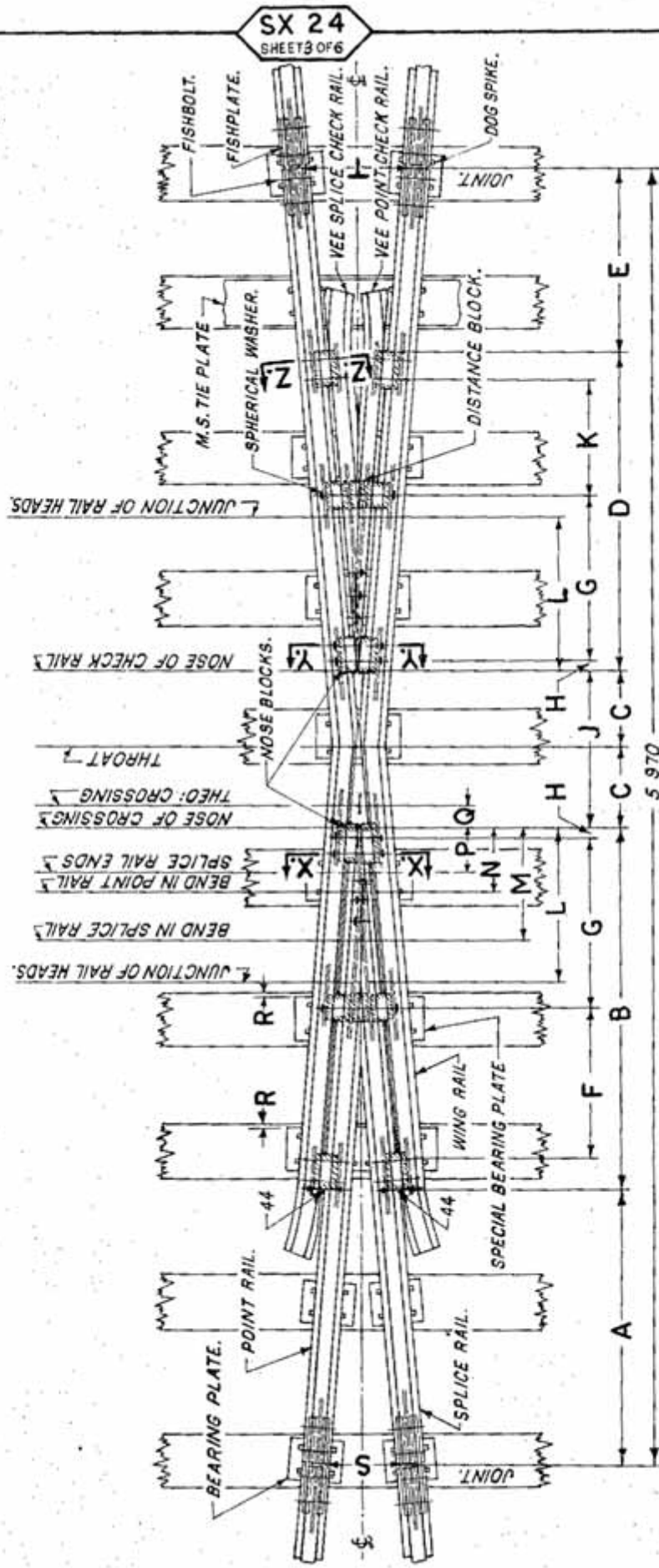
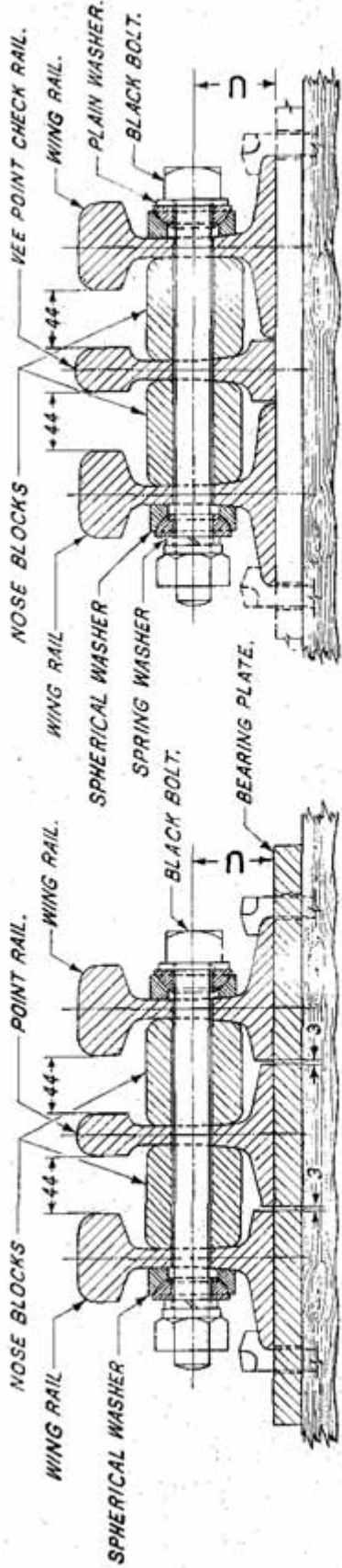


TYPICAL I IN 6 ACUTE CROSSING FOR SCISSORS

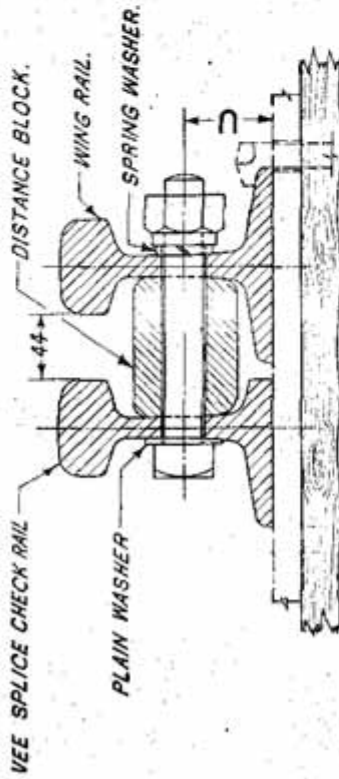
4725 mm TRACK CENTRES B.G.



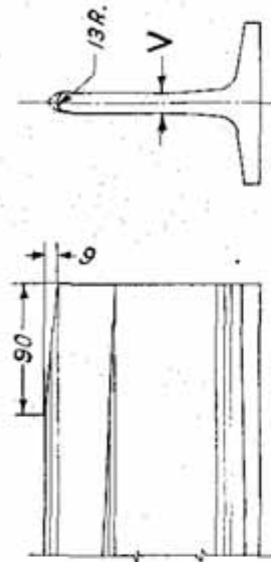


SECTION ON X.X.

SECTION ON Y.Y.



SECTION ON Z.Z.



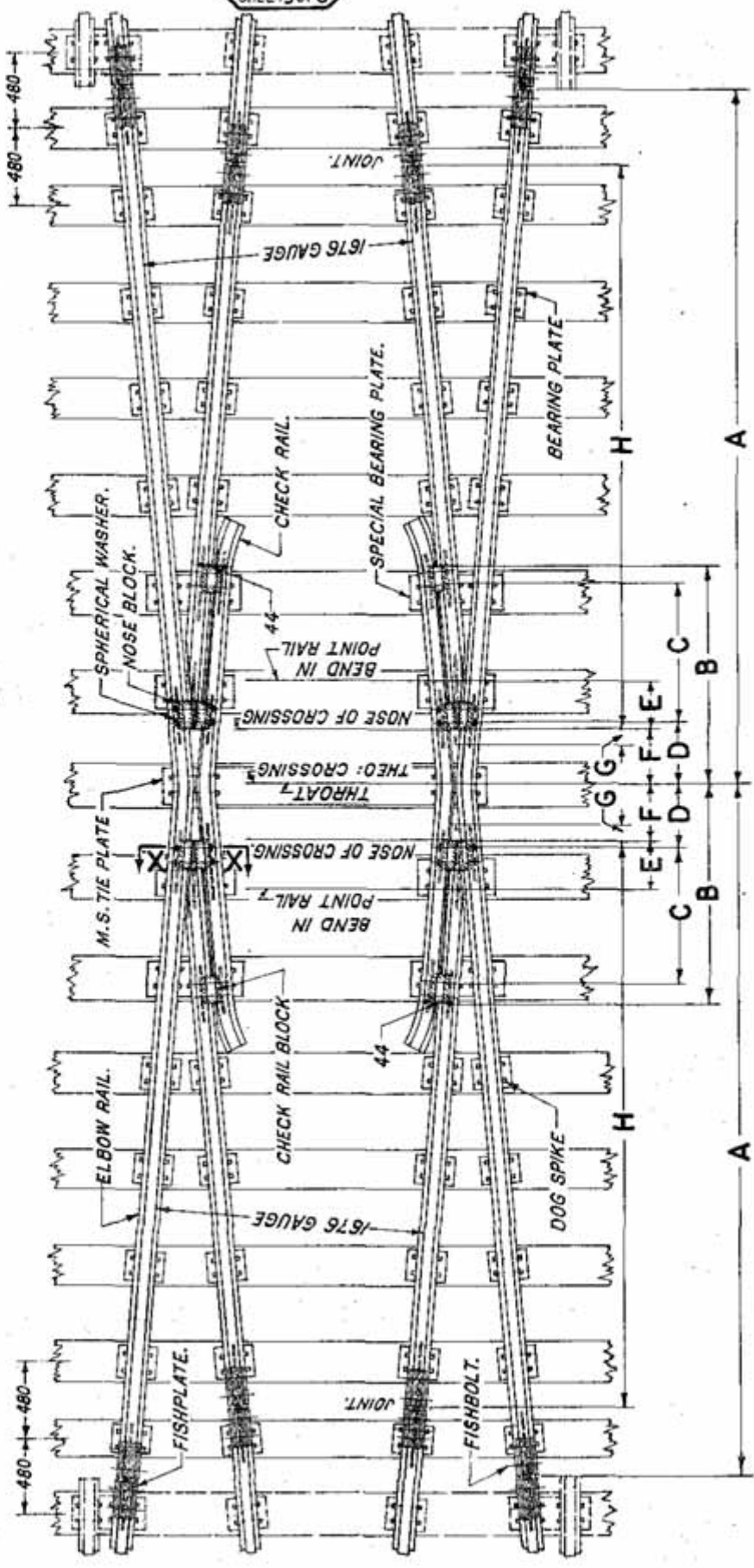
DETAIL OF NOSE OF CROSSING

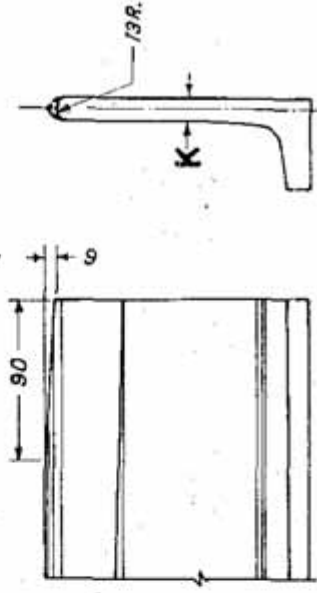
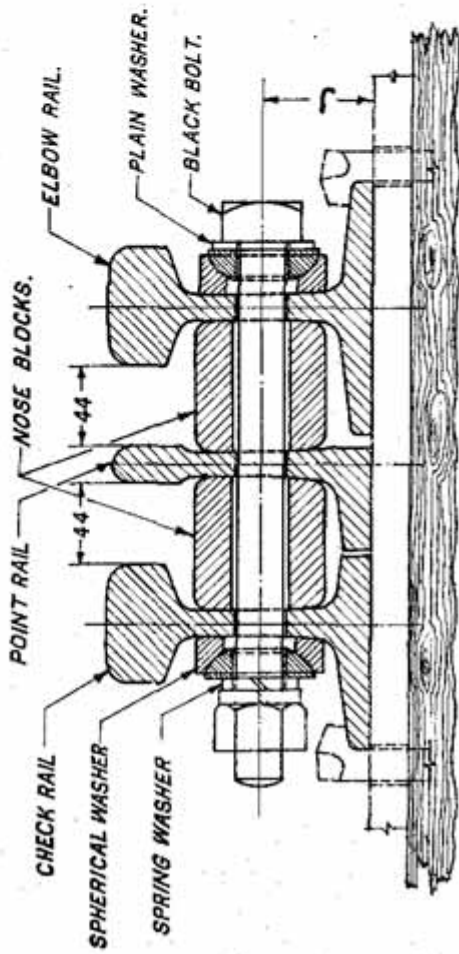
TABLE OF DIMENSIONS

RAIL ASSEMBLY SECTION / DRAWING NO.	D I M E N S I O N S (mm)																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V
52 Kg TA 20205	1 275	1 652	358	1 465	862	700	785	40	716	530	714	520	310	210	93	11	369	492	67	15-5
90R. TA 20168	1 290	1 637	348	1 467	880	700	795	30	696	530	719	536	318	218	83	-	368	493-5	60	13-89

TYPICAL 1 IN 6 OBTUSE CROSSING FOR SCISSORS

4725 mm TRACK CENTRES B. G.





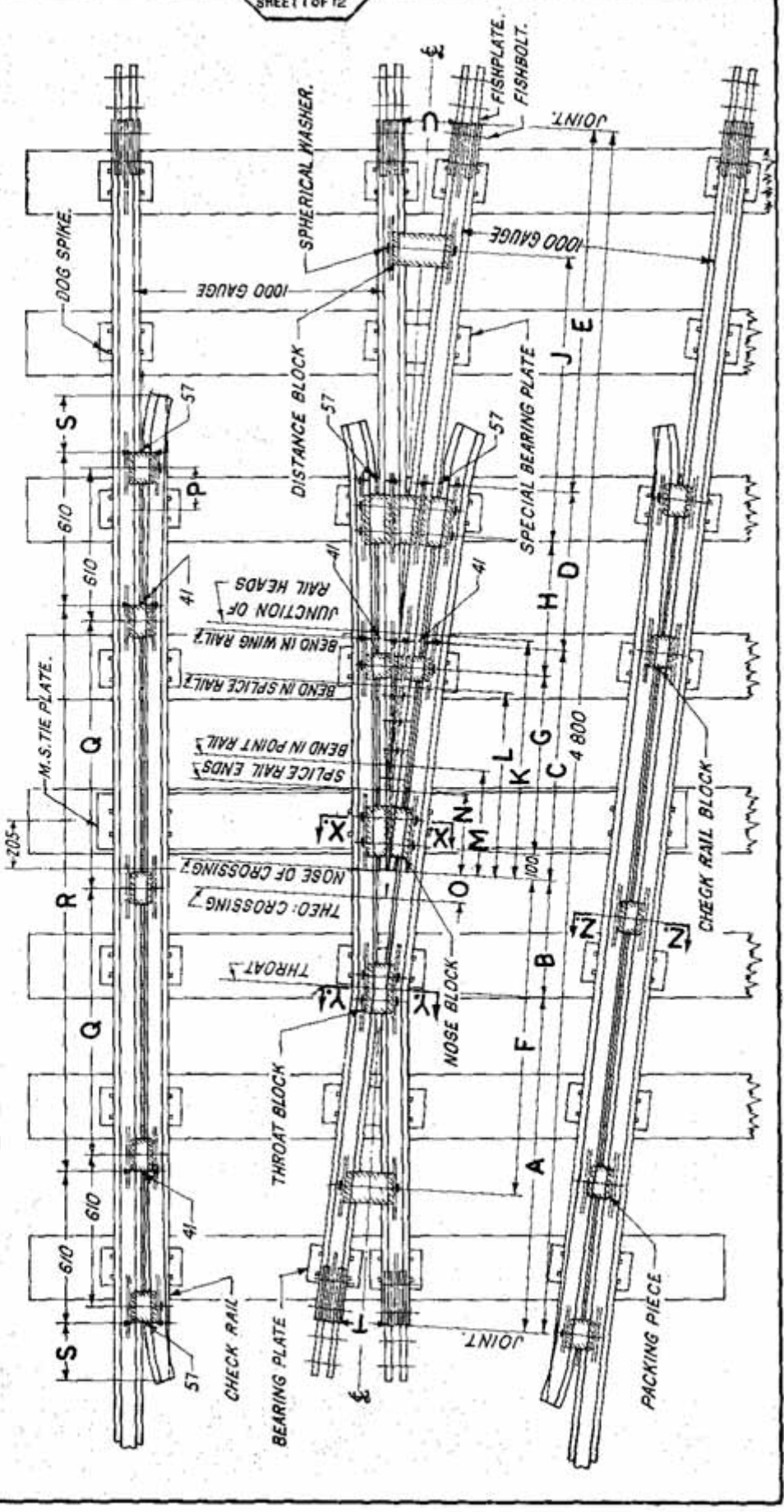
DETAIL OF NOSE OF CROSSING

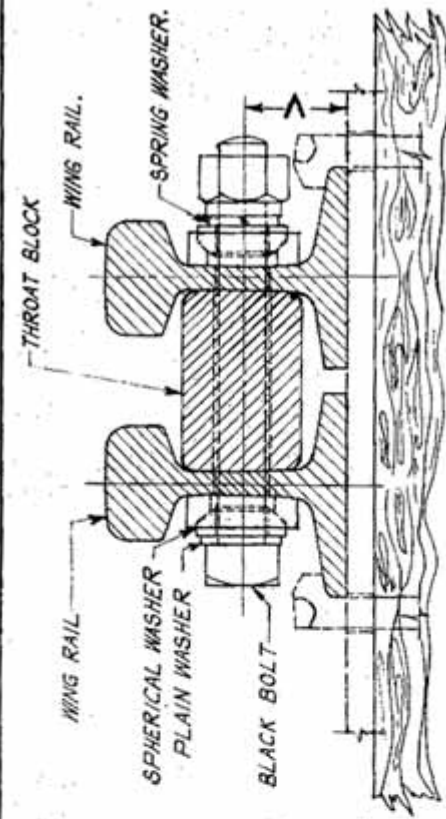
SECTION ON X.X.

TABLE OF DIMENSIONS

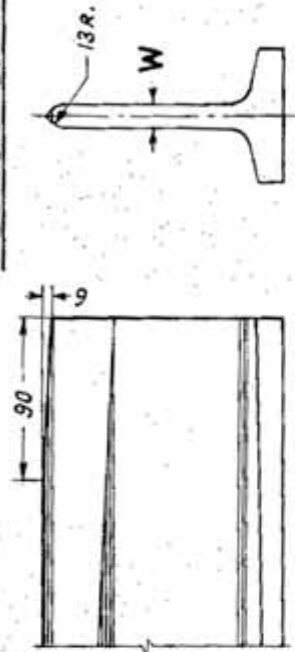
RAIL SECTION	ASSEMBLY DRAWING NR	DIMENSIONS (mm)										
		A	B	C	D	E	F	G	H	J	K	
52 kg	TA 20206	4 376	1 375	675	398	310	358	93	3 549	67		15.5
90R.	TA 20169	4 395	1 375	693	378	318	348	83	3 540	60		13.89

**TYPICAL 1 IN 8 1/2 ACUTE CROSSING FOR SCISSORS
4420mm AND 4265mm TRACK CENTRES M.G.**

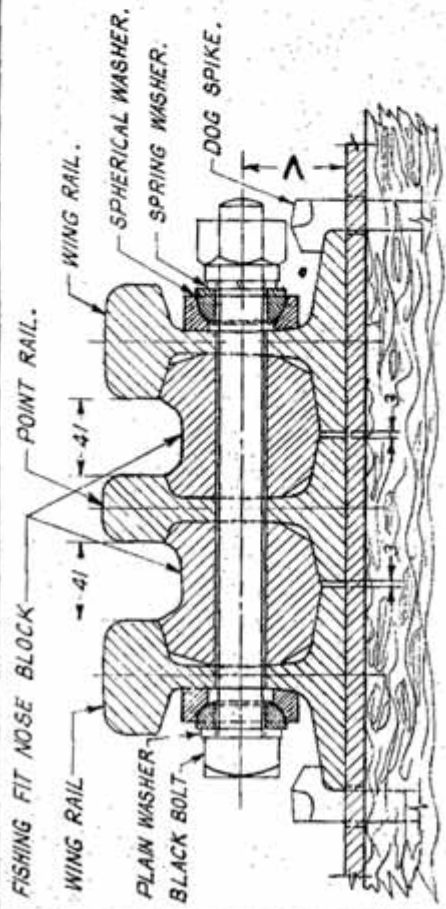




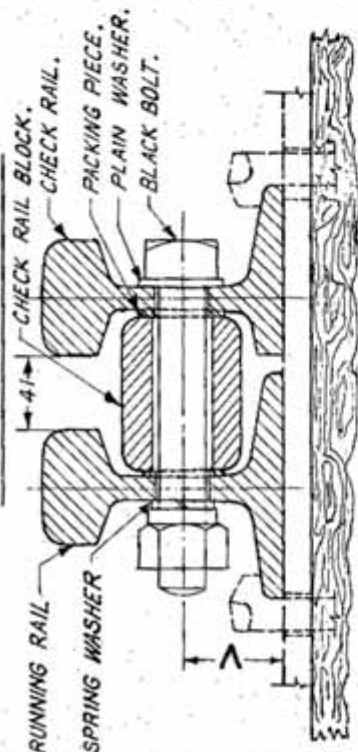
SECTION ON Y. Y.



DETAIL OF NOSE OF CROSSING



SECTION ON X. X.



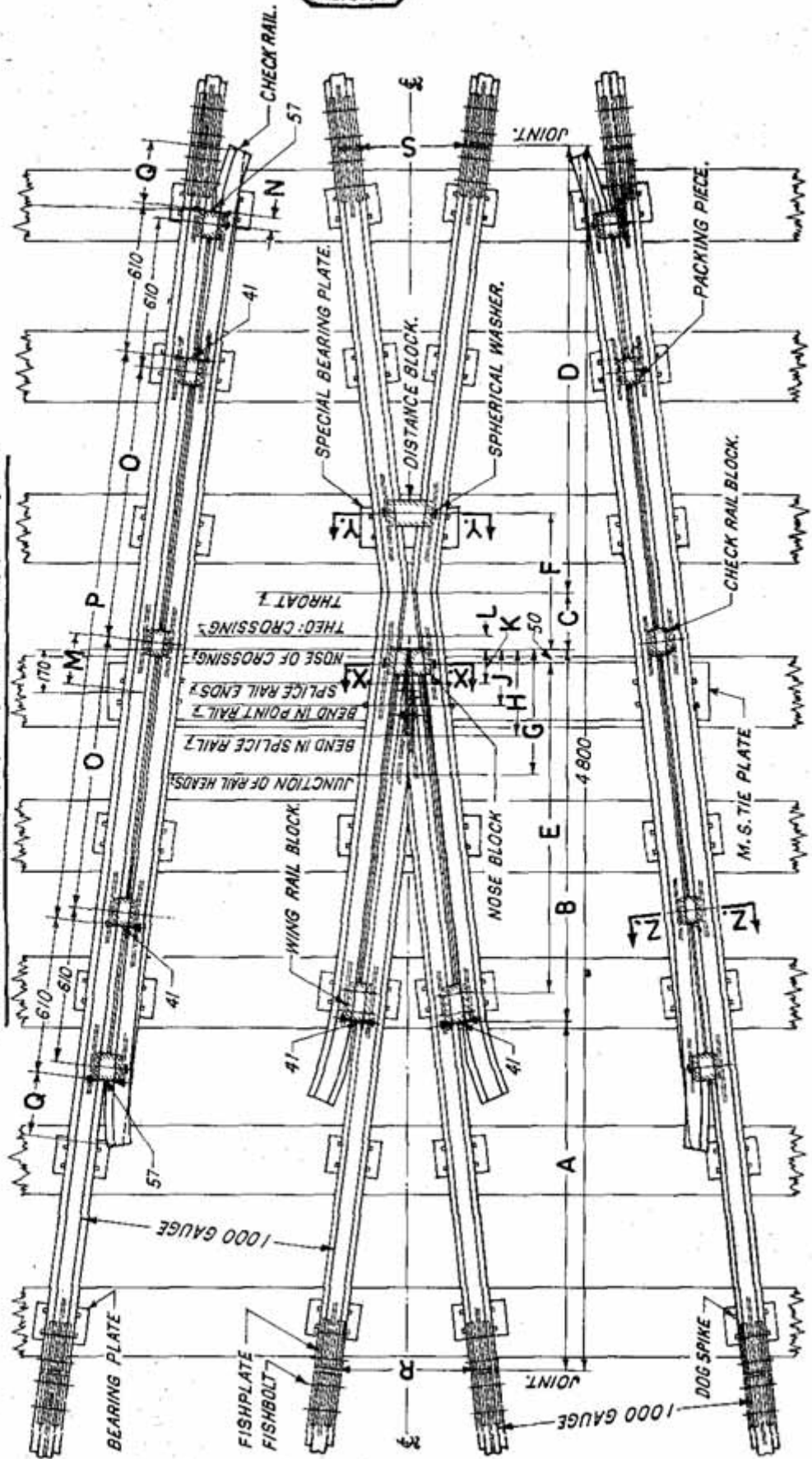
SECTION ON Z. Z.

TABLE OF DIMENSIONS

DIMENSIONS
(IN MM)

RAIL ASSEMBLY SECTION	DRAWING NO.	DIMENSIONS																					
		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
75 R.	TA 20437	1353	462	915	635	1435	1270	710	535	1130	946	734	417	317	112	165	1065	2 255	230 ²⁵	200	239	54	13-1
60 R.	TA 20433	1370	445	915	635	1435	1270	710	535	1130	881	686	393	293	95	165	1065	2 255	230 ²⁵	202	247	47-5	11-11

TYPICAL I IN 4 1/4 ACUTE TRACK CROSSING FOR SCISSORS 4420 mm TRACK CENTRES M.G.



SX 25

SHEET 4 OF 12

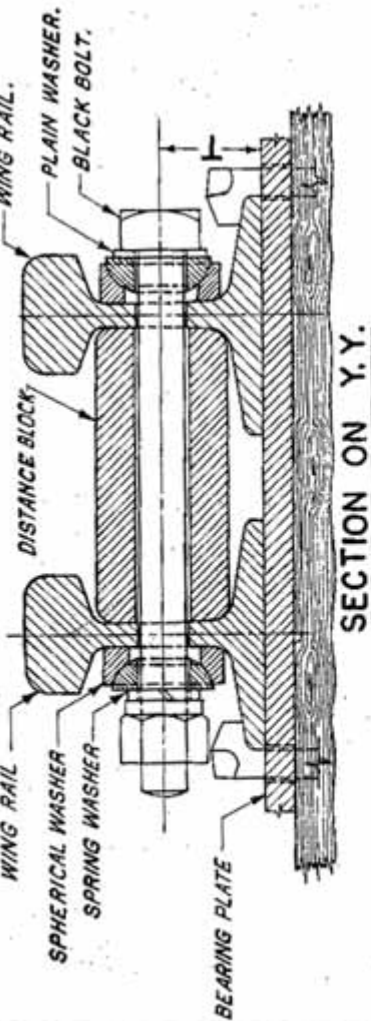
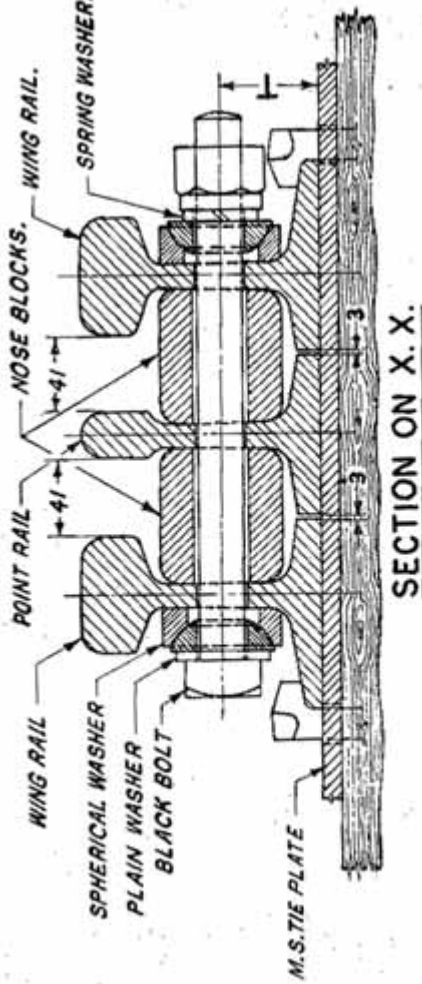
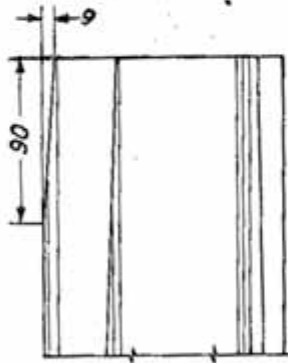
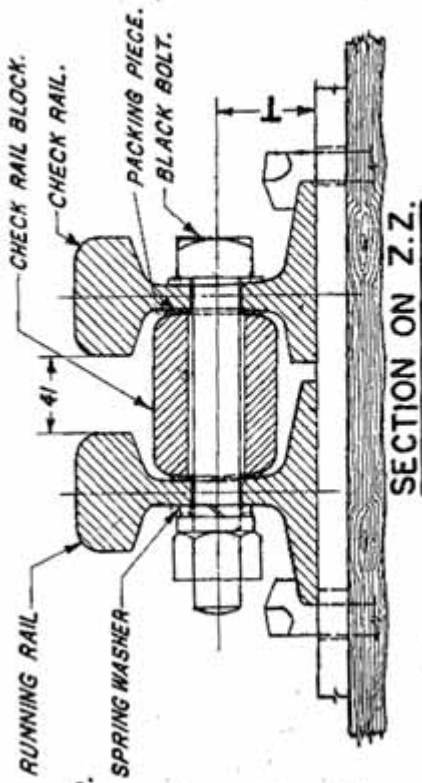


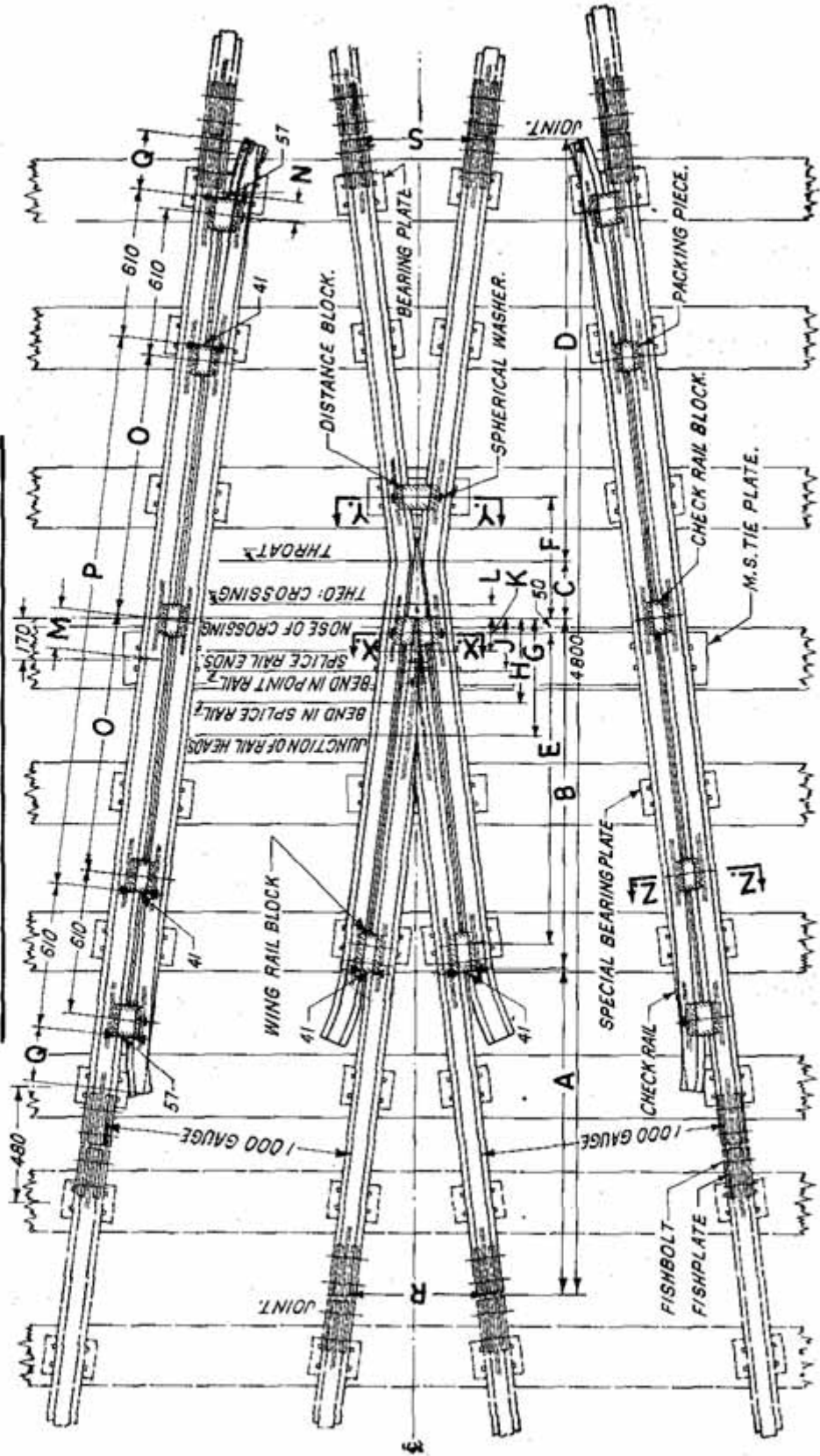
TABLE OF DIMENSIONS

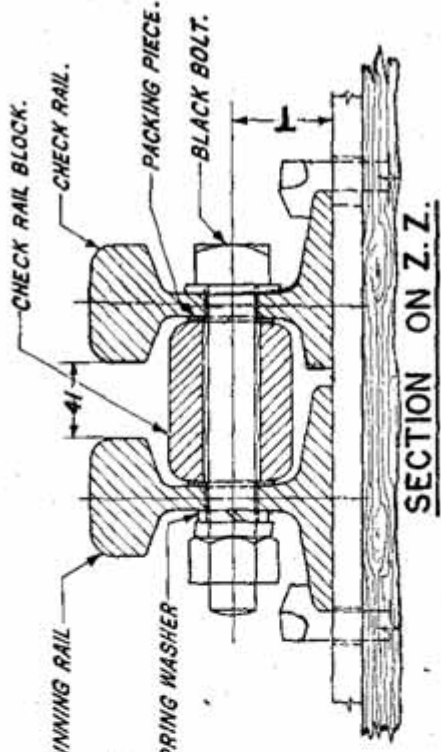
D I M E N S I O N S
(mm)

RAIL SECTION	ASSEMBLY DRAWING NO.	D I M E N S I O N S (mm)																			
		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
75R.	TA 20435	1375	1447	231	1747	1279	512	474	343	209	134	56	170	-	1065	2255	230225	552	453	54	13-1
60R.	TA 20431	1389	1450	222	1739	1288	500	443	321	198	123	47	-	41	1065	2255	230225	564	450.5	47.5	11-11

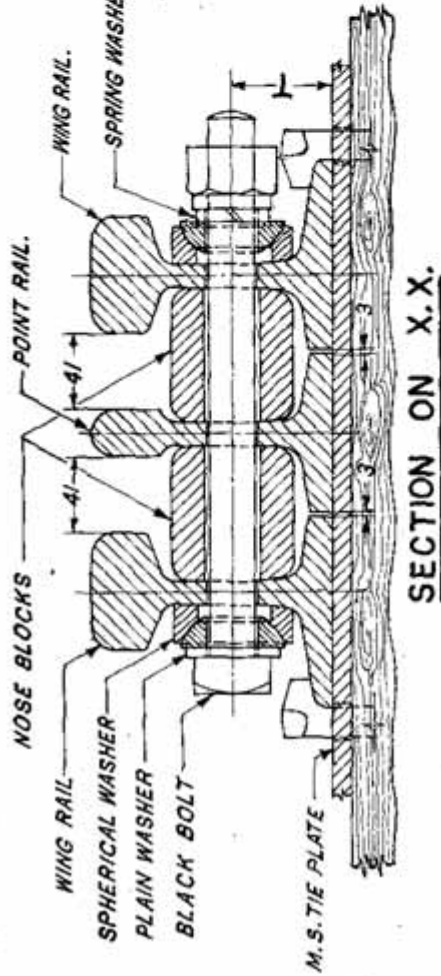
TYPICAL 1 IN 4 1/4 ACUTE CROSSING FOR SCISSORS

4265 mm TRACK CENTRES M.G.

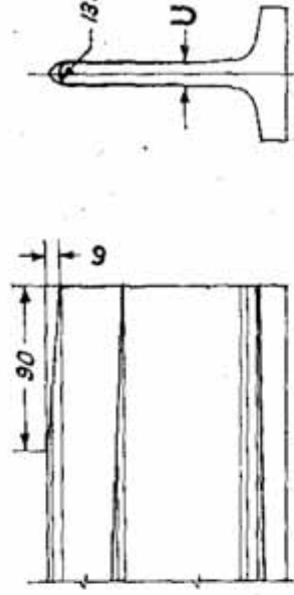




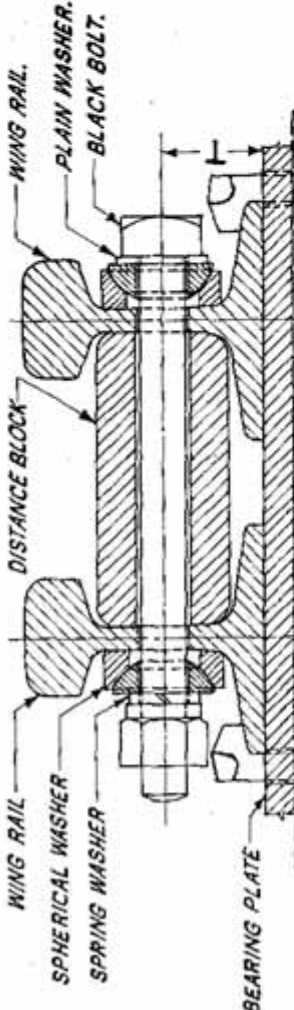
SECTION ON X.X.



SECTION ON Y.Y.



SECTION ON Z.Z.

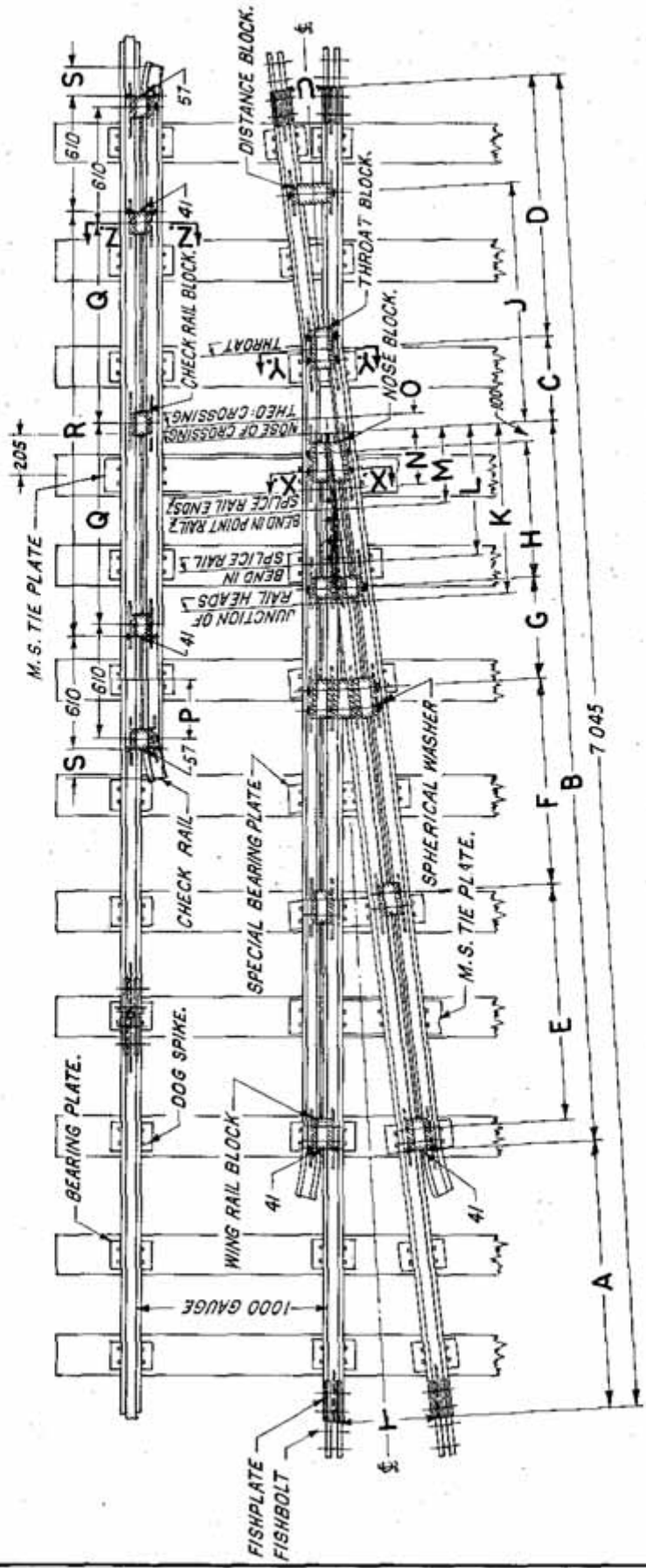


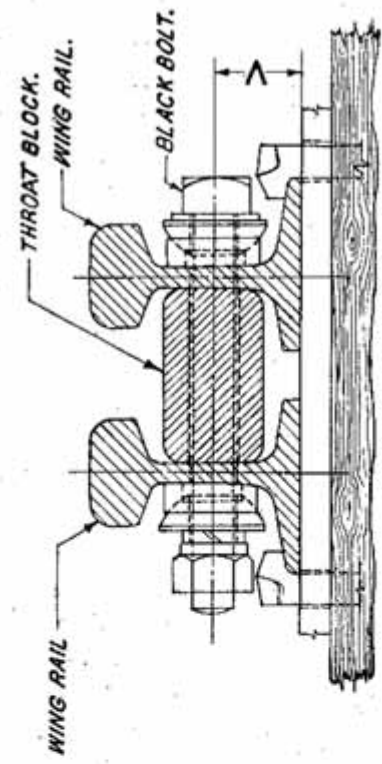
DETAIL OF NOSE OF CROSSING

TABLE OF DIMENSIONS

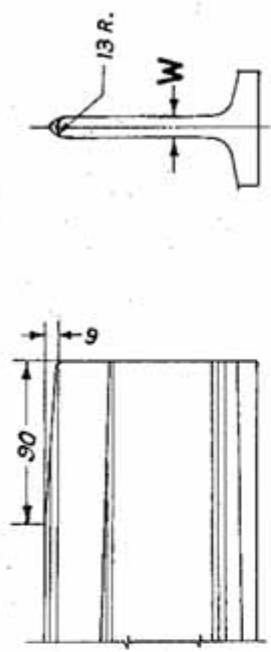
RAIL SECTION	ASSEMBLY DRAWING NO.	DIMENSIONS (mm)																			
		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
75R.	TA 20485	1375	1447	231	1747	1279	512	474	343	209	134	56	170	-	1065	2255	230±25	552	453	54	13.1
60R.	TA 20444	1389	1450	222	1739	1268	500	443	321	198	123	47	-	41	1065	2255	230±25	564	450.5	47.5	11.11

TYPICAL 1 IN 8½ ACUTE CROSSING FOR SCISSORS
3810 mm TRACK CENTRES M.G.

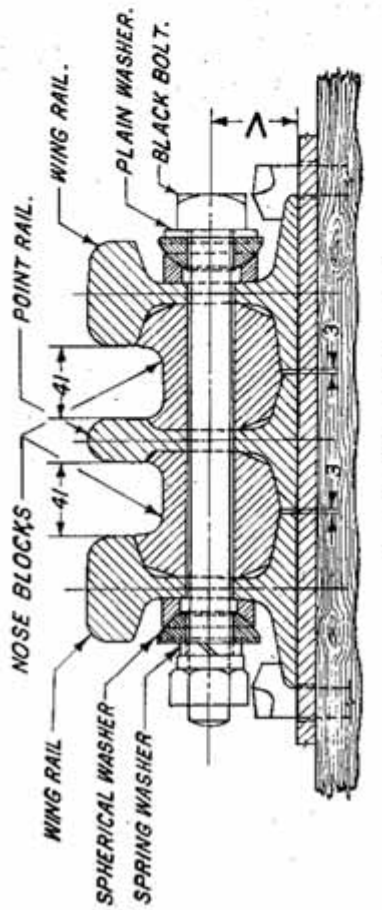




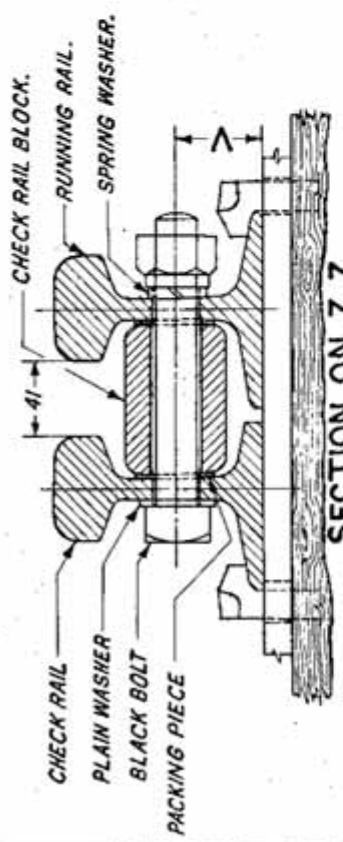
SECTION ON Y.Y.



DETAIL OF NOSE OF CROSSING



SECTION ON X.X.



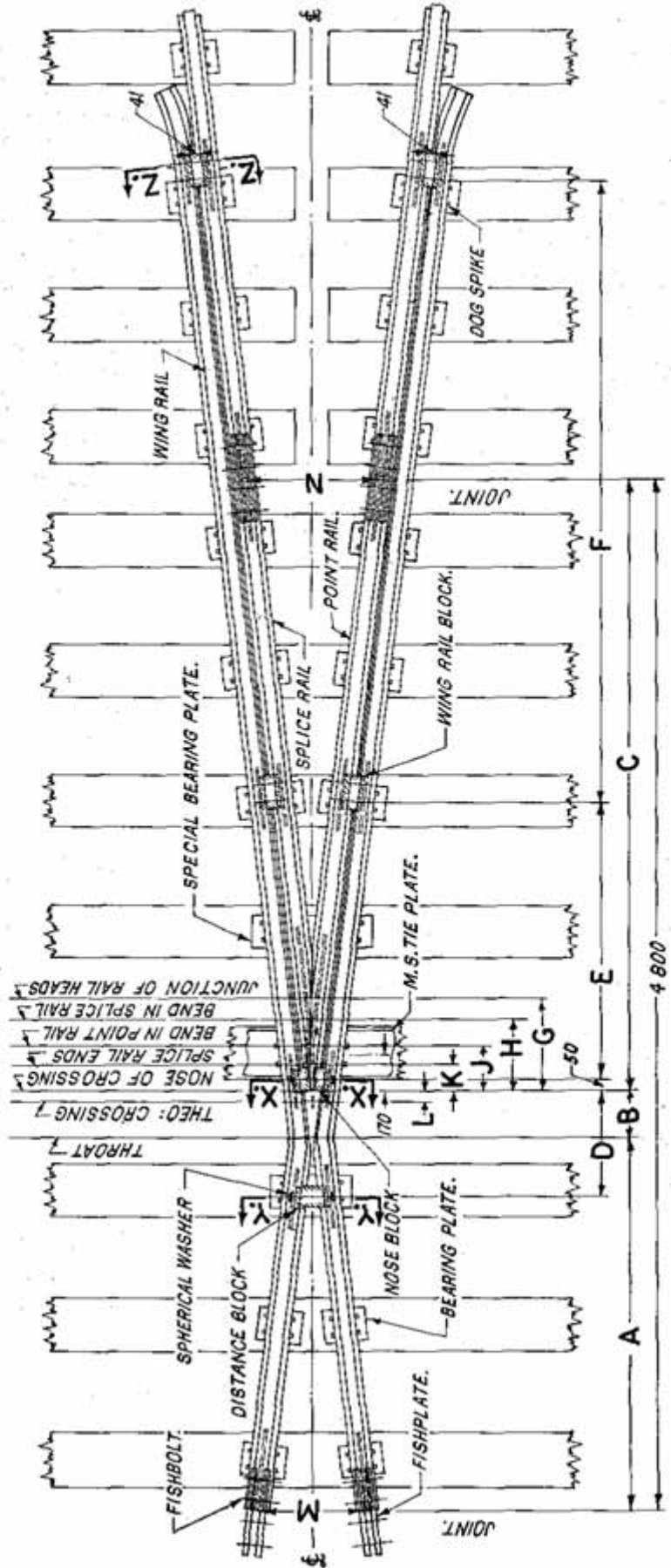
SECTION ON Z.Z.

TABLE OF DIMENSIONS

RAIL ASSEMBLY SECTION DRAWING NO.		D I M E N S I O N S (mm)																					
		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
60R.	TA 20446	1420	3810	445	1370	1258	1095	535	710	1270	881	686	393	293	95	3/5	1065	2255	230725	510	202	47.5	11-11

TYPICAL I IN 4 1/4 ACUTE CROSSING FOR SCISSORS

3810 mm TRACK CENTRES M.G.



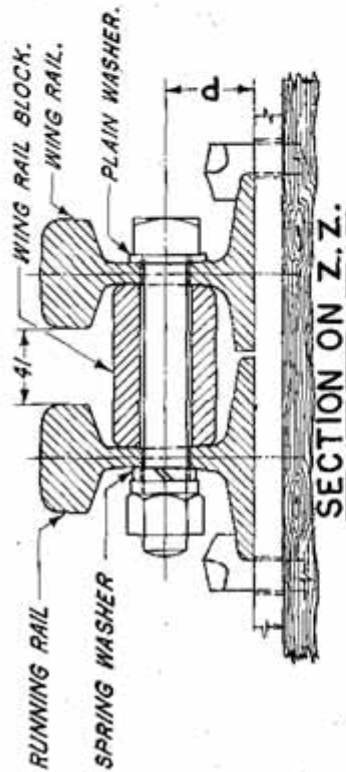
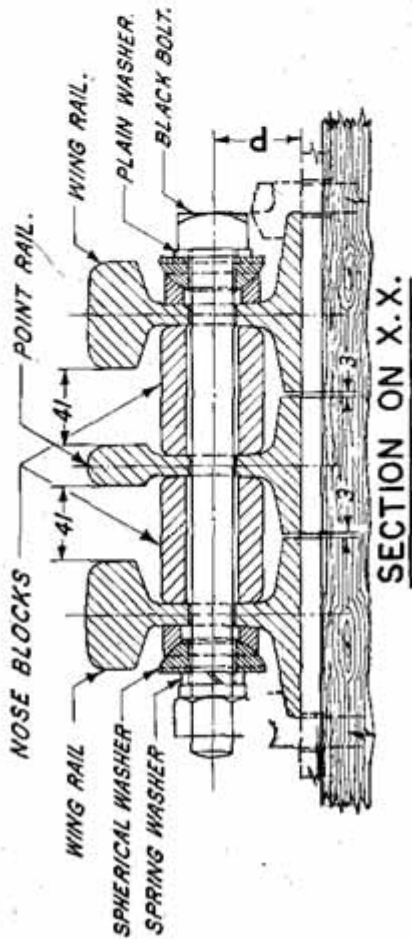
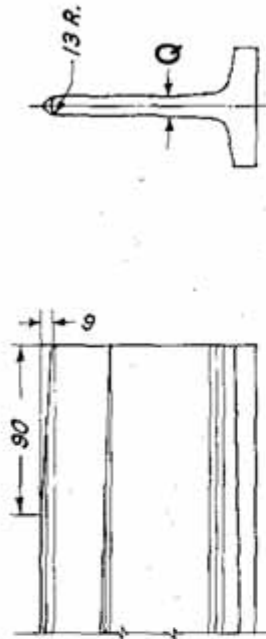
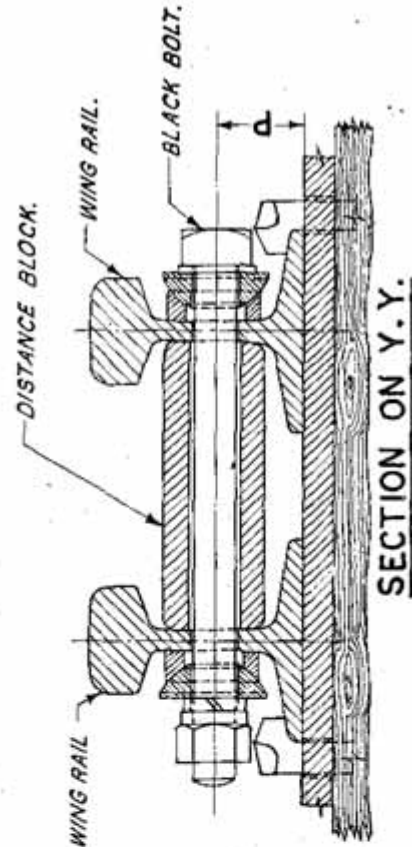
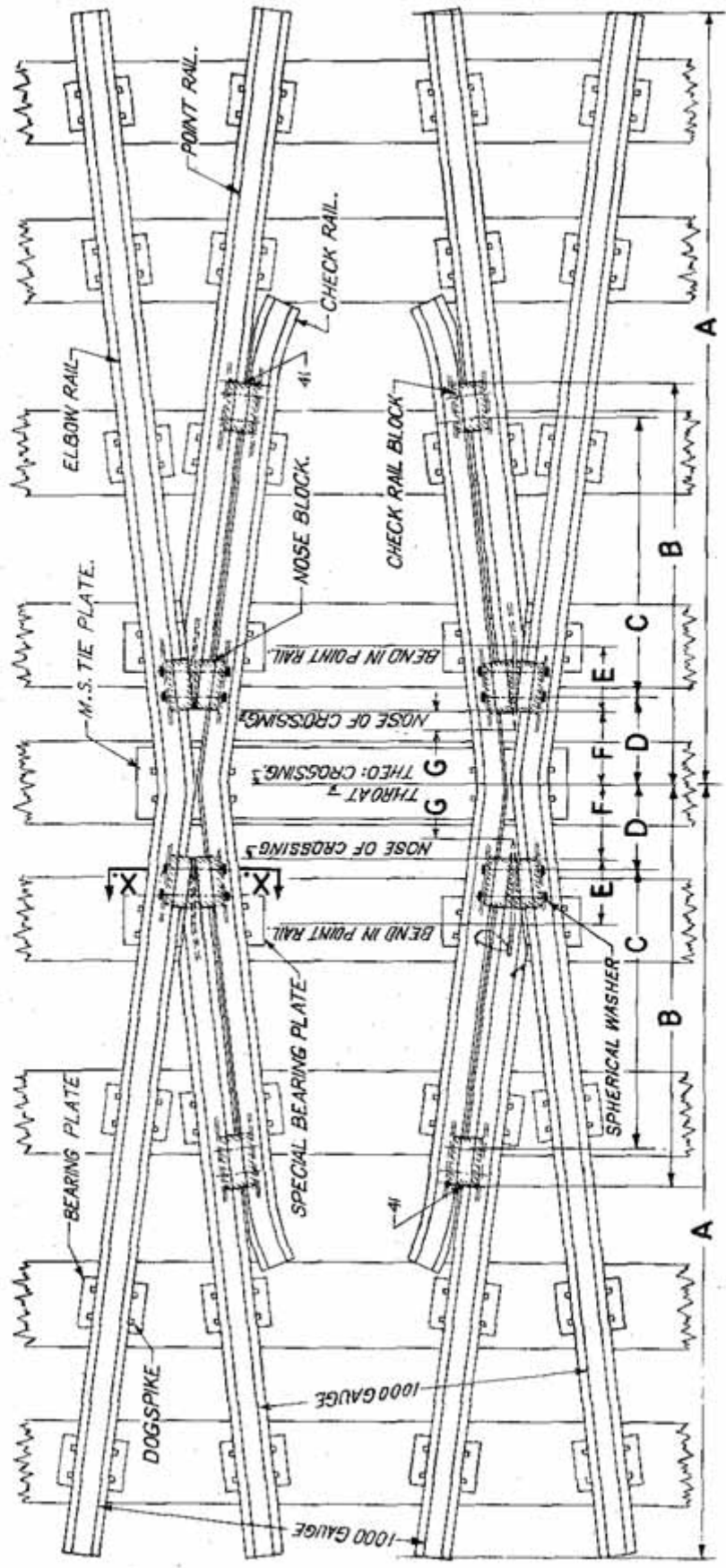
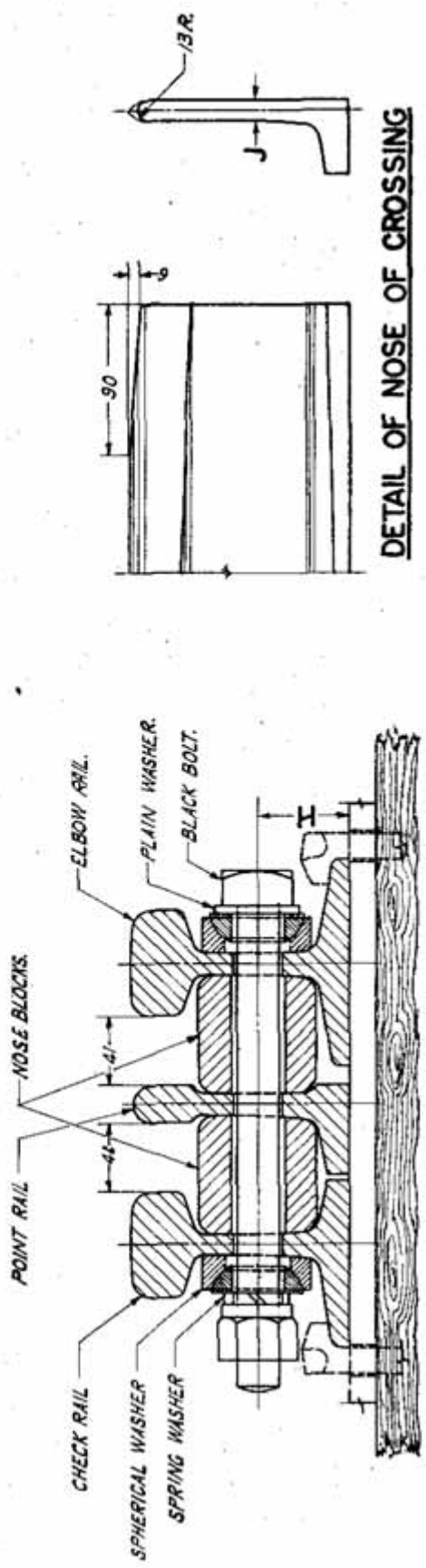


TABLE OF DIMENSIONS

RAIL SECTION	ASSEMBLY DRAWING NO.	DIMENSIONS (mm)															
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	
60R.	TA 20445	1 739	222	2 839	500	1 288	2 894	443	321	198	123	47	450.5	564	47.5		11.11

**TYPICAL 1 IN $4\frac{1}{4}$ OBTUSE CROSSING FOR SCISSORS
4420 mm, 4265 mm AND 3810 mm TRACK CENTRES M.G.**





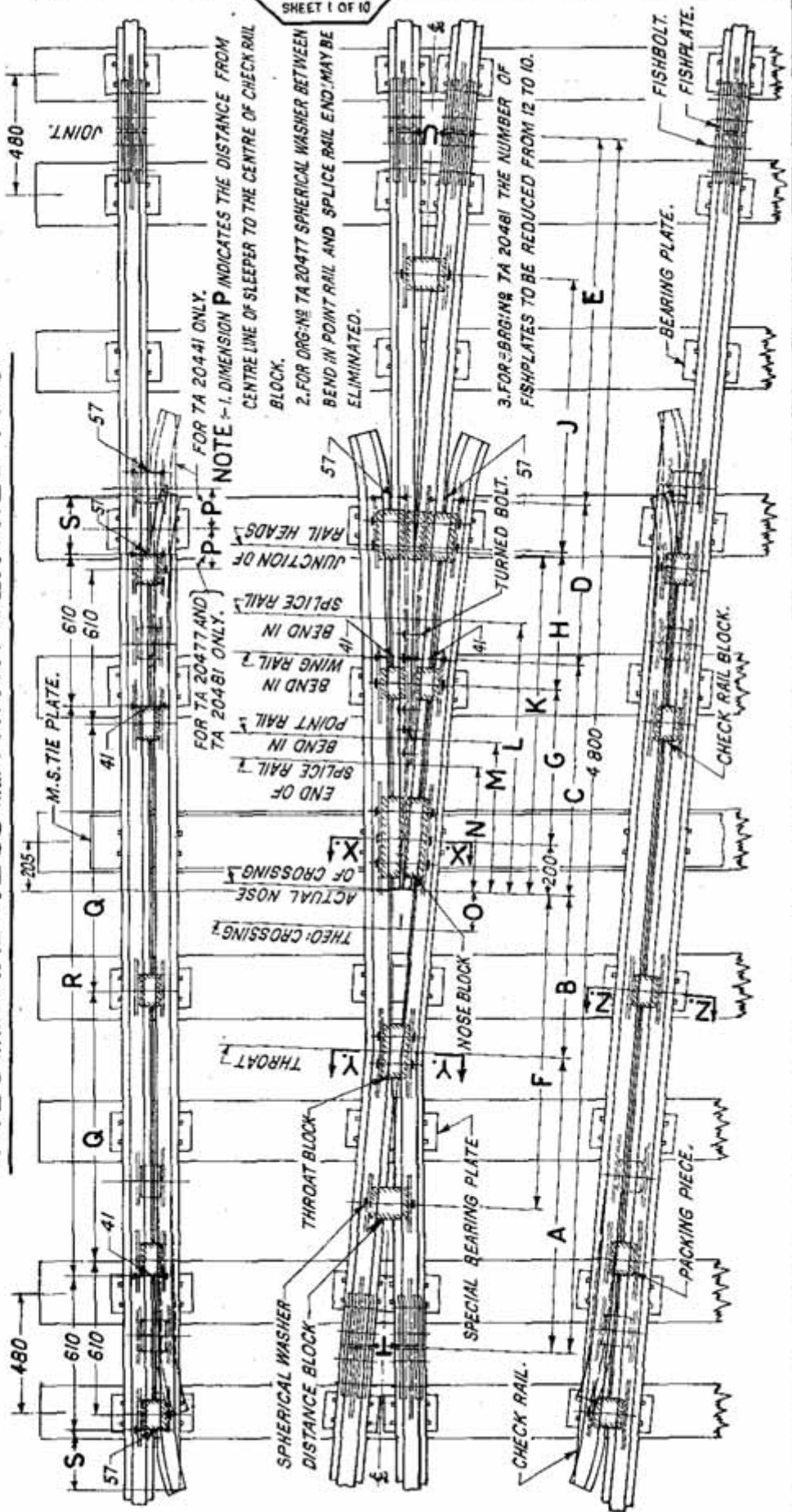
DETAIL OF NOSE OF CROSSING

SECTION ON X.X.

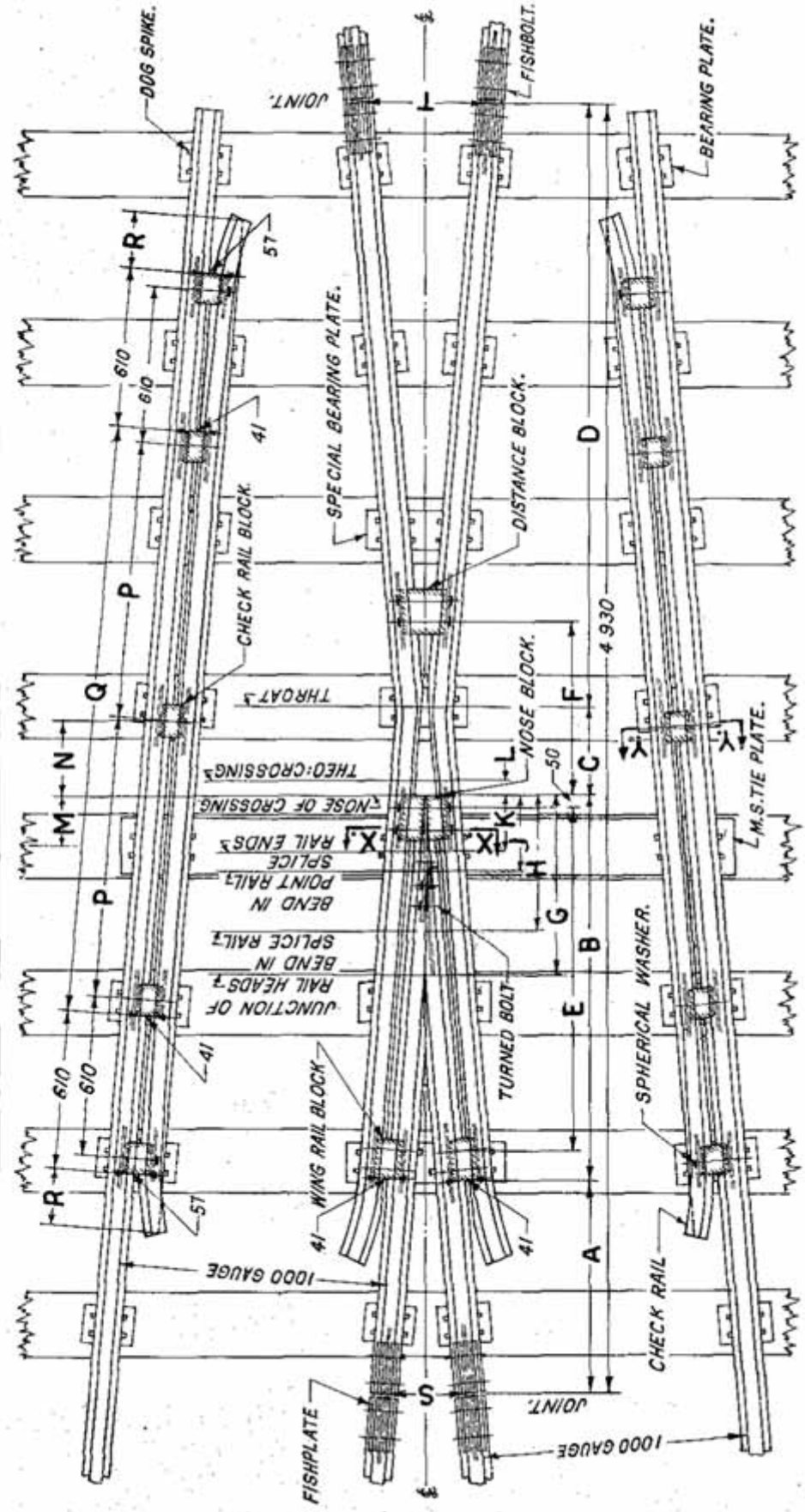
TABLE OF DIMENSIONS

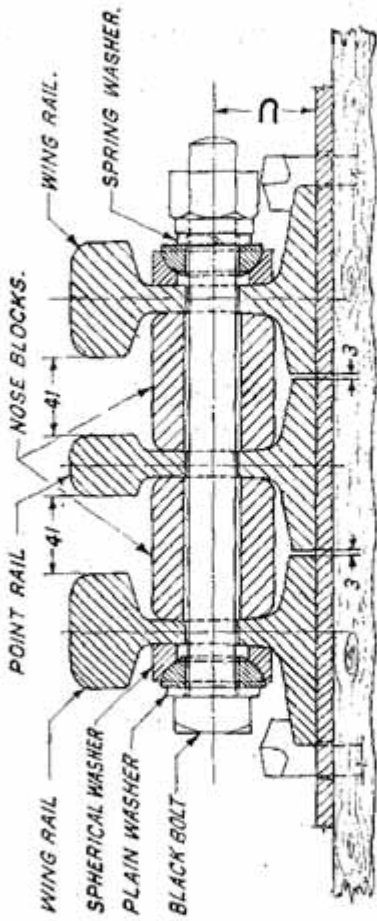
RAIL SECTION	ASSEMBLY DRAWING NO	D I M E N S I O N S									
		A	B	C	D	E	F	G	H	J	
75 R.	TA 20436	2352	1220	851	271	209	231	56	54	131	
60R.	TA 20432	2359	1220	855	263	198	223	47	47.5	111	

TYPICAL 1 IN 12 ACUTE CROSSING FOR SCISSORS 4420 mm AND 4265 mm TRACK CENTRES M. G.

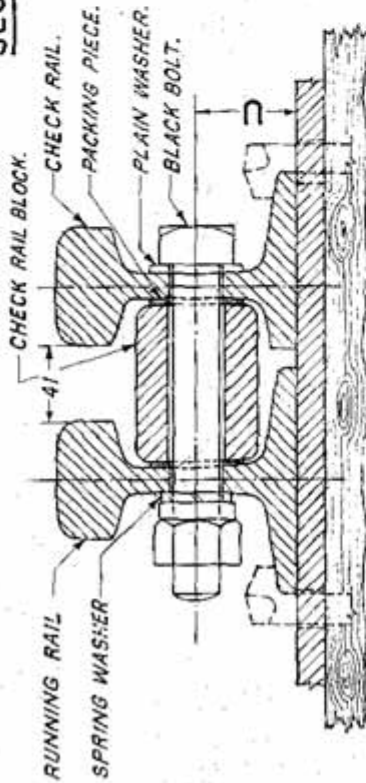


TYPICAL 1 IN 6 ACUTE CROSSING FOR SCISSORS
4420 mm AND 4265 mm TRACK CENTRES M.G.

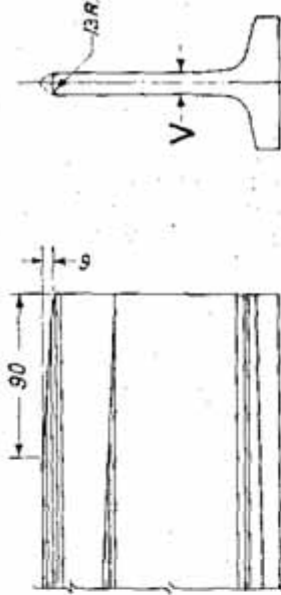




SECTION ON X.X.



SECTION ON Y.Y.

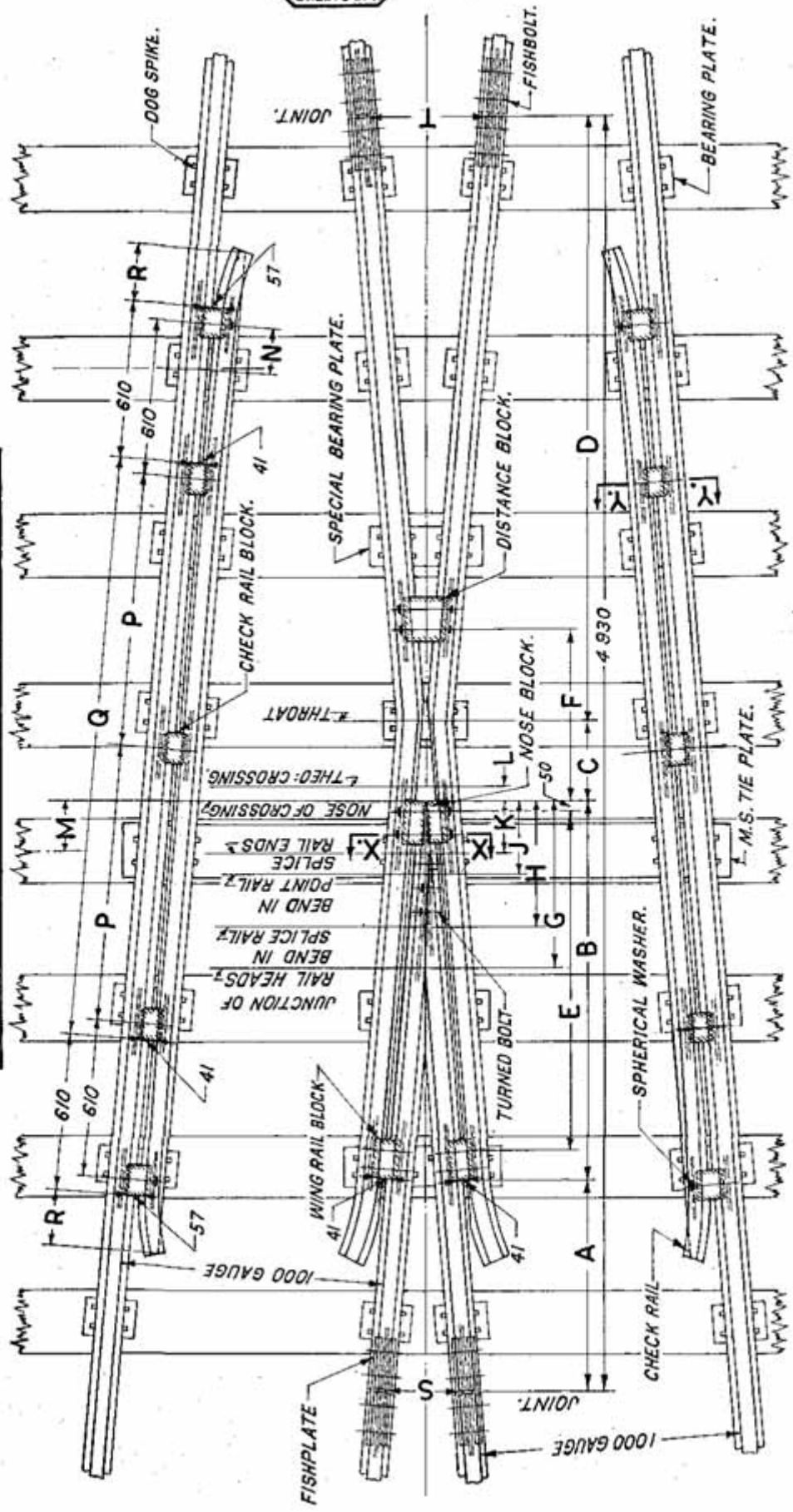


DETAIL OF NOSE OF CROSSING

TABLE OF DIMENSIONS

RAIL ASSEMBLY SECTION DRAWING NO.	DIMENSIONS (in mm)																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V
75R. TA 20478	813	1438	326	2353	1276	702	667	513	294	219	79	205	265	1065	2255	230±25	274	433-5	54	13-1

TYPICAL 1 IN 6 ACUTE CROSSING FOR SCISSORS
4420 mm TRACK CENTRES M.G.



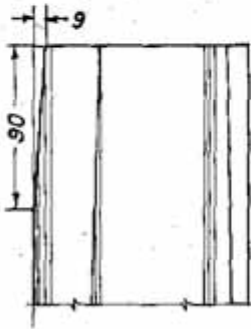
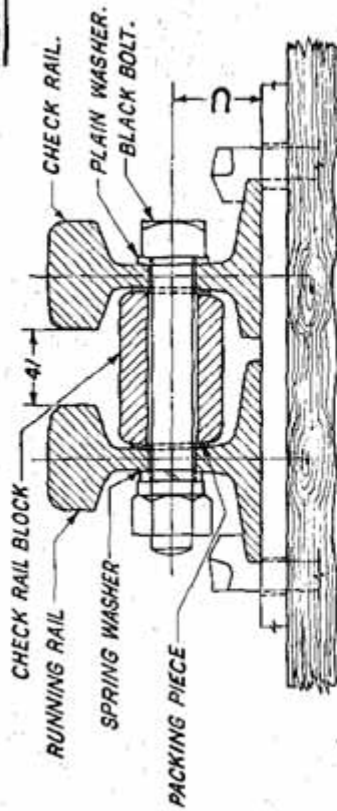
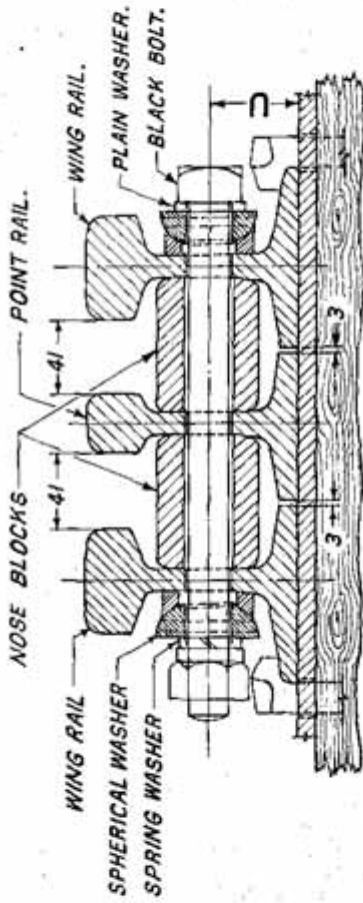
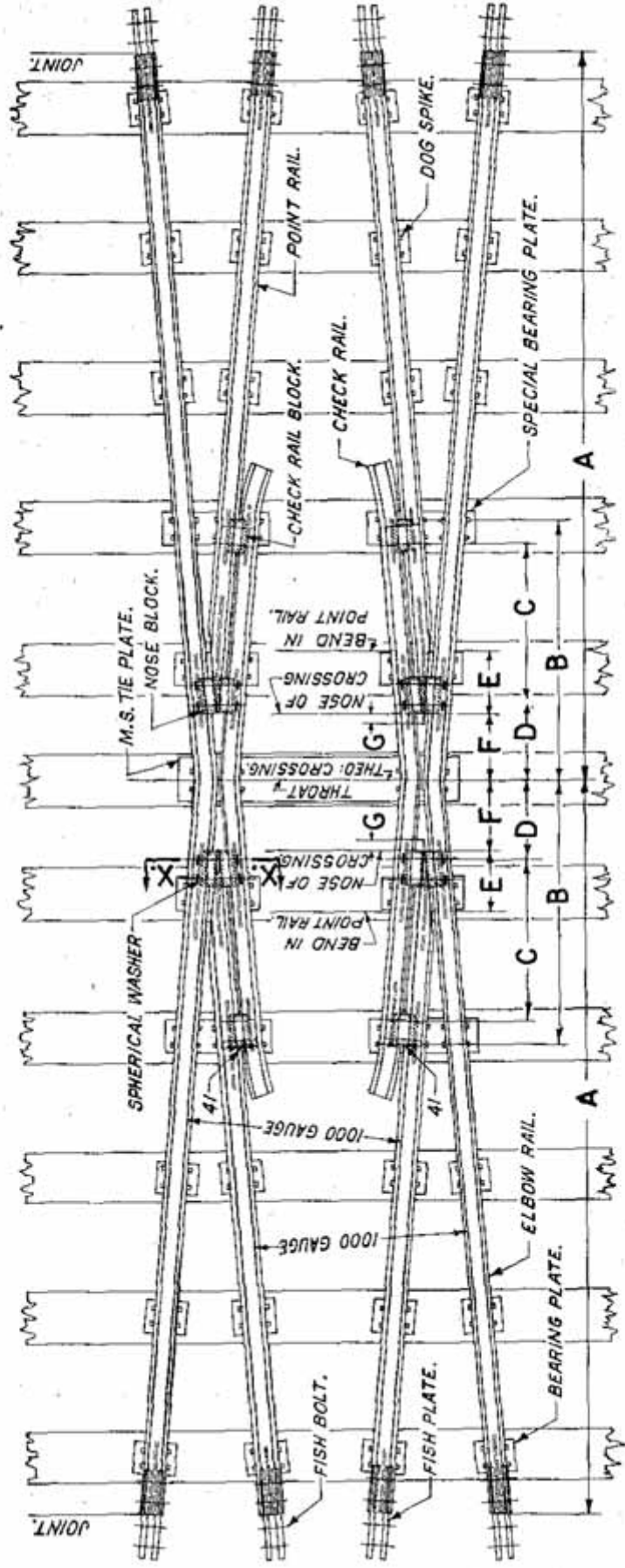
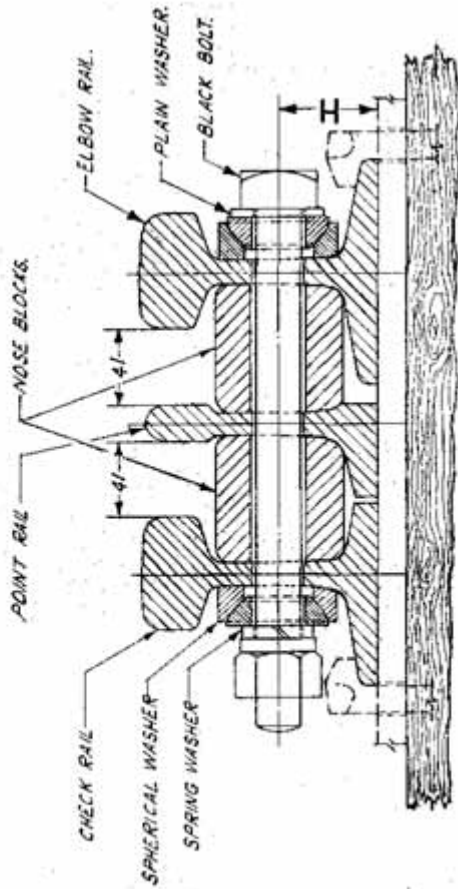


TABLE OF DIMENSIONS

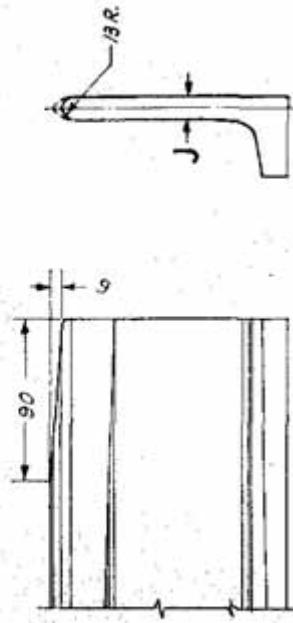
RAIL ASSEMBLY SECTION DRAWING NO.	DIMENSIONS (mm)																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V
60R. TA 20439	813	1 450	314	2 353	1 288	678	621	479	277	202	67	193	180	1 065	2 255	230±25	274	433.5	47.5	11.11

**TYPICAL 1 IN 6 OBTUSE CROSSING FOR SCISSORS
4420 mm AND 4265 mm TRACK CENTRES M. G.**





SECTION ON X.X.



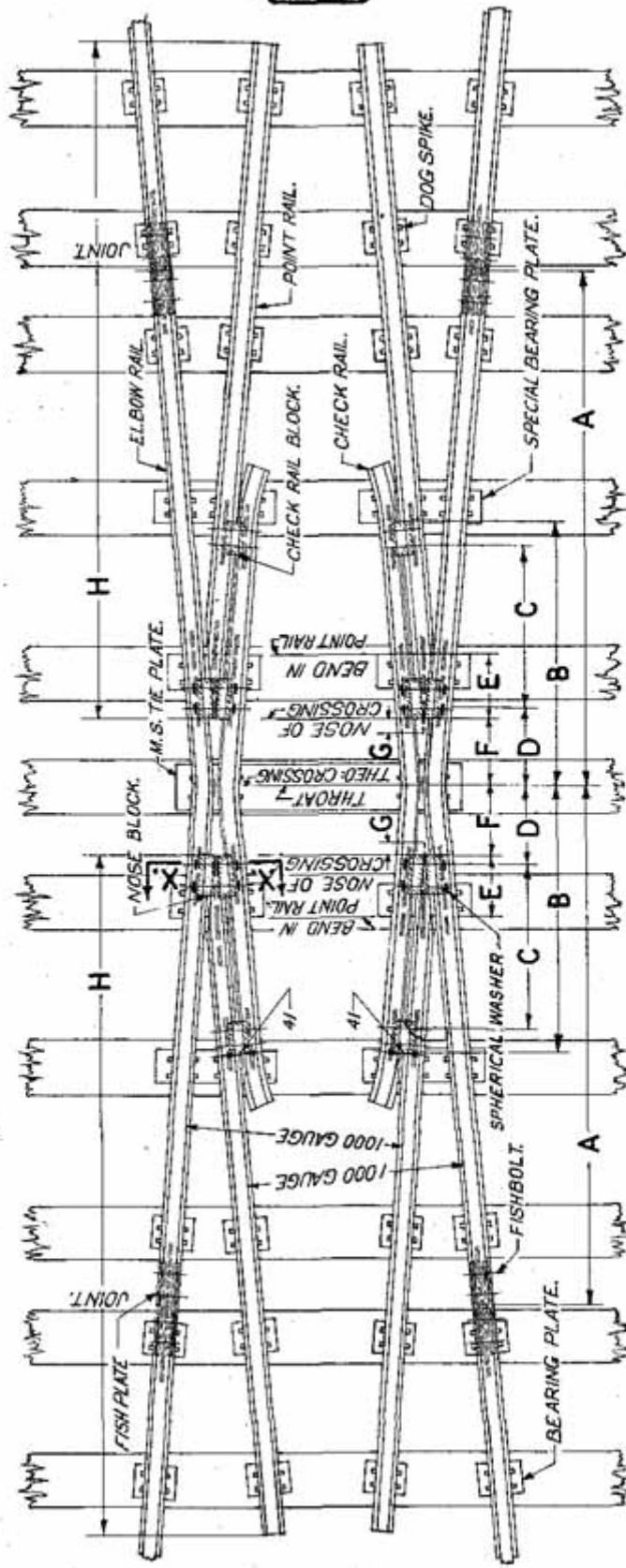
DETAIL OF NOSE OF CROSSING

TABLE OF DIMENSIONS

RAIL SECTION	ASSEMBLY DRAWING NO.	DIMENSIONS (mm)									
		A	B	C	D	E	F	G	H	J	
75R.	74 20479	3415	1220	739	376	294	326	79	54	131	

TYPICAL 1 IN 6 OBTUSE CROSSING FOR SCISSORS

4420mm TRACK CENTRES M.G.



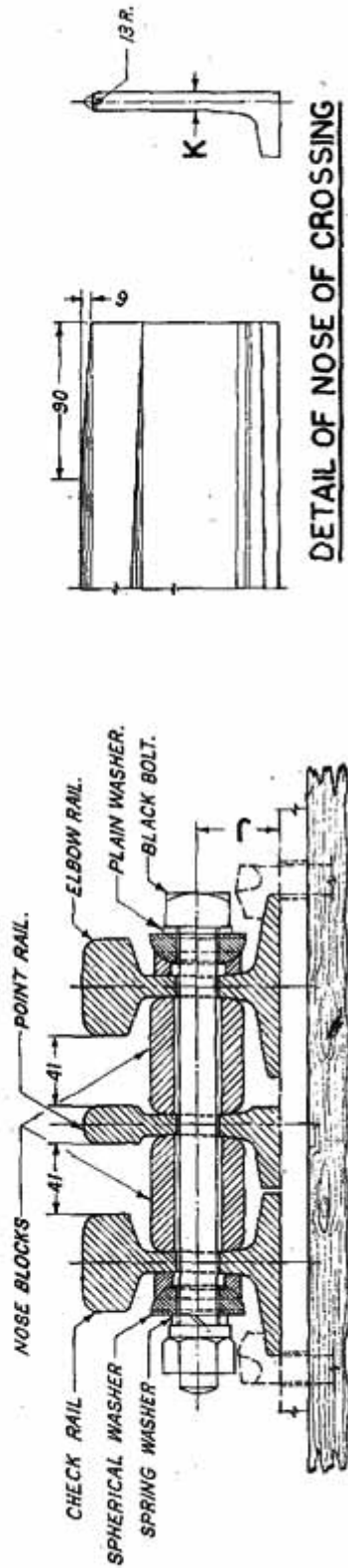


TABLE OF DIMENSIONS

RAIL SECTION	ASSEMBLY DRAWING No	D I M E N S I O N S (mm)										
		A	B	C	D	E	F	G	H	J	K	
60R.	TA 20440	2 408	1 220	751	364	277	314	67	3101	47.5	11.11	

TYPICAL TAPERED CHECK RAILS

(ACUTE CROSSING FOR SCISSORS 4725 mm TRACK CENTRES B.G.)

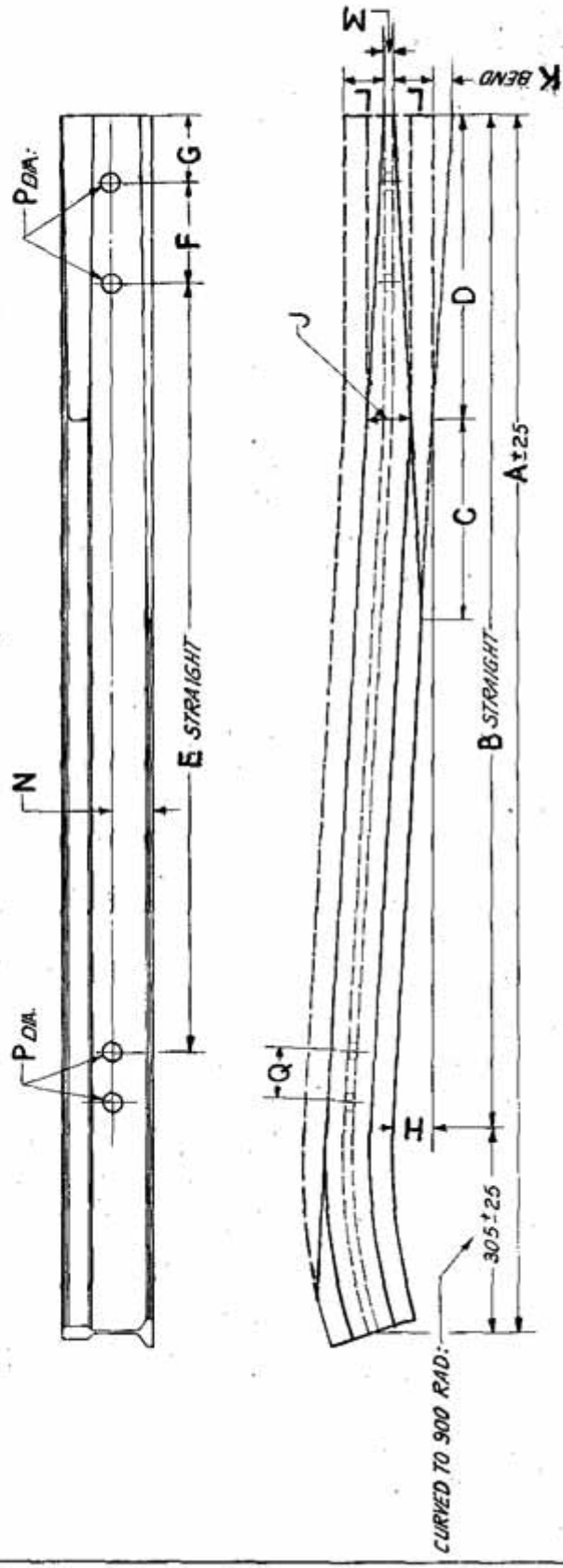


TABLE OF DIMENSIONS

RAIL SECTION	CROSSING	DRAWING NUMBER	DIMENSIONS (mm)														
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
52 kg	1 IN 8 1/2	T 19029	1800	1495	295	440	1135	150	100	62	67	25.5	60.25	15.5	67	28	70
90 R.	1 IN 8 1/2	T 19014	1815	1510	298	452	1145	150	100	62	66.7	26.5	61.3	13.9	60	28	75

TYPICAL TAPERED CHECK RAILS

(ACUTE CROSSING FOR SCISSORS 4725 mm TRACK CENTRES B.G.)

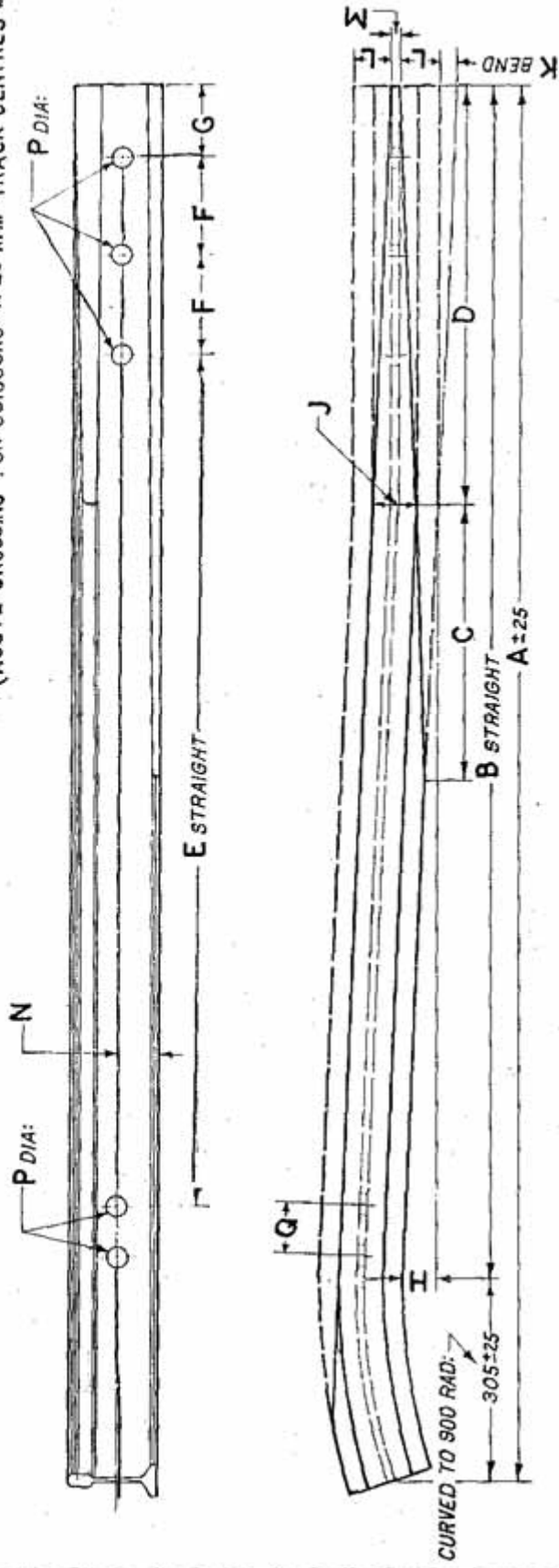
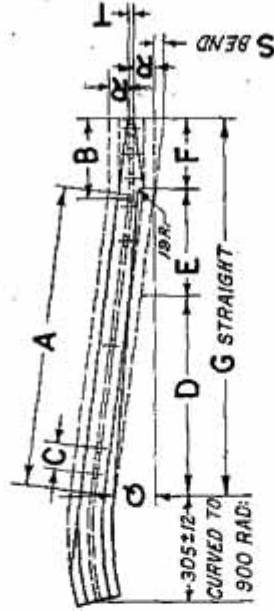
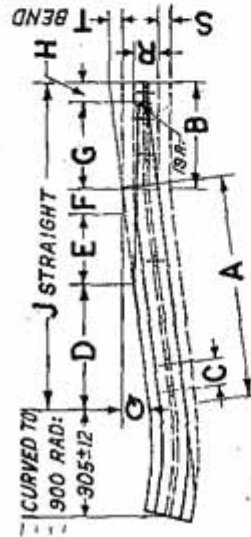
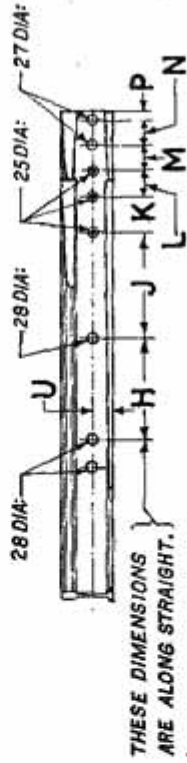
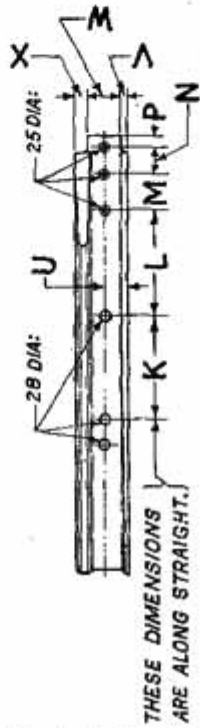


TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	DIMENSIONS (mm)																
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q		
52 kg	T 19034	1 IN 12	2 125	1 820	415	620	1 300	150	105	50	67	25.5	60.25	15.5	67	28	70		
90R.	T 19019	1 IN 12	2 125	1 820	420	635	1 300	150	105	49.5	66.7	26.5	61.3	13.9	60	28	75		

TYPICAL VEE CHECK RAILS

(ACUTE CROSSING FOR SCISSORS
4725 mm TRACK CENTRES B.G.)



SPLICE CHECK RAIL

POINT CHECK RAIL

NOTE :- HOLES SHOWN THUS ϕ ARE 25 mm DIA: FOR TURNED BOLTS.

TABLE OF DIMENSIONS FOR SPLICE CHECK RAILS

RAIL SECTION	DRAWING NUMBER	CROSSING	D I M E N S I O N S (mm)																					
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
52 kg	T 19028	1 / N 4 1/2	653	295	70	385	196	66	245	50	944	290	295	100	75	40	76.5	67	34.5	34.7	67	17	100	39
90 R.	T 19015		633	301	75	364	206	59	251	50	930	304	300	100	75	40	73	66.7	34.9	35.4	60	15	95	32.9
52 kg	T 19033	1 / N 6	956	310	70	344	415	194	235	75	1263	538	325	100	100	50	79	67	34.5	25.5	67	19.8	94.5	41.7
90 R.	T 19020		942	318	75	335	421	163	243	75	1257	538	357	100	100	50	78	66.7	34.9	26.5	60	16.5	91	35.4

TABLE OF DIMENSIONS FOR POINT CHECK RAILS

RAIL SECTION	DRAWING NUMBER	CROSSING	D I M E N S I O N S (mm)																			
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	
52 kg	T 19028	1 / N 4 1/2	675	221	70	583	311	196	1090	280	295	100	75	86	70	30	102	60.25	25.5	15.5	67	
90 R.	T 19015		661	226	75	570	310	201	1081	304	300	100	75	86	75	30	100	61.3	26.5	13.9	60	
52 kg	T 19033	1 / N 6	1167	310	70	759	429	285	1473	536	325	100	100	150	70	40	97	60.25	25.5	15.5	67	
90 R.	T 19020		1161	318	75	756	426	283	1475	538	357	100	100	163	75	30	96.5	61.3	26.5	13.9	60	

TYPICAL CHECK RAILS

(OBTUSE CROSSING FOR SCISSORS CROSSOVERS)

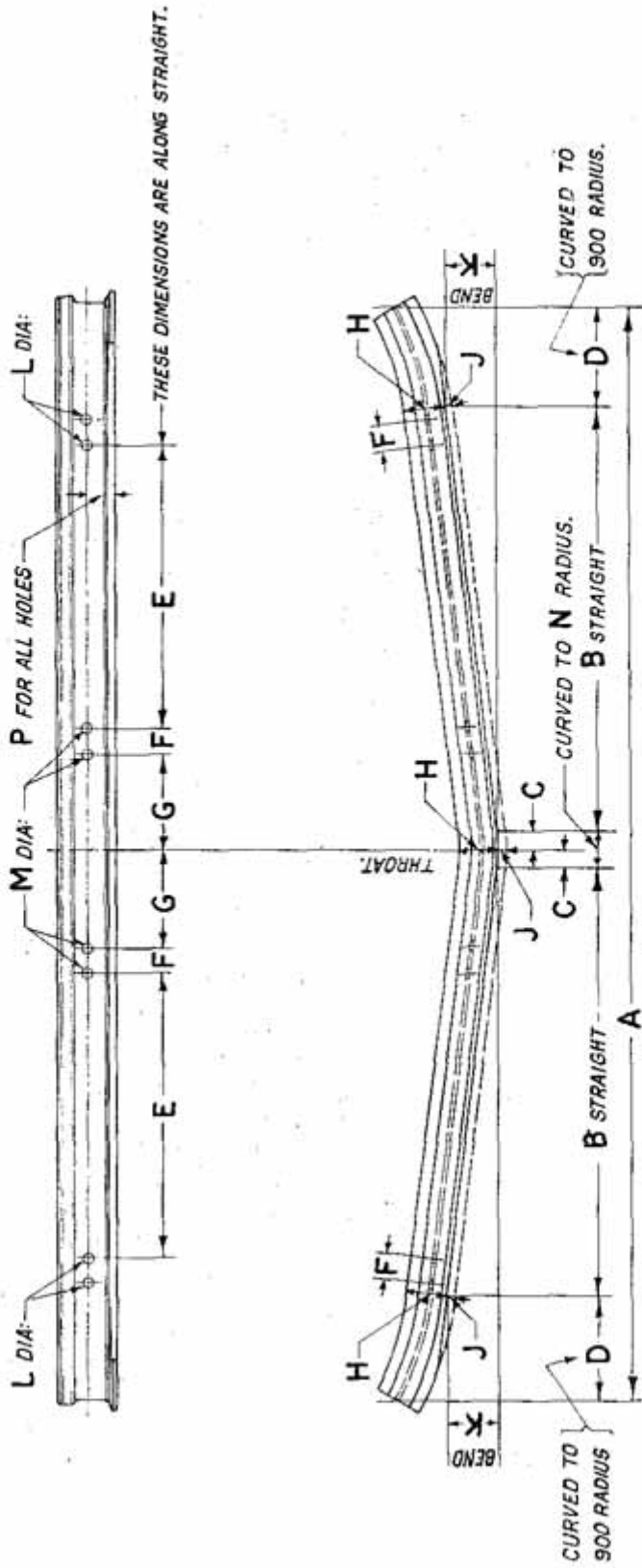
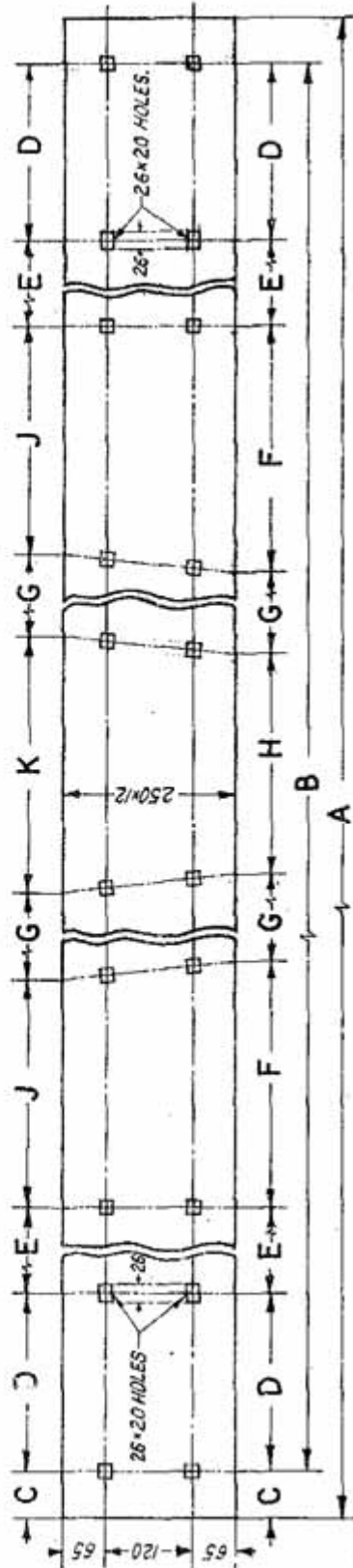


TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	GAUGE	CROSSING	DIMENSIONS (mm)													
				A	B	C	D	E	F	G	H	J	K	L	M	N	P
52 kg 90R.	T 19027	B.G.	1 IN 4 1/2	3200±25	1243	52	305±12.5	832	70	284	108	28	152	28	27	450	67
	T 19012			3200±25	1243	52	305±12.5	831	75	277	107.5	29	152.5	28	27	450	60
52 kg 90R.	T 19032	B.G.	1 IN 6	3360±25	1300	75	305±12.5	797	70	398	108	28	114.5	28	27	900	67
	T 19018			3360±25	1300	75	305±12.5	810	75	378	107.5	29	114.5	28	27	900	60
75 R. 60R.	T 19022	M.G.	1 IN 4 1/2	2950±50	1168	52	255±25	769	70	271	100.2	22	143.5	28	27	450	54
	T 19021			2850±50	1168	52	255±25	770	75	269	95	14.5	143.5	25	24	450	47.5
75 R. 60R.	T 19039	M.G.	1 IN 6	2950±50	1183	37	255±25	664	75	376	100.2	22	100	28	27	450	54
	T 19023			2950±50	1183	37	255±25	669	75	364	95	14.5	101.5	25	24	450	47.5

TYPICAL TIE PLATES

(ACUTE CROSSING FOR SCISSORS
5180^{mm} TRACK CENTRES B.G.)



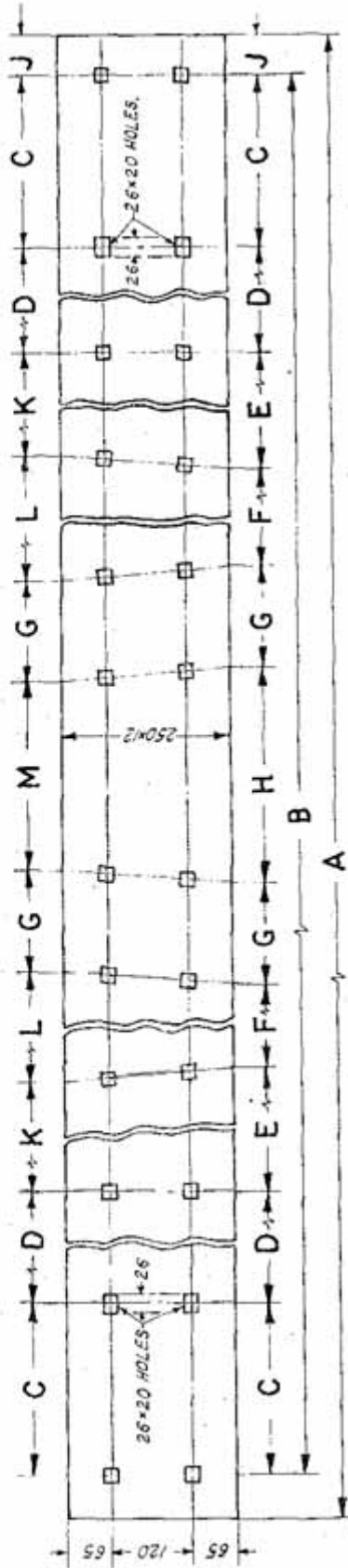
NOTE:-1. FOR TIE PLATE T 15066, DIMENSIONS SHOULD BE CONTROLLED FROM THE RIGHT HAND SIDE.
2. ALL HOLES ARE 20^{mm} SQUARE EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	D I M E N S I O N S (mm)										
			A	B	C	D	E	F	G	H	J	K	
52kg	T 15066	IN 6	7210	7074	70	260	1372	356	1374	350	335	392	
	90R. T 15046		7210	7075	70	259.5	1372.5	355	1374	353	334	395	
52kg	T 15063	IN 4 1/2	7210	7075	70	260	1372	367	1379.5	318	338	376	
	90R. T 15040		7210	7075	70	259.5	1372.5	366.5	1379	320	337	379	

TYPICAL TIE PLATES

(IN 6 ACUTE CROSSING FOR SCISSORS
4725 mm TRACK CENTRES B.G.)



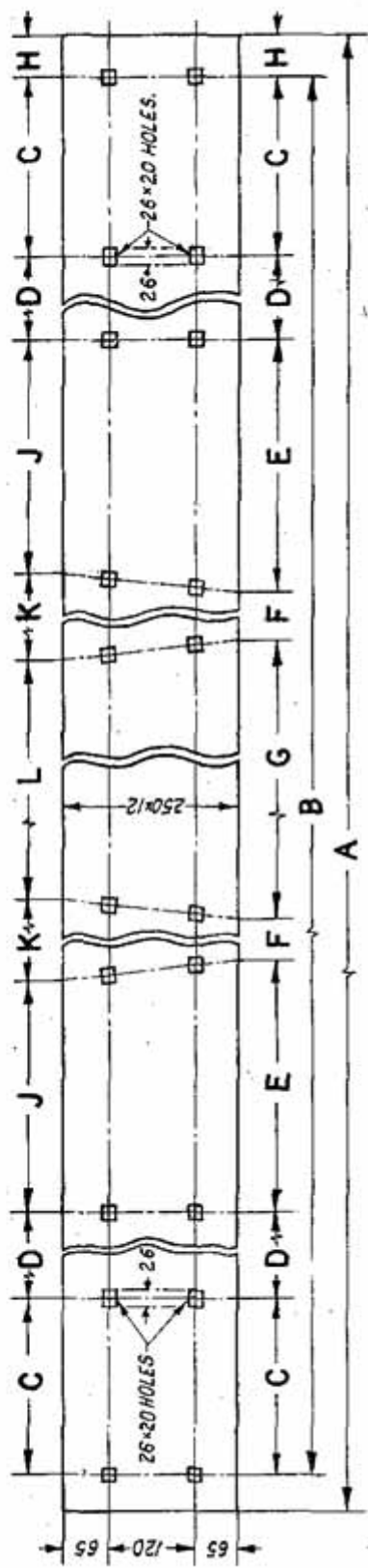
NOTE:- ALL HOLES ARE 20^{mm} SQUARE
EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	D I M E N S I O N S (mm)											
		A	B	C	D	E	F	G	H	J	K	L	M
52 kg	T 15067	6750	6620	260	1372	357	1006	152	326	65	336	1046	284

TYPICAL TIE PLATES

(1 IN $4\frac{1}{4}$ ACUTE CROSSING FOR SCISSORS
4725mm TRACK CENTRES B.G.)



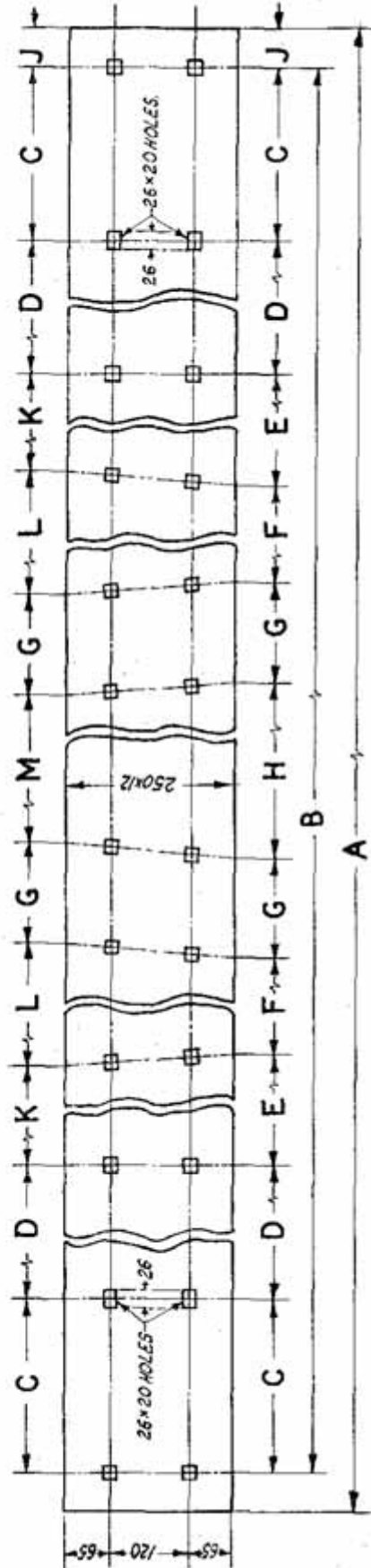
NOTE :- ALL HOLES ARE 20mm SQUARE
EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	D I M E N S I O N S (mm)										
		A	B	C	D	E	F	G	H	J	K	L
52kg	T 15062	6750	6620	260	1372	367	977.5	667	65	338	1036	608
90R.	T 15042	6750	6620	259.5	1372.5	366.5	980	663	65	337	1038.5	605

TYPICAL TIE PLATES

(1 IN 6 ACUTE CROSSING FOR SCISSORS
4725mm TRACK CENTRES B.G.)

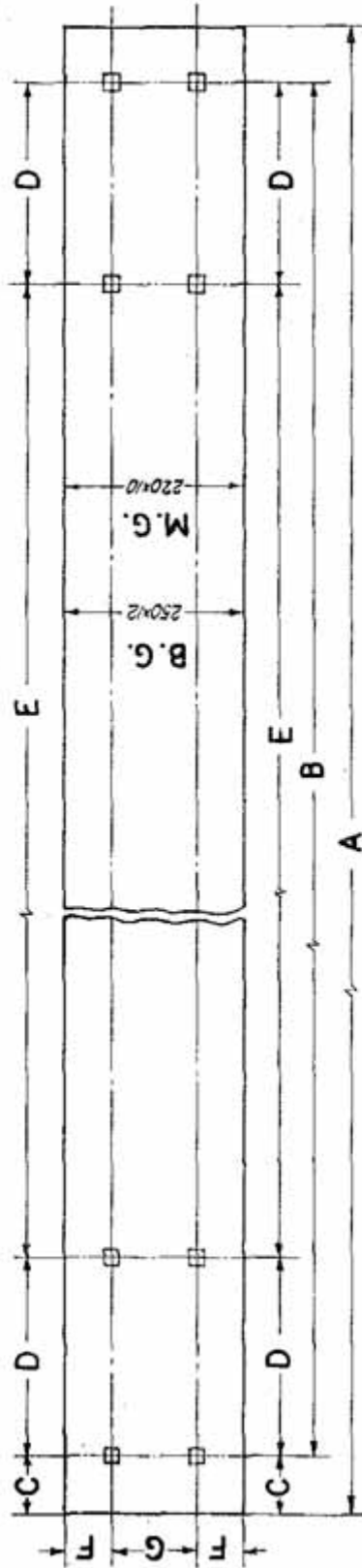


NOTE:- ALL HOLES ARE 20mm SQUARE EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	D I M E N S I O N S (mm)												
		A	B	C	D	E	F	G	H	J	K	L	M	
90R.	T/5047	6750	6620	259.5	1372.5	355	1008	152.5	325	65	334	1050	283	

TYPICAL TIE PLATES
(OBTUSE CROSSING FOR SCISSORS)



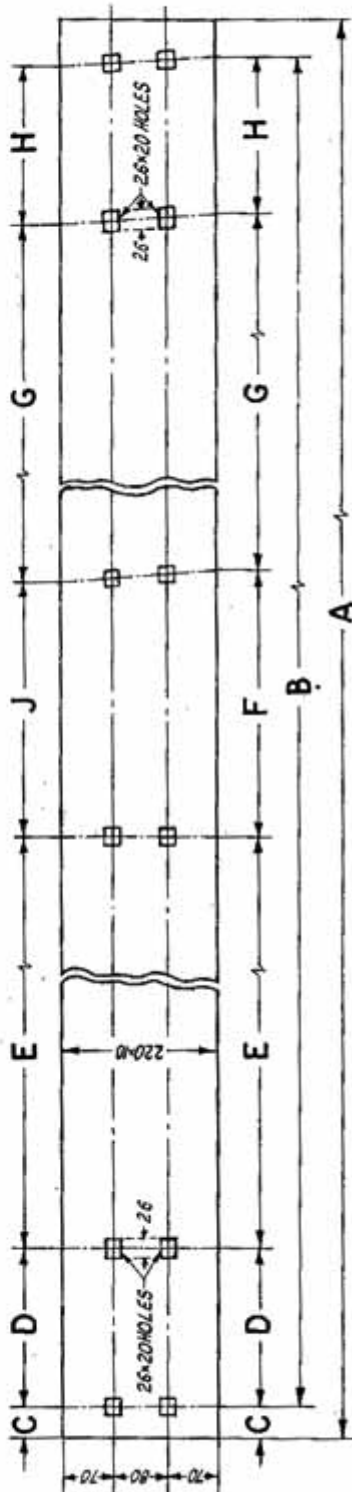
NOTE: ALL HOLES ARE 20mm SQUARE.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	GAUGE	D I M E N S I O N S (mm)								
				A	B	C	D	E	F	G		
			B.G.									
90 R.	T 15041	1 IN 41	B.G.	2080	1922	80	278.5	1365	65	120		
75 R.	T 15051					1320	1218	50	252	714	70	80
60 R.	T 15048	1 IN 6	B.G.	1300	1200	50	234.5	731	70	80		
90 R.	T 15045	1 IN 6	M.G.	2080	1912	85	274	1364	65	120		
60 R.	T 15054					1300	1193	55	230.5	732	70	80

TYPICAL TIE PLATES

(ACUTE CROSSING FOR SCISSORS
4420^{mm} TRACK CENTRES M.G.)



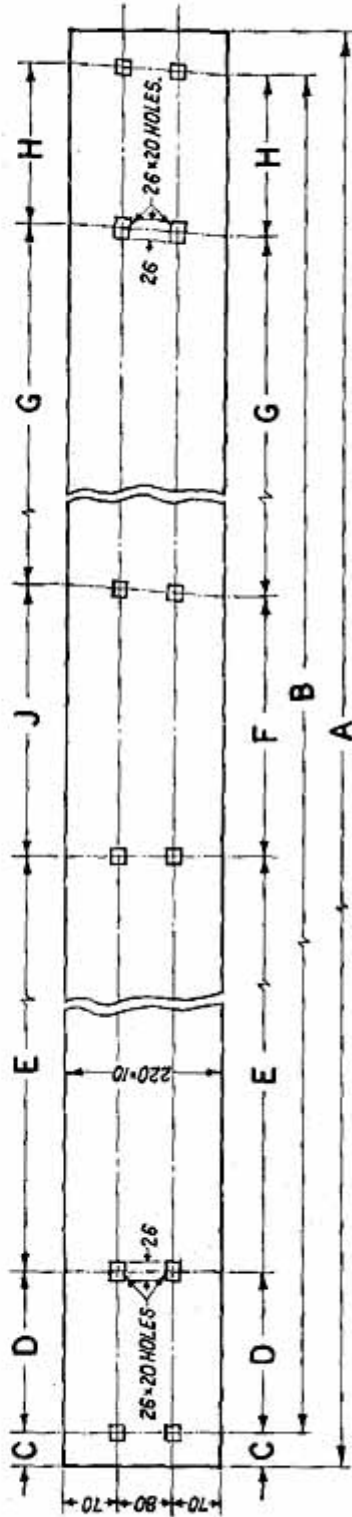
NOTE :- ALL HOLES ARE 20^{mm} SQUARE
EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	D I M E N S I O N S (mm)									
			A	B	C	D	E	F	G	H	J	
60R.	T 15049	1 IN 8 ¹ / ₂	2340	2238	50	220	739	313	744	222	287.5	
60R.	T 15055	1 IN 12	2320	2223.5	45	220	739	302	741.5	221	283.5	

TYPICAL TIE PLATES

(ACUTE CROSSING FOR SCISSORS
4420mm TRACK CENTRES M.G.)



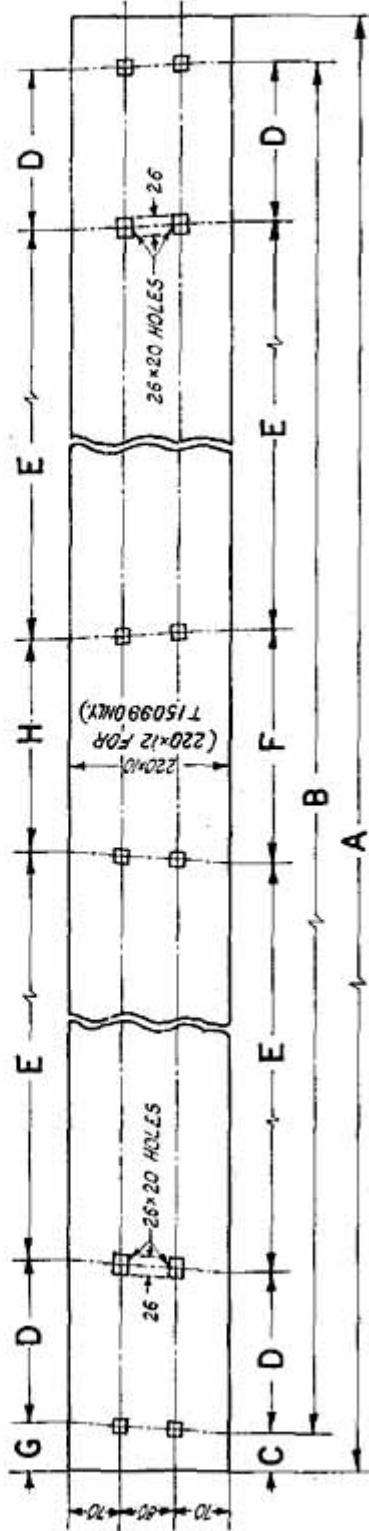
NOTE:— ALL HOLES ARE 20 mm SQUARE
EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	DIMENSIONS (mm)									
			A	B	C	D	E	F	G	H	J	
75 R.	T 15052	1 IN 9 ¹ / ₂	2 360	2 226	55	238	721	306	723	238	332	
75 R.	T 15098	1 IN 12	2 350	2 225	55	238	721	303.5	723.5	239	322	

TYPICAL TIE PLATES

(ACUTE CROSSING FOR SCISSORS
4420 mm TRACK CENTRES M.G.)



NOTE-1. FOR TIE PLATE T 15099, DIMENSIONS SHOULD BE CONTROLLED FROM THE RIGHT HAND SIDE.
2. ALL HOLES ARE 20^{mm} SQUARE EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	D I M E N S I O N S (mm)							
			A	B	C	D	E	F	G	H
75R.	T 15053	1 N 41	2400	2293	55	239	726	363	81	311
60R.	T 15050		2380	2275	50	222	744	343	76	291
75R.	T 15099	1 N 6	2400	2266.5	65	239	720	349.5	83	312
60R.	T 15056		2350	2251.5	50	221	741.5	326.5	68	290

TYPICAL TIE PLATES
(IN 4 1/4 ACUTE CROSSING FOR SCISSORS
3810 mm TRACK CENTRES M.G.)

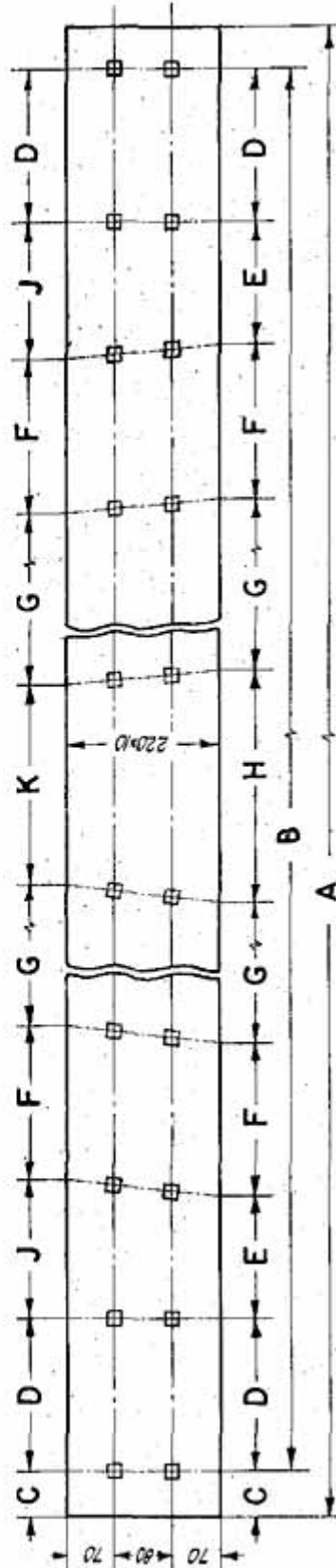


TABLE OF DIMENSIONS

NOTE:- ALL HOLES ARE 20 mm SQUARE.

RAIL SECTION	DRAWING NUMBER	D I M E N S I O N S (mm)										
		A	B	C	D	E	F	G	H	J	K	
60R.	7/5060	3200	3075	65	223	177	225	741	343	203	291	

TYPICAL TIE PLATES

(1 IN 6 OBTUSE CROSSING FOR SCISSORS M.G.)

SX31
SHEETS OF 3

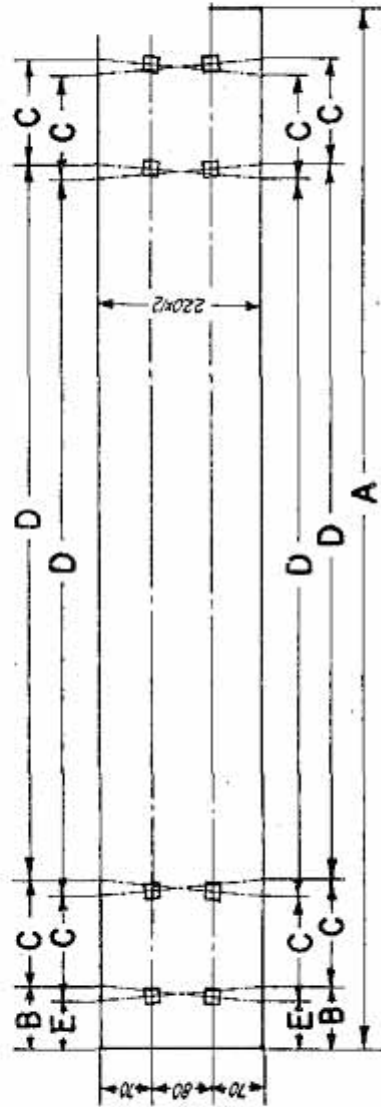


TABLE OF DIMENSIONS

NOTE:- ALL HOLES ARE 20mm SQUARE.

RAIL SECTION	DRAWING NUMBER	DIMENSIONS (mm)				
		A	B	C	D	E
75R.	T/5100	1390	63	139	559	65

CHAPTER VIII
SPECIAL LAYOUTS

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Main dimensions of turnouts with spring crossings BG & MG.	SL3
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Typical R.H. 1 in 12 crossing BG-MG mixed gauge.	SL29 (Sheets 1 & 2)
Typical R.H. 1 in 12 MG crossing BG-MG mixed gauge.	SL29 (Sheets 3 & 4)
Typical R. H. 1 in 14 ·07 switch crossing BG-MG mixed gauge.	SL29 (Sheets 5 & 6)
Typical 1 in 8½ crossing for double turnout, BG.	SL30 (Sheets 1 & 2)
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General : Most of the special layouts included in this Chapter are those which were initially prepared with dog spikes on wooden sleepers. Some of the assemblies and sub-assemblies on wooden sleepers which were initially designed with rail screws and plate screws are also included. Sub-assemblies and parts for use with dog spikes are being modified for use with rail screws/ plate screws. There is no change in drawing numbers and dimensions of sub-assembly drawings of the Track Manual except for showing the rail screws/plate screws instead of dog spikes in the sheets. For parts such as tie plates, slide chairs etc. there are changes in dimensions and new drawing numbers have been allotted. Therefore, concerned relevant part drawings with rail screws/plate screws issued to railways are being included at the end of the IRS Track Manual Vol. II as an Annexure.

Brief Notes

Symmetrical splits : In a symmetrical split, the centre line of crossing is placed along the centre line of the main track so that its heel diverges along two separate tracks having equal radii of curvature. The effect being to halven the crossing angle and the degree of curvature of the lead curves so as to permit speeds higher than what could be allowed over an ordinary turn-out having the same switch and crossing angles.

((It has also been the practice to use 1 in $8\frac{1}{2}$ symmetrical splits for snag dead ends, provided to isolate main lines from the loops. In the special type of crossings used for this purpose, it is possible to provide a through running rail for the main running line normally used by trains, whereas the other rail of the crossing leading to the snag dead end is raised by 38 mm for BG and 35 mm for MG, so that vehicles entering the dead-end may cross over the main running line without damaging it. Such a crossing, besides being economical in the first cost, provides for smoother travel on the main line and has a longer life. 1 in $8\frac{1}{2}$ right hand and left hand special crossings are designed for use with snag dead ends.

The following important design features differentiate a symmetrical split layout from an ordinary turnout:

- (i) The degree of curvature of the through track and the turnout track in symmetrical splits are equal.
- (ii) For given turnout data, the radius of a symmetrical split is nearly double the length of an ordinary turnout radius.
- (iii) Both stock rails in the switch of a symmetrical split are given a bend each at the theoretical toe, as against only one bend in the ordinary turnout.
- (iv) All the sleepers in the symmetrical splits are perpendicular to the centre line of the layout.

For general definitions of symmetrical splits refer page SL 1 sheets 6 & 7.

Spring crossings : In the IRS crossings described in Chapter V (TSC) in Vol. I of IRS Track Manual, (metric), the wheel load is transferred from the wing rail on to the Vee of the crossing or *vice versa* across a gap which has to be left for the wheel flanges. In order to obviate this gap and to prevent a vehicle from lurching at the throat, spring crossing has been designed having a moveable wing rail held against the Vee by a strong helical spring. By this arrangement an unbroken running surface is presented to the wheels of trains using the main line track whilst for trains entering or leaving the turnout track the moveable wing rail is forced outward by the wheel flanges to allow the passage of wheels. Spring crossings are generally used at locations where the bulk of the traffic is on the straight road e.g., emergency cross-overs at wayside stations and catch-sidings on the double line etc.

The important design features of spring crossings are:

- (i) The spacing of sleepers under the spring crossing is kept the same as that under the ordinary acute crossing. This is done with a view to facilitate replacement of ordinary crossings by spring crossings and *vice versa*.

- (ii) (a) The moveable wing rail is strengthened with reinforcing straps to make up for the machining at the foot of the rail. This strap is bent double to form lugs which go inside the hold-down brackets on some of the crossing sleepers.
- (b) In the R.H. spring crossings, the right wing rail is moveable and in the L.H. spring crossings, the left wing rail is moveable. The moveable wing rail is anchored at the heel of the crossing by means of a Pivot block and is held to the Vee by a strong helical spring. A portion of the top table of the head of the moveable wing rail is planed off a little distance away from the actual nose to avoid its being forced open by a worn wheel.
- (iii) The table of the moveable wing rail is planed for a small distance so as to ensure the safe passage of the wheels in the trailing direction.
- (iv) The fishplate at the heel of the moveable wing rail is bent so as to permit free movement of the rail.
- (v) The adjustment of helical springs can be made by tightening the nuts at both ends.

For general definitions of turnouts with spring crossings
r pages SL1 sheets 8 & 9

Mixed gauge turnouts : The mixed gauge turnouts included in this Manual are those which have one rail common to both the gauges. There can be 28 possible combinations for the various types of such mixed gauge turnouts. It has not been considered worthwhile to prepare the detailed designs of all the possible combinations with various rail sections and crossing angles. Only the most commonly used combinations—that of 1 in 12 RH and LH turnouts and 6400 mm switches on 90R rails are included in the present volume. It may be noticed that in the entire assembly, the rail section used invariably belongs to the bigger gauge i.e. the heavier rail section is always used for the entire layout even if the rail section of the smaller gauge track is a

lighter one. The smaller gauge turnout with a heavier rail section is then connected to the running track by means of suitable combination fishplates as detailed in pages RF4 sheets 1 to 4 (Vol. I).

It is also sometimes necessary to interlace the smaller and the bigger gauge tracks, wherever, there is an inadequate width for providing two separate tracks. The arrangements at the two ends of such a gauntletted track are similar to that of a turnout except for that no switches are provided. The minimum check rail clearance must, however, be maintained between any two rails using the check rail blocks and other fittings as may be needed. No drawings have, however, been standardised for such an arrangement.

Double turnout or tandem : A double turnout is adopted on sparsely used tracks in congested yards. An essential feature of a double turnout is that one turnout falls within the lead curve of another turnout. The distance by which the actual toe of switch of one turnout trails behind that of the other is governed by the considerations of adequate divergence for the throw of the trailing switch rails. In the case of turnouts of contrary flexure, care has also to be taken to see that the acute crossing formed by the intersection of the gauge lines of outer rails is located so as not to unduly restrict the length of either of two normal crossings. For a double turnout of similar flexure such an acute crossing is formed at the intersection of the gauge lines of the outer rail of one turnout and the inner rail of the other.

Another interesting design feature of the double turnout of contrary flexure is that when the two turnouts have similar dimensions and equal angles, the third acute crossing and the connecting lead radius are that of a symmetrical split with an appropriate crossing angle. For example, for the 1 in $8\frac{1}{2}$ double turnout included in this Chapter, the acute crossing is that of a symmetrical split with crossing angle 1 in 6. Pages SL1 sheets 12 & 13 give the definitions of a double turnout.