Turn outs.	Signals. Home.	Signals. Distant.	Weigh bridges.	Weighing machines.
Harihar	...	15	...	2	1	2
Davangeri	2	5	...	2	...	2
Tholhousi	1	2	...	2	...	1
Kodagnur	1	2	...	2	...	1
Mayakonda	1	2	...	2	...	1
Sasalee	1	2	...	2	...	1
Jajive	1	2	...	2	...	1
Holalkeri	1	2	...	2	...	1
Ramgeri	1	2	...	2	...	1
Bidarkeri	1	2	...	2	...	1
Sivani	1	2	...	2	1	2
Ajampur	1	5	...	2	1	2
Beeruru	1	5	...	2	...	1
Kaduru	1	2	...	2	...	1
Devanur	1	2	...	2	...	1
Banavaru	1	2	...	2	...	1
Arsikere	3	14	...	2	1	1
Konehalli	1	2	...	2	...	1
Tipturu	2	2	...	2	...	1
Kopalu or Kardi ...	1	2	...	2	...	1
Bansandra	1	2	...	2	...	1
Yelladbagi	1	2	...	2	...	1
Nitturu	1	2	...	2	...	1
Gubbi	1	3	...	2	...	1
Tumkur	1	9	...	2	...	1
Hirehalli	1	1	...	2	...	1
Nidvanda	...	2	...	2	...	1
Dodbelli	...	2	...	2	...	1
Golhalli	...	2	...	2	...	1
Banavar	...	2	...	2	...	1
Bangalore	5	31	1	2	1	1
Kengeri	...	2	...	2	...	1
Bidadi	...	4	...	2	...	1
Closepet	...	5	...	2	...	1
Chennapatna	...	4	...	2	...	1
Mudgire	...	2	...	2	...	1
Maddur	1	2	...	2	...	1
Mandya	...	4	...	2	...	1
Yelliyur	...	2	1	2	...	1
French Rocks ...	...	4	...	1	...	1
Seringapatam ...	...	3	...	2	...	1
Paschimavahini ...	1	2	...	2	...	1
Mysore	2	13	1	1	1	1

NOTE.—From Harihar to Gubbi all tanks, latrines, platforms and stations generally are of one type.

STATIONS—*cont.*

Stations.	Mechanical lifting power.	Turn-tables.	Ash-pits.	Carriage examination pits.	Station yard. Area.	Points and crossings, total number.
					ACRES. R. P.	
Harihar	...	1	Sanctioned 2, but built 1, and the other will be built after further orders.	...	38 2 31	16
Davangeri ...	...	...	...	...	22 2 0	9
Tholhousi ...	...	...	...	...	18 2 11	4
Kodagnur ...	...	...	1	...	18 2 11	4
Mayakonda ...	...	...	...	...	18 2 11	4
Sasalee	...	...	...	...	18 2 11	4
Jajive	...	...	...	...	18 2 11	4
Holalkeri ...	...	...	1	...	18 2 11	4
Ramgeri	...	...	...	...	18 2 11	4
Bidarkeri ...	...	...	...	...	18 2 11	4
Sivani	...	1	Sanctioned 2, built 1, and at Harihar.	...	18 2 11	4
Ajampur ...	...	...	...	...	18 2 11	9
Beeruru	...	...	...	...	2,800′ × 350′	7
Kaduru	...	...	1	...	2,300′ × 350′	4
Devanur	...	...	...	...	2,300′ × 350′	4
Banavaru ...	...	...	...	...	1,800′ × 350′	4
Arsikere	...	1	2	1	3,550′ × 1,200′	20
Konehalli ...	...	...	...	...	2,200′ × 350′	4
Tipturu	...	...	...	...	2,800′ × 350′	6
Kopalu or Kardi.	...	...	...	...	2,300′ × 350′	4
Bansandra ...	...	...	1	...	2,300′ × 350′	4
Yelladbagi ...	...	...	...	...	2,300′ × 350′	4
Nitturu	...	...	...	...	2,300′ × 350′	4
Gubbi	...	1	1	...	2,000′ × 200′	5
Tumkur* ...	1	Traingle.	1	...	2,400′ × 200′	11
Hirehalli ...	...	...	...	...	1,800′ × 200′	3
Nidvanda ...	...	...	1	...	1,600′ × 200′	2
Dodbelli ...	...	...	...	...	1,700′ × 200′	2
Golhalli ...	...	...	1	...	1,800′ × 200′	2
Banavar ...	...	...	...	...	1,800′ × 200′	2
Bangalore† ...	35-ton cranes.	1	5	7	3,800′ × 1,500′ Including Madras Railways.	41
Kengeri ...	...	...	...	...	1,700′ × 200′	2
Bidadi	...	...	1	...	2,000′ × 240′	4
Closepet ...	...	...	...	...	1,700′ × 200′	5
Chennapatna ...	...	...	1	...	1,700′ × 200′	4
Mudgire ...	...	...	...	...	1,150′ × 250′	2
Maddur ...	...	...	2	...	2,000′ × 450′	4
Mandya	...	...	...	...	1,400′ × 250′	4
Yelliyur ...	...	...	...	...	1,400′ × 250′	2
French Rocks ...	...	...	...	...	2,000′ × 300′	4
Seringapatam ...	...	...	...	...	1,500′ × 150′	3
Paschimavahini...	1	...	1	...	1,050′ × 350′	4
Mysore	1	1	2	...	1,270′ × 1,050′	17

REMARKS.—Two-and-a-half miles from Harihar station are the old cantonment lines. A good defensive position for both the station and the Tungabhadra bridge would be formed by the dâk bungalow situated on a rise less than half a mile from each. Water is plentiful from the river. The brick arch bridge carrying Poona-Harihar main road is close alongside (about 400 yards) railway bridge over Tungabhadra. It consists of 14 eliptical arches of 60′ space.

* TUMKUR—A good bazaar and large tank near fort. Head-quarters of district.

† ROLLING STOCK.—

	No.
Locomotive engines	24
Coaching stock	109
Goods stock	232

The telegraph posts are galvanised tubular 22 to mile and carry four wires.

Wood fuel comes from the Mysore forests.

NOTE.—From Harihar to Gubbi all tanks, latrines, platforms andstations generally are of one type.

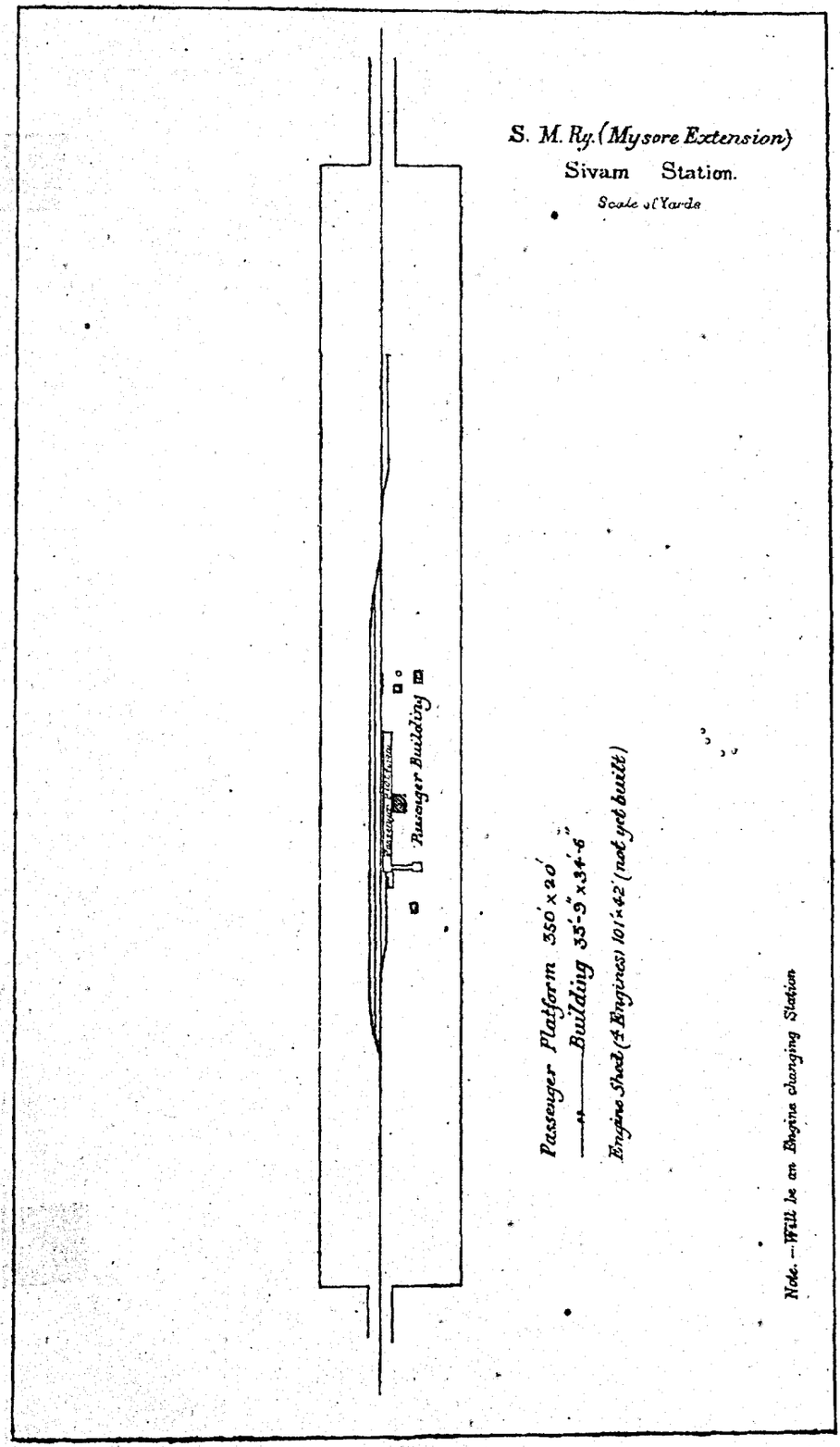


Photo-Zincographed in Central Survey Office, Madras.

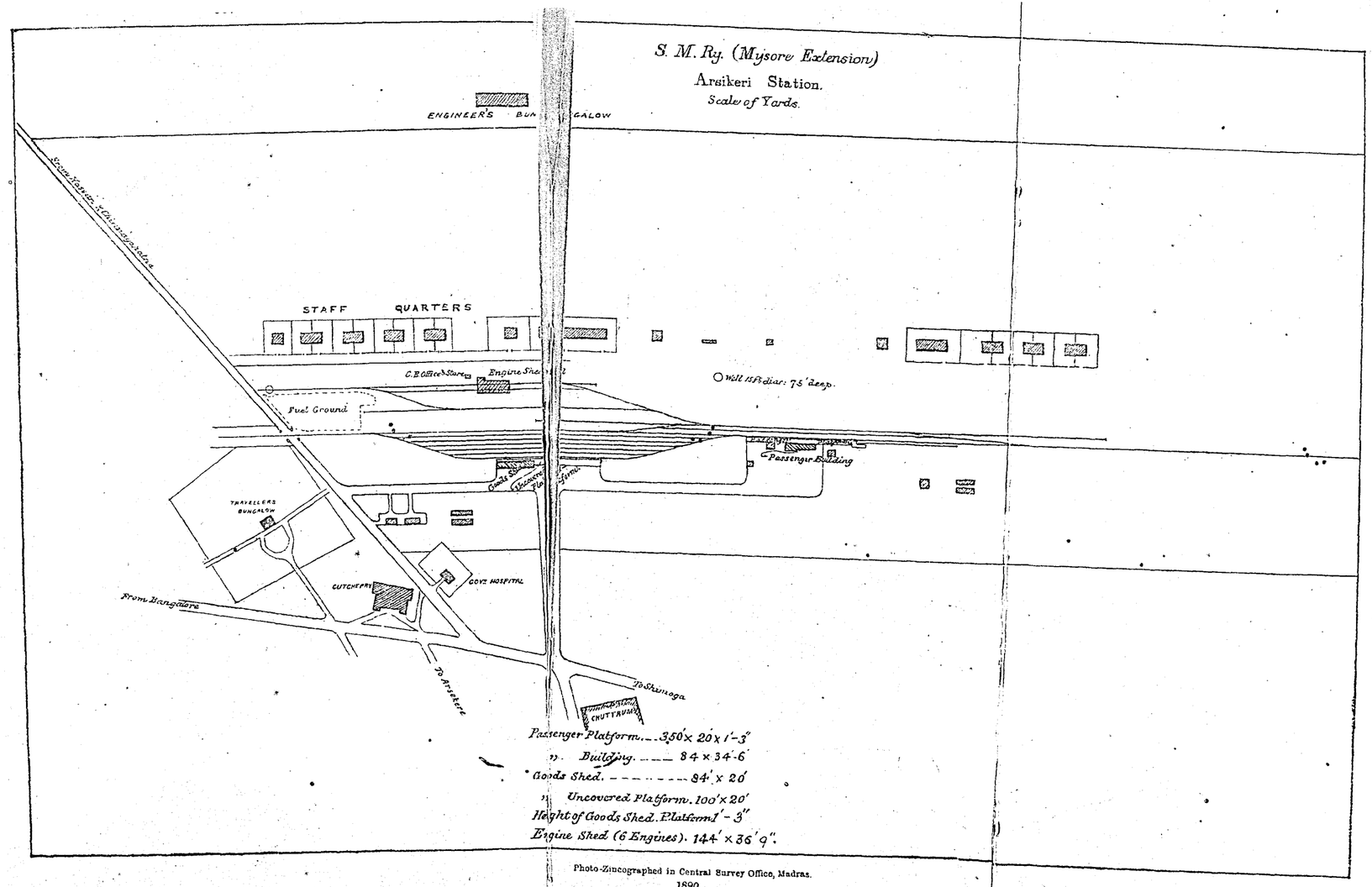
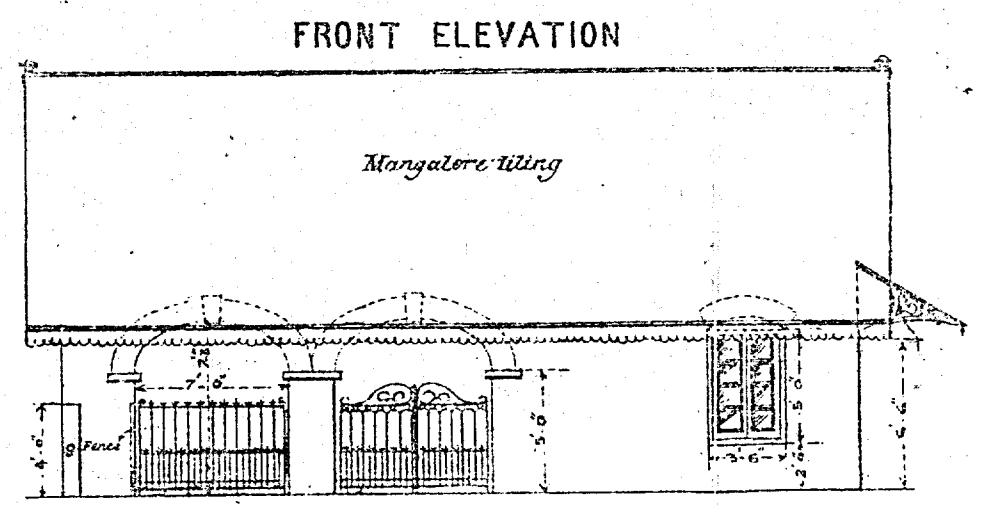
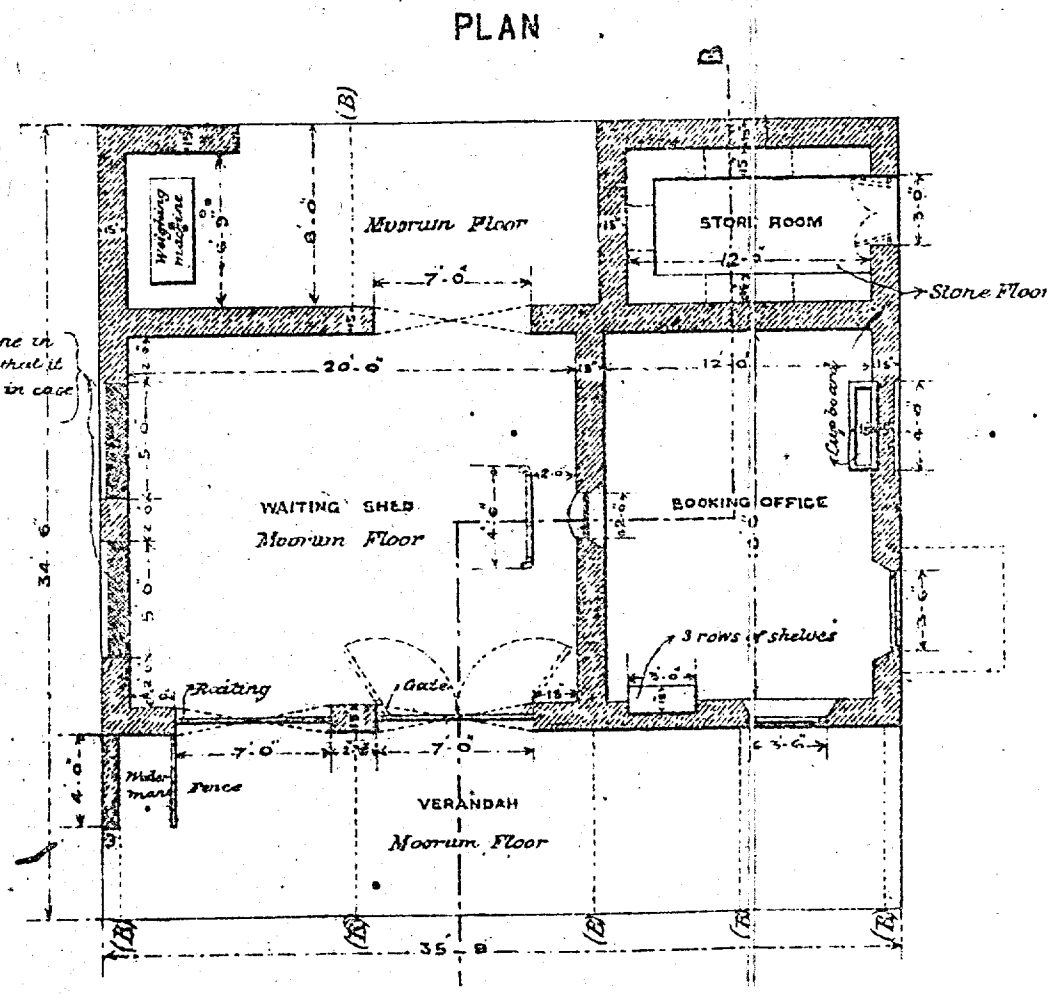


Photo-Zincographed in Central Survey Office, Madras.
1890

Type for all Stations between Harihar and Gubbi, Except Arsikere, Beeruru and Tiptur which are in accordance with "Extension X."





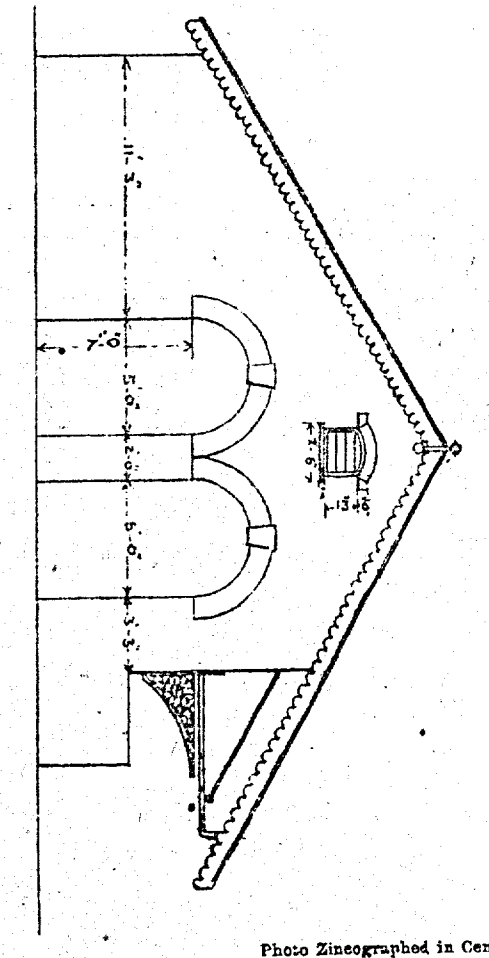


Photo Zincographed in Central Survey Office Madras.
1890

HARIHAR TO MYSORE.

The Country.

On crossing the Tungabhadra river at Harihar, the Southern Maharatta Railway leaves the Dharwar district of the Bombay Presidency and enters the State of Mysore, through which the remainder of its course south runs.

This Native State is an undulating table-land broken by rocky hills and deep ravines and dotted over with numerous tanks and isolated "droogs" or rocks, which latter rise to an immense height, and, from the fact of a plentiful supply of water being found at their summits, are generally crowned with an old fort. The country is divided into two parts, that on the west adjacent to the Western Ghâts being composed of hill and forest and known as the "Malnád"; and the remaining, or greater portion of the State, comprising widespreading valleys and plains covered with villages and towns, known as the "maidan."

As regards the greater portion, or "maidan," cotton and millets are grown in the alluvial black soil of the north; sugar-cane and rice, with cocoanut and areca palms, in the south and west (which is irrigated by channels drawn from the rivers and tanks); ragi and dry crops in the high lying red soil of the east; whilst stony pasture land exists in the centre. The whole country is covered with a perfect network of tanks, of which there are over 37,600, the largest called Sulekere, being 40 miles in circumference. Harihar, 1,830 feet above sea level, may be said to be the lowest point of the Mysore table-land which attains an attitude of 3,000 feet at the central watershed separating the Kistna and Cauvery. The line at first passes through the western side of the Chitaldroog district which consists chiefly of the arid stony valley of the Vedavati or Hugari, a tributary of the Tungabhadra. A broad belt of parallel hills, mostly bare and rocky, runs across from south-east to north-west, the western parallel of which commences near Hosdurga (3,280 feet) and passes by Mayakonda, the fourth station from Harihar to Anaji. The remainder of the district is an open plain about 2,000 feet high with very few trees but much excellent pasture. In the Davangere taluk, except for the low range of hills running east of Mayakonda and Anaji, the country is an open level plain sloping down to Harihar and the Tungabhadra, with black soil in the west and gravelly soil in the east, Davangere itself being a large cotton mart and trade centre. South of the Davangere taluk, about Holakere and Ramagiri in the Hosdurga taluk, the line passes west of the range of hills running north from Hosdurga over a comparatively flat country with long stretches of good grazing, the soil being chiefly red, except round Ramagiri where it is a good black. Further south, between Bidarkere and Banavar, the Kadur district is entered. This district contains the most mountainous region, or "Malnád," of Mysore, the magnificent Baba Budan chain, the highest point of which rises to 6,317 feet, lying in

the centre of the district about 15 miles west of Beeruru and Kodur and the line of rail. On the east of the district, or that part through which the railway runs, though some low ranges of hills occur, the country is generally maidan or plain land. Round Ajjampura and eastward black cotton soil prevails growing wheat, cotton, chenna, millet, &c. At Banavar and Kadur the elevation is 2,563 feet and 2,553 feet, respectively, a marked transition from the western side of the line. All this eastern portion of the Kadur district is watered by the Avati and Veda which unite near Kadur (on the line) and form the Vedavati. Between Beeruru and Kadur it is almost all grazing ground, being a Government "caval" for the cattle-breeding establishment, or "Amrat Mahal."

Round Arsikere, where the line passes through the Haruhalli taluk of the Hassan district for about 7 miles, it is hilly and jungly. The Hirekal-Gudda hills lie just north of the town, whilst to the south and west low stony hills and jungle exist. A mile west of Arsikere is another large Government "caval." About 5 miles east, close to Kovehalli, the Tumkur district is entered. All along between Beeruru and Gubbi the country is very undulating, chiefly scrub jungle and dry cultivation. Between Kovehalli and Tiptur there is another large Government "caval." Large tanks abound, every low-lying piece of ground being bunded up, and round these tanks wet cultivation is generally found. From Kovehalli to Hirehalli the line runs through almost the centre of the Tumkur district, the greater portion of which consists of elevated land, broken by river valleys, being part of the general plateau of Mysore. North-east of Tumkur, by Kortagere and Madgiri, a range of hills, rising to about 4,000 feet, run north and south, constituting an important watershed dividing the river system of the Kistna from that of the Cauvery. This range is part of that running through Magadi, Closepet and Kankanhalli taluks in the Bangalore district. On the west of Tumkur town and sub-division, a low range of hills, commencing at Kibbanhalli, runs north-west past Chiknayakanhalli and connects with the central belt of the Chitaldroog district. The watershed separating the river system of the Krishna in the north from that of the Cauvery in the south may be defined by a line drawn east and west from Kortagere to Tiptur. all about Tumkur sub-division the country is plentifully dotted with trees, and large plantations of cocoanuts occur in other parts. A fertile tract, irrigated from perennial springs, lies north-east of Tumkur town towards Madgiri. The rock in this district is generally gneiss, but about Sira it becomes stratified, being chiefly ferruginous slate clay covered with magnetic ironstone. The Bangalore district, which is entered close to Hirehalli, or about 9 miles south-east of Tumkur town, covers an area of 2,914 square miles and consists mainly of the valley of the Arkavati river running north and south. The eastern side is watered by the south Pinákini river, and on the west the country is broken and rugged, with a succession of hills and valleys, intersected by rocky and sandy streams. A line drawn from Nundydroog, south to Anekal, passing west of Bangalore, would run along the highest part of the ridge of land which separates the Arkavati valley from that of the south Pinakini. The elevation of this rising ground is at Bangalore, one of the highest parts of the Mysore table-land, 3,050 feet above sea-level.

Parallel with this watershed is a broken chain of rocky hills extending from the west of Nelamangala through Magadi, Closepet, and Kankanhalli taluks, occasionally rising into lofty peaks, such as Shivaganga and Sávandurga. The central, northern and eastern portions of the district are open and undulating. The low-lying grounds are occupied with series of tanks, varying in size from small ponds to considerable lakes. The upland tracks are often bare or covered with low scrub jungle. The prevailing formation is gneiss rock, which is excellent building material, and the prevailing soil is "kempu," a loam of great fertility.

The demand for fuel for the railway has created many large plantations, and the State forests cover an area of 32 square miles. From Bangalore to Madagere the line continues in the Bangalore district, after which it passes into the Mysore district. From Madagere to Mysore the principal physical feature is the sacred Cauvery river flowing from west to east past historical Seringapatam, and receiving from the north the tributaries Hemavati, Lokapavani and Shimsha, and from the south the Lakshmantirtha, Kabbani and Houna Hole. Between the Cauvery and Shimsha the country is high-lying and undulating and consists chiefly of dry cultivation, all the waters flowing by the Malvalli drain into the Shimsha. Close to the railway the following is a brief summary of the nature of the country:—Bangalore to Bidadi, undulating and stony; Bidadi to Chennapatna, very rocky and well wooded; Chennapatna to Madagere increased cultivation and numerous cocoanut topes; Madgiri to Maddur very undulating; Maddur to Yeleyur cultivation decreases and the country becomes barren and stony, though a few topes of mango and cocoanut are seen.

Yeleyur to French Rocks and on to Seringapatam, rice and sugarcane, cocoanuts and plantains are highly cultivated, after which the country becomes somewhat stony and barren though still under cultivation, which is chiefly of a dry nature throughout.

Rivers.

Three large rivers cross the railway and main road between Bangalore and Mysore, viz.:—

The Arkavati flowing north and south through the Bangalore district into the Cauvery, cutting the line and road at Closepet where it is bridged; the Shimsha also flowing north and south through Tumkur and Mysore districts into the Cauvery, cutting the line and road at Maddur where it is bridged.

The Cauvery flowing south-east through Coorg, Mysore and eastward into the Bay of Bengal, cutting the line and road at Seringapatam where it is bridged.

Arkavati River.

The Arkavati river, which is crossed by the line of rail about 10 miles north-west of Bangalore, near Golhalli, is a tributary of the Cauvery. It rises to the west of Nundydroog and flows south for 120 miles. It passes the Bellapur, Nelamangala, Magadi, Closepet and Kankanhalli taluks. Between Dodballapur and Nelamangala it forms three large tanks, east of Magadi town it receives the Kumadvati stream, just north of Closepet it runs between Ramgiri and Shivangiri peaks, and at Maduvadi is joined by the Vrishabhávati from the north. From Magadi south its course is through a wild and rocky country, precipices and thick jungle. In the hot season its sandy bed contains only a trickling stream, but in the rains it becomes greatly swollen and is a formidable stream. It is bridged at 5 miles, Nelamangala on the Bangalore-Tumkur road, on the Bangalore-Magadi road 10 miles east of the latter place, and at Closepet.

The Cauvery River.

The Cauvery, one of the great rivers of Southern India, famous for its sanctity, rises on the Brahmagiri, a hill in Coorg, high up in the Western Ghâts, and flows with a generally south-east direction across the Mysore plateau, eventually emptying into the Bay of Bengal through two principal mouths forming a rich delta over the Tanjore district, after a total course of 475 miles. Through Coorg it is tortuous with a rocky bed and high banks covered with luxurious vegetation, and is fordable almost anywhere during the dry season, though in the rains it swells to a torrent 30 feet deep.

In this portion of its course it is joined by the tributaries—the Kakabe, Kadanur, Kummahole, Muttaremutta, Chikkahole and Haringi.

At Fraserpet it is spanned by a fine bridge of stone 516 feet in length.

On entering Mysore, the Cauvery passes through a narrow gorge suffering a fall of 60 to 80 feet in the rapids at Chunchankatte, but presently widens to an average breadth of 300 to 400 yards. Its bed continues rocky and prevents all navigation, and its banks are bordered

with a rich strip of wet cultivation. Its course through Mysore is interrupted by 12 anicuts or dams, the most important of these being the Madadkatte, from which an artificial channel, 72 miles long runs, irrigating 10,000 acres and ultimately bringing a water-supply into Mysore town. In this portion of its course it forms the two islands of Seringapatam and Sivasamudram. The branches of the stream which enclose the latter island from the celebrated falls of the Cauvery, 200 to 300 feet in height. The reunited stream passes thence eastwards along a bed 300 feet lower, through a wild gorge, receives the Shimsha and Arkavati and running southwards forms the boundary between the Coimbatore and Salem districts, until it strikes the Trichinopoly district. During this portion it receives the Bhaváni and other streams. Flowing past the rock of Trichinopoly it forms the island of Srirangam and then spreads in a rich delta over the Tanjore district, the principal arm known as the Coleroon, flowing north-east into the Bay of Bengal at Devakóta. During its passage through Mysore it receives the tributaries Hemavati, Lakshmantirtha, Lokapavani, Shimsha, Arkavati, Honnuhole, and in Madras district the tributaries Bhaváni, Nóyil and Amarávati. At Erode it is crossed by the main line of the Madras Railway by an iron-girder bridge 1,536 feet long of 72 spans. Its ordinary monsoon discharge, calculated at 4 feet in depth, is 18,000 cubic feet per second. The first fresh generally occurs about the middle of June, in August the water begins to decrease, and about the end of October the river is fordable. It is also bridged at Seringapatam and Savasamudram by good structure of native work.

The Shimsha.

The Shimsha, a tributary of the Cauvery, rises to the south of Devaraydurga in Tumkur district, and after flowing southwards enters Mysore north-east of Mandya taluk. Pursuing a south-east course, it passes through Malvalli taluk and falls into the Cauvery, a few miles below the falls at Sivasamudram. It is spanned at Maddur on the Bangalore-Mysore road by a fine brick bridge of seven arches.

ROADS.

The main and direct route from Harihar to Bangalore and Mysore lies along the trunk road passing through Chitaldroog, Hiriyur and Sira. This is merely a continuation of the celebrated Poona-Harihar road, which might be more aptly termed the Poona-Bangalore road as the communication between these two places is practically a straight line along a broad and excellent highway. The distance from Harihar to Bangalore is much less by this road than by the line of rail which circles round to the westward, and between Ajjampura and Arsikere follows the line of the Mysore-Shimoga main road which passes through Kadur. These two roads—the "Harihar-Bangalore" (or "Poona-Bangalore") and the "Mysore-Shimoga" run more or less parallel to each other at a distance of about 50 miles apart, and are connected by several good cross roads, the principal one being that running from Arsikere to Tumkur, *viâ* Tiptur and Gubbi, which is alongside this section of line the whole way between the two places. All these roads are metalled and bridged throughout. A very fair road also connects these two main routes between Beeruru and Sira passing through Budihal, Hosdurga and Ajjampura. From Harihar a murumed road runs *viâ* Channagiri to Shimoga, so that troops and stores could move in parallel lines along two excellent routes throughout the whole course of this section of railway. Between Tumkur and Bangalore the main road follows the rail crossing and re-crossing it several times, and between Golhalli and Dodbelli only is at any distance from it (about 4 miles). The Arkavati river is crossed 5 miles south of Nelamangala by a good bridge of 5 arches and is the only water-way of any size that occurs between Tumkur and Bangalore.

At Hiriyur about half way between Hariha and Bangalore, an excellent metalled road joins the "Harihar-Bangalore" road from Bellary. This is a continuation of the Bellary-Kurnool trunk route which leads to Secunderabad.

Lateral Communications.

In addition to the foregoing from Bangalore itself good roads radiate in all directions, the principal ones being—

(a) *Westwards.*—The Bangalore-Mangalore trunk road of 221 miles passing through Kunigal and Hassan. This road is metalled and bridged throughout and practicable at all seasons. The Mangarabad ghât, about 150 miles from Bangalore, has a mean gradient of 1 in 19. Water-supplies and camping ground all long. A short length of 28 miles of excellent road runs from Nelamangala, 16 miles north on the Bangalore-Tumkur road, into the Bangalore-Mangalore road at Kunigal.

(b) *East.*—The Bangalore-Madras road of 214 miles *viâ* Vániyambádi, Vellore and Ranipet. This is the direct route to Madras and is metalled and bridged throughout. It passes the two military stations of Vellore and Poonamallee (sanitarium). Two other roads connect Bangalore and Ranipet, of which the one passing through Kolar is the best. From Vániyambádi to Ranipet the road runs alongside of the Madras Railway.

(c) *North-east.*—The Bangalore-Pennkonda road of 87 miles 3 furlongs, a portion of the main and best route between Banglore and Secunderábad. It is metalled and bridged all the way to Penukonda and is practicable at all times.

(d) The Seringapatam-Banava road, running north and south, connects the Bangalore-Mysore, Bangalore-Mangalore, and Bangalore-Shimoga roads. This road cuts the Bangalore-Mangalore route at Channaraypatna and is metalled and bridged throughout.

(e) From Vániyambádi some distance east of Bangalore, on the Bangalore-Madras road, an excellent road metalled and bridged leads south to Salem and Erode.

Bangalore-Mysore.

The main route from Bangalore to Mysore runs *viâ* Closepet, Maddur, Mandya and Seringapatam. It is an excellent road of 89 miles, metalled and bridged throughout, with abundant water-supply and good camping grounds.

It runs contiguous to the railway, in one place only being about 2 miles distant. From Seringapatam it continues on south-west to Cannanore and due south *viâ* Mysore to Gundlupet, both roads being metalled and bridged. From Yelwal, 12 miles from Seringapatam on the road to Cannanore, a good road of 9 miles 3 furlongs runs south-east into Mysore. More or less parallel with the main road from Bangalore to Mysore *viâ* Closepet and Maddur, another route between these two places runs *viâ* Kankanhalli and Malvalli. This road at 90 miles 6 furlongs is metalled and partially bridged and practicable at all seasons, for ferries ply across the unbridged streams. The Arkavati, Shimsha and Cauvery rivers cut this road and the country is hilly but fairly cultivated, and supplies and water are plentiful.

(a) From the main road, the Malvalli-Tumkur runs north and south passing through Kunigal and Maddur, at which latter place it cuts both the line of rail and the Bangalore-Mysore road. This is a most useful road as connecting the Bangalore-Harihar, Tumkur-Honavar, Bangalore-Mangalore, Bangalore-Cannanore and Bangalore-Mysore roads. It is a good made road metalled and bridged throughout.

(b) Parallel with the Malvalli-Tumkur road is one running from Seringapatam to Arsikere just south of Kodur on the Tumkur-Honavar route.

The Seringapatam-Arsikere or "Mysore-Shimoga" road starts from the former place, cuts the Bangalore-Mangalore road at Channaraypatna and joins the Tumkur-Honavar road at Arsikere. This is a good road metalled and bridged throughout.

(c) The Seringapatam-Cannanore road *viâ* Yelwall, Hunsur and the Periyambadi ghât, the best and most direct route between the two places. It is metalled and bridged throughout. The Periyambadi ghât is well made, is 8½ miles in length, and has a gradient of 1 in 18 (average). At 32 miles the Government cattle and horse farm of Hunsur is passed, and at Atúr, 52 miles distant, the descent of the ghât is commenced. At Panchalli, 42 miles from Seringapatam, the road to Mercara in Coorg branches off and runs into the Seringapatam-Cannanore road again at Vatkoli (73 miles). From Mercara there is a good route to Mangalore.

Total distance of this road 118 miles 4 furlongs.

Another route to Cannanore runs *viâ* Manantoddy and the Peria Pass, but it is both longer and, although mostly metalled and bridged throughout, more difficult.

(d) The Mysore-Ootacamund road of 69 miles *viâ* the Ségúr Pass. As far as Gundlupet this road is both metalled and bridged, after which it is somewhat rough in places, though bridged and muramed, as the country becomes hilly and jungly. At Ségúr the ascent of the Nílgiris commences, the Ségúr ghât being 6 miles 5 furlongs in length with an average gradient of 1 in 12. The bridges are of timber. Twenty-five miles of this road is through jungle in which game abounds. There is an old road up the ghât from Gúdalúr which is somewhat shorter, but it is not fit for wheeled traffic. On the whole this is an excellent road and passable at all times. From Mysore a good road runs to Satyamangalam and Erode.

From Ootacamund the Bangalore-Mysore route continues on to Coimbatore, Madura and the extreme south.

The state of Mysore may be said to be unusually well provided with excellent road communication, and it is rarely that any difficulty presents itself in getting from any one point to another, even for heavily-laden carts. Most of the roads are shaded by avenues of fine trees. Camping ground can always be found close by, and water and supplies are generally obtainable.

The "Bangalore-Harihar" and "Mysore-Shimoga" are the two main routes, running parallel to the Western Coast. These are connected in the north by the Harihar-Shimoga, and in the south by the Bangalore-Mysore roads, the whole forming a parallelogram.

MILITARY POSTS.

Bangalore.—The head-quarters of the Bangalore brigade and a second-class Ordnance Ammunition Depôt.

Garrison—

British.

1 Battery R.H.A.	1 Regiment Infantry.
2 Batteries R.A.	1 Company R.E.
1 Regiment Cavalry.	

Native.

5 Companies S. and M.	8 Regiments Infantry.
1 Depôt Cavalry.	1 Depôt Infantry.

Cannanore.—Southern District Madras Army.

Garrison—

British.	*Native.*
1 Company Infantry.	1 Regiment Infantry.

Mangalore, Belgaum District.—Distant, by road, 221 miles from Bangalore, with a garrison of one regiment of Native Infantry.

Wellington, South District.—The head-quarters of the Southern District, distant 10½ miles from Ootacamund, 167 miles 3 furlongs south of Mysore by road, with a garrison of 4½ companies Infantry (British) and a Convalescent Depôt for all arms.

At *Calicut*, 135 miles from Mysore, there is a company of British Infantry and a company and a half at Malapuram about 20 miles south.

This section of line is connected with—

Madras, arsenal, magazine, and seaport, distant 219 miles (by the Madras Railway).

Bellary, arsenal and magazine, distant 420 miles (by Southern Mahratta Railway).

Belgaum, garrison, 398½ miles distant (by Southern Mahratta Railway).

Poona, garrison, 643 miles distant (by Southern Mahratta Railway).

tables, &c., 77,076; cocoanut trees 33,194; areca palms 565, fruit trees the remainder.

The soil is chiefly argillaceous, but contains also light sand and decayed vegetable matter. In many parts it is full of stone and gravel.

The staple produce is rice, of which there are two harvests, one in winter and one in summer, the latter raised by artificial irrigation. Next to rice the cocoanut is most important, the trees growing in luxuriant groves on all lands not hilly or used for rice, and along the sea coast.

The principal exports are cocoanuts, betel-nuts, mangoes, water-melons, jack and other fruits, cinnamon, pepper, salt-fish, gum, coir-work, firewood, fowls and salt, but the value of the imports far exceed that of the exports.

The chief towns in the territory of Goa are Nova Goa or Panjim with 1,185 houses and a population of 8,440; Margao, 2,522 houses and a population of 11,794; and Mapuça, 2,285 houses, population 10,286.

Goa city comprises Old Goa and New Goa, including Panjim and Ribandar. Old Goa, formerly the capital of the Portuguese empire in Asia, a city famous for its wealth, splendour and magnificence, is now only half a dozen churches and heap of ruins, with a miserable population of 1,882. Nova Goa, the present capital, comprehends Panjim, Ribandar, as well as Old Goa, and is 6 miles in extent. It is situated on the left bank of the Mandávi river, 3 miles from its mouth. Ribandar is connected with Panjim by a causeway, 300 yards long, through which lies the main road leading to Old Goa.

It is, however, to its *harbour* that Goa owes its present importance in a military sense.

The Main Road.

The direct road to Goa over the Tinai Ghât passes Molay, Oodray,* and Ponda, crosses the river forming the island of Goa and connecting the Mandâvi and Juari, and runs through Old Goa, Ribandar and Panjim or New Goa, terminating at Cabo point about 3 miles beyond. It is a made road all the way, the first port being down the Tinai Ghât, the descent of which is easy. It crosses many nâlâs and between Molay and Oodray, the Condeapur river (about 30 yards wide with high banks and a stony bed) by a good ford. The country all along is hilly and jungly. As far as Ponda the road runs in a west direction, after which it takes a turn to the north-west and continues due west across the island of Goa. It is north of the line of railway all the way at some distance from it, the nearest point after separating at Tinai being Kalai, about 4½ miles south. Water is abundant all along the route and there is nothing to impede the passage of troops.

* Or Curdray.

Lateral Communications.

In the territory of Goa there are thirty-one roads in fair order, but many more are now under construction. They run in all directions and connect the districts of Ilhas, Salsette, Bárdez, Peruem, Sanquelim, Ponda, Sangueem, Quepem and Canacova into which the Portuguese Settlement is divided. The best roads are (*a*) that running northwards from Verem, opposite Panjim, through Pilerue, Saligao, Assovora and Sankarwalle, where it meets the one constructed in British territory; (*b*) that running southward past Margaon, Sangueem and over the Diggi Ghât into Kanara, but lateral communication is open to any point.

MILITARY POSTS—PORTUGUESE.

There is a Portuguese battalion, consisting of 313 men of all ranks, quartered at Goa, and a force of 919 police.

Belgaum is the nearest British garrison.

WEST OF INDIA PORTUGUESE RAILWAY.

BRITISH FRONTIER TO GOA.

The Line generally and permanent way.

THE West of India Portuguese Railway, though not in British territory, is so closely allied with the Southern Mahratta line, which it connects with the Portuguese port of Murmagao, that it may almost be said to be a portion of its system.

It was constructed and is worked by a Company under a guarantee of interest given by the Portuguese Government, which is also carrying out extensive works at the harbour of Murmagao.

The line is 51 miles in length and is almost entirely dependent for its traffic on the Southern Mahratta Railway.

From the British frontier as far as Collem, 13 miles, the line is constructed for a double line of rails and has an almost continuous gradient of 1 in 40. The remaining 38 miles, on which the ruling gradient is 1 in 1,000, are constructed for a single line as regards the earthwork and iron superstructure, but for a double line as regards all bridges and culverts. As the country over the Braganza ghât is very difficult there are many sharp curves, particularly at the Sonal valley between mile 43 and 46 from Murmagao, and numerous tunnels. From Margao station, mile 17 from Goa, the line takes a sharp bend to the right and runs up to Murmagao harbour and bay just inside the Murmagao headland. On the ghâts there are twelve tunnels, eight of which are through solid rock.

The cuttings have nearly all perpendicular sides, being mostly laterite stone, and the banks on the ghât section being in many instances very high and not yet consolidated require constant attention.

Owing to the many steep grades, high banks, deep cuttings and numerous tunnels, this 51 miles of railway is a most expensive line to maintain, and, as the monsoon in this district is unusually heavy, requires constant supervision and repair.

The scenery on the Braganza ghât is very fine, and the line passes immediately below the celebrated Dadh Sagar falls, crossing the stream by viaduct No. 11. The permanent way is of the 62-lb. State railway type throughout with ten sleepers to the rail. The ghât section is 16 miles in length. Special rules for working it are in force, the loads being limited to 13 loaded vehicles for one engine and 24 for two, and the speed of any train to 12 miles an hour and day-light running. The locomotives are of one type, weighing 43½ tons when loaded.

The harbour of Goa is a fine one, formed by the promontories of Bárdez and Salsette. The "Cabo" of the island of Goa projects half-way between these extremities, dividing the harbour into two anchorages, known as Alguada and Murmagao. Both are capable of accommodating safely the largest shipping from September to May.

During the south-west monsoon, owing to the high winds and sea and the formation of sandbanks in the estuary of the Mandavi at that period, Alguada is virtually closed to shipping and navigation, but Murmagao is accessible at all times, and it is to this latter that the West of India Portuguese Railway in connection with the Southern Mahratta Railway runs, terminating at the Murmagao headland, where extensive harbour works are under construction and where large steamers can now lie alongside the quay. The harbour works are protected by a breakwater built of large concrete blocks, which has been carried out to a distance of 1,100 feet, affording very fair anchorage for shipping behind it. When funds are available it is intended to extend this breakwater to 1,800 feet, and it would be also advisable to increase its present proportions throughout as they appear inadequate to resist the heavy seas which dash against and over it. Just inside the Murmagao headland at the terminus of the railway, the hill has been scarped away and a broad level surface formed, on which is the harbour station, a long-covered storehouse, several sidings, two 25-ton overhead traversing cranes, two 5-ton ordinary cranes, and two or three bungalows. On the headland itself, which commands a fine view all round, there is a signal station, an excellent dâk bungalow, the Chief Engineer's bungalow, and two or three smaller houses. The old fort, which is about three-quarters of a mile from the Point, is now used as offices. The railway and harbour works are practically entirely in the hands of the British, nearly all the officials, commerce, capital, shipping, &c., being English. At Panjim there is a telegraph office maintained jointly by the British and Portuguese Governments.

The general aspect of the Portuguese settlement is that of poverty and decay, the only spot where enterprise and life appear to be existent being at Murmagao.

I.—Gradients.

				Miles.
Above 1 in	30 to 1 in	50	inclusive ...	9·48
Do. 1 „	50 „ 1 „	80	„	0·55
Do. 1 „	80 „ 1 „	100	„	11·16
Do. 1 „	100 „ 1 „	150	„	3·26
Do. 1 „	150 „ 1 „	300	„	3·17
Do. 1 „	300 „ 1 „	1,000	„	3 20
Do. 1 „	1,000 ...	...	... ...	1·91
Level	... ...	...	... ...	18·31

Curves.

	No.	Length. Miles.
Above 600 feet to 1,000 feet ...	44	6·70
Do. 1,000 „	58	13·29
Straight	103	31·05

II.—Tunnels.

	Lineal feet.
No. I	498
„ II	412½
„ III	455

	Lineal feet.
No. IV	320
„ V	660½
„ VI	352
„ VII	271¼
„ VIII	527
„ IX	175
„ X	842
„ XI	527
„ XII	428
Covered way, mile 44	168
Do. do. Up-face tunnel VII ...	300

III.—Sleepers.

Creosoted pinewood below ghâts and peak and sâl mixed on ghâts, laid transversely 2,220 to mile.

IV.—Ballast.

Mile 1 to 17. Broken laterite stone.
„ 17 „ 41. 15½ miles broken latrite.
6¼ do. broken blue and white stone.
2¼ do. gravel.
„ 41 „ 51. Blue trap and granite mixed.

V.—Bridges (Major).

(1) Overbridge,—mile 2, span 60 feet, rise 16 feet, width 30 feet. This bridge is built entirely of cement concrete, has way for four lines of railway, and connects road from headland to Vasco da Gama.

(2) Accommodation—mile 2¾, 1 span, 30 feet, depth of girder 3 feet.

Line runs between girders.
- (3). Rio de Sal—mile 16, 1 span of 90 feet, depth of girder 10 feet.
- (4). Paroda—mile 23¾, 3 spans of 90 feet each, depth of girder 10 feet.
- (5). Sluice—mile 26, 1 span of 90 feet, depth of girder 10 feet.

Line runs on top of girders.
- (6). Sanguem—mile 27¾, 3 spans of 90 feet each, depth of girder 10 feet.
- (7). Kalay—mile 31½, 2 spans of 90 feet each, depth of girder 10 feet.

(8). Sirsat—mile 37⅓, 2 spans of 30 feet each, depth of girder 3 feet.

Line runs on top.
- (9). Kandiapar—mile 37⅔, 1 span of 98 feet, depth of girder 11 feet.

(10). Viaduct—mile 45, 1 span 60-feet arch, 16 feet rise.

(11). Dadh Sagar viaduct—mile 45⅓, 2 spans of 60-feet arches, 16 feet rise; 5 semi-arches 25 feet 6 inches span and retaining wall.

(12). Cœssi ghât road overbridge—mile 48, 28-feet span (timber).

(13). Viaduct and retaining wall—mile 48, with three semi-arches 25 feet 6 inches span.

(14). Escarpment—mile 48¼, 2 spans of 90 feet each, depth of girder 11 feet.

(15). Viaduct and retaining wall—mile 48¼, one semi-arch 25 feet 6 inches span.

(16). Viaduct and retaining wall—mile 48¾, 8 semi-arches 25 feet 6 inches span.

Stations.

Not including Castle Rock, where the West of India Portuguese Railway practically starts from, there are eleven stations on this line, viz.—

Miles from Castle Rock.	Miles between stations.	Stations.	
...	...	Castle Rock, S.M.R.	Ghât Section.
8½	8½	Dadh Sagar, W.	
16½	8	Collem, W.	
21½	5	Kalay.	
27½	6	Sanoordem, W.	
32	4½	Chandor.	
37½	5½	Margao.	
41½	4	Marjorda.	
44½	3	Cansaulim.	
49	4½	Dabolim.	
52½	3½	Vasco da Gama, W.	
54½	2	Murmagao harbour.	

Of these Dadh Sagar, Collem, Sanoordem, and Vasco da Gama are watering stations and Dadh Sagar the ghât crossing station.

Only four stations have been built on a permanent plan, viz., Vasco da Gama, Marga, Sanoordem and Collem. Vasco has a covered area of 2,400 square yards and has 6 units 15′ × 10′ each—the other three stations have a covered area of 2,000 square yards and 4 units 15′ × 10′. The platforms of these four and that portion of permanent in front of the platforms are covered by a light tiled roofing supported by iron pillars and cross girders, the station building or offices being on one side only.

These stations appear well adapted for both sun and rain. The remaining stations are built on a temporary plan with platforms about 350′ × 12′ uncovered, and a timber cabin for offices 12′ × 12′.

No permanent goods sheds or platforms have yet been erected. At Murmagao harbour there are temporary sheds as follows:—

Two 150′ × 20′, two 90′ × 35′, and one 195′ × 35′. At Margao there is also a temporary goods shed 60′ × 24′.

STATIONS.

Station.	Class and Description: W. Watering. A. W. Auxiliary Watering. E. Engine. F. Fuel.	Situation, Miles.		Buildings.											
				Passenger.		Goods.		Engine.			Workshops.		Other such as Staff Quarters, &c.	
		From Castle Rock.	Between Stations.	Units.	Size.	Nature.	Size.	Size.	Capacity.	Nature.	Size.	Number.	Size.
Dadh Sagar ...	W. ...	8½	8½	...	...	...	...	...	...	Fitting and Smithy Shops at Vasco da Gama.	Small.	...	...
Collem ...	1st W. E. F. ...	16½	8	4	15′ × 10′	...	...	88′ × 55′	4 locos.			...	...
Kalay ...	3rd class ...	21½	5	...	...	...	...	...	...			...	...
Sanoordem ...	1st W. ...	27½	6	4	15′ × 10′	...	...	...	...			...	...
Chandor ...	3rd class ...	32	4½	...	...	...	...	...	...			...	...
Margao ...	1st do. ...	37½	5½	4	15′ × 10′	...	...	...	...			...	...
Marjorda ...	3rd do. ...	41½	4	...	...	...	...	...	...			...	...
Cansaulim ...	3rd do. ...	44½	3	...	...	...	...	...	...			...	...
Dabolim ...	4th do. ...	50	4½	...	...	...	...	...	...			...	...
Vasco da Gama ...	1st W. E. F. ...	53½	3½	6	15′ × 10′	...	...	88′ × 55′	4 locos.			...	...
Murmagao harbour ...	1st class * ...	55½	2	...	...	...	...	...	...			...	...

* Permanent station building not yet erected.

STATIONS—*cont.*

Station.	Platforms.				Wells, Nature.	Water.					
	Passengers.		Goods.			Tanks.			Pumps.	Hy-drants.	Water Columns.
	Covered Size.	Uncovered Size.	Covered Size.	Uncovered Size.		Size.	Capacity.	Time to Refill.			
							Gallons.	Hours.			
Dadh Sagar	...	350′ × 12′	Nil.	Nil.	Lined with laterite. ...	17 × 13 × 4½	6,205	12	...	...	2
Collem	200′ × 22′	320′ × 22′			...	13 × 13 × 4½ 9 × 9 × 4½	7,019	3	...	...	2
Kalay	...	350′ × 12′			1	...	...	...	...	...	...
Sanoordem	200′ × 22′	300′ × 22′			...	13 × 13 × 4½ 13 × 13 × 4½	9,490	3	...	...	2
Chandor	...	350′ × 12′			...	...	...	...	...	...	...
Margao	200′ × 22′	280′ × 22′			1	...	...	...	...	...	...
Marjorda	...	350′ × 12′			...	...	...	...	...	...	...
Cansaulim	...	350′ × 12′			...	...	...	...	...	...	...
Dabolim	...	350′ × 12′			...	...	...	...	...	...	...
Vasco da Gama ...	230′ × 22′	280′ × 22′			2	13 × 13 × 4½ 17 × 13 × 8½	16,467	4	1	...	2
Murmagao harbour ...	...	...			...	25 × 13 × 4½	9,126	48	...	...	...

STATIONS—*cont.*

Station.	Fuel.			Sidings.		Signals.		Weigh Bridges.	Weighing Machines.	Mechanonal Lifting Power.	Turn Tables.	Ash Pits.	Carriage Examination Pits.
	Stage.	Kind.	Where stored.	Number.	Length.	Home.	Distant.						
					Yds.								
Dadh Sagar	...	...	...	...	529	...	...	...	1	...	...	...	...
Collem	3	Wood.	In open.	...	3,206	2	2	...	1	...	...	4 in Engine sheds.	...
Kalay	...	...	...	...	318	1	...	...	1	...	...	...	...
Sanoordem	1	...	...	...	1,957	2	2	1	1	...	...	1	...
Chandor	...	...	...	...	336	1	...	...	1	...	...	...	...
Margao	...	...	...	...	1,110	2	2	...	1	...	...	...	...
Marjorda	...	...	...	...	...	...	...	...	1	...	...	...	...
Cansaulim	...	...	...	...	453	1	...	...	1	...	...	...	...
Dabolim	...	...	...	...	...	...	...	...	1	...	...	...	...
Vasco da Gama	2	Wood and coal.	Coal in sheds. Wood in open.	...	4,797	2	2	...	1	...	...	2 and 4 in Engine sheds.	2
Murmagao harbour ...	...	...	...	...	3,633	...	1	2*	1	2-25 ton overhead traversing and 2 ordinary cranes.	...	...	...

* These lengths include dead ends, cross overs, &c., the total being miles 9·28.

SOUTHERN MAHRATTA RAILWAY SECTION.

CASTLE ROCK TO GOA (WEST OF INDIA PORTUGUESE RAILWAY), (PORTUGUESE TERRITORY).

The Country.

The settlement of Goa, belonging to the Portuguese Government through the centre of which the "West of India Portuguese Railway," of 51 miles, runs from east to west in connection with the Southern Mahratta system, lies between 14° 53′ and 15° 48′ North latitude, and between 73° 45′ and 74° 24′ East longitude, about 250 miles south south-east from Bombay. It is bounded on the north by the Tirakul or Auranudem river, on the south by the North Kanara District, on the east by the Western Ghâts, and on the west by the Arabian Sea. Its extreme length from north to south is 62 miles, and its greatest breadth from east to west 40 miles, comprising a total area of 1,062 square miles. It has a population of 445,449, with four towns, 400 villages, 100 parishes, and about 87,196 houses.

The country is hilly, especially that part known as the Novas Conquistas.

Its distinguishing feature is the Sahyadri mountains, a portion of the long range of Western ghâts, which throw out branches westwards across the territory in the form of numerous spurs and ridges, some of the peaks of which attain an altitude of over 3,000 feet, such as Sonságar 3,827, Catlanchimauli 3,633, Vaguerim 3,500 and Morlemchagor 3,400 feet.

The country is intersected by numerous rivers, the eight principal ones being the Tirakul or Auranudem, rising in the Western Ghâts in the Sáwantwari State and flowing south-west for 14½ miles into the Arabian Sea; the Cháporá or Colvalle, 18 miles long, rising at Ram ghât and flowing south-west into the sea by the village of Cháporá; the Baga, 1 mile long, rising in Bárdez; the Sinquerim, 3½ miles long, also rising in Bárdez and flowing first westward and then southward into the Bay of Aguada, the Mandari, 38½ miles long, rising at Parvar ghât in Satari and flowing first north-west of Ponda and then south-west of Bicholim and Bárdez into the Bay of Aguada; the Mandavi is the most important stream in the territory, it has many offshoots and runs past Panjim or New Goa; the Juari, 39 miles long, rising at the foot of the Digny ghât and flowing northward into the Bay of Murmagao; the Sal, 15 miles long, running close to Margoa and discharging into the sea near Betúl; the Talpona, 7 miles long, rising at Ambu ghât and running westward through Canacova into the sea at Talpona. These rivers are generally navigable.

Stately forests abound in the district called Novas Conquistas, and there are others scattered over, covering an area of 74,133 acres, having an aggregate value of £700,000.

About 234,754 acres out of a total of 679,680 acres are under cultivation, thus distributed: rice 122,566 acres; other cereals, vege-

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