



BUILDING THE M1 MOTORWAY

www.buildingworkersstories.com

ISBN 978-0-903109-36-9

Cover photograph: Laying and rolling the lean concrete base.
Source: John Laing archive

PREFACE

This pamphlet is the third to be produced as part of a two-year University of Westminster research project, entitled 'Constructing Post-War Britain: Building Workers' Stories, 1950-1970', which began in August 2010. The project is funded by the Leverhulme Trust and aims to collect oral history testimonies from construction workers who were employed on five of the highest profile sites and developments of that era: Stevenage New Town; Barbican development, City of London; South Bank arts complex; Sizewell A power station; and the M1 motorway. The aim of the research is both to gain a greater understanding of the processes of change within the construction industry during these decades and to highlight the role that construction workers played in the creation of the post-war built environment.

For more information see project website www.buildingworkersstories.com

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The research for this pamphlet was conducted during August 2010-April 2012.
Nine ex-workers were interviewed:

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interviewed in Corby on 8 June 2011

Barry Crisp
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interviewed in Desborough on 13 June 2011

Eric Longhurst
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interviewed in Corby on 27 June 2011

John Swan
former carpenter
interviewed in Gretton on 29 June 2011

Vic Longhurst
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interviewed in Corby on 30 August 2011

David Grey
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interviewed in Woodbridge on
15 September 2011

Steve Morris
former cost surveyor
interviewed in London on 11 October 2011

Dave Culpin
former fitter mechanic and driver,
interviewed in Lowestoft on 13 October 2011

Richard Sisson
former steel-fixer
interviewed in Castle Donington on
25 October 2011

INTRODUCTION

Described as the 'most extended civil operation since the railways were built'¹, the M1 motorway was the first long-distance, inter-urban motorway to be constructed in Britain and the first motorway to consist of three carriage lanes. The initial construction of the road was split into two separate phases, running from London to Yorkshire, although it has been further developed since. The first phase, a 73 mile stretch built mainly by John Laing and Sons and running from St Albans in Hertfordshire to Crick in Northamptonshire, employed thousands of workers, perhaps as many as 19,000 though never more than 4,200 at any one point. Many lived in temporary accommodation and camps dotted along the route. Over £5 million worth of plant was deployed and the speed of the project was remarkable, completed on schedule in just 19 months, from March 1958 to October 1959 that is, one mile every eight days! The second phase of the M1 was built between 1963 and 1968 and included an 87 mile stretch between Crick and Doncaster and a 35 mile one from Aston to Leeds. This second phase was not dominated by any one contractor, the eighteen separate contracts being won by a multitude of major firms, including Robert McAlpine, Tarmac, Wimpey, Costain, Holland, Hannen and Cubitts, RM Douglas and John Laing and Sons.

¹ The Times, 24 June 1958



Bill Swan



Barry Crisp



Eric Longhurst



John Swan



Vic Longhurst



David Grey



Steve Morris



David Culpin



Richard Sisson

BACKGROUND

Britain was a late starter when it came to motorway development and lagged well behind states such as Italy and Germany. From the 1930s onwards, however, there was a growing awareness and recognition of the importance of motorway systems within government circles and increased interest in the German system in particular.² Immediately after the end of the war, the new Labour government outlined a ten-year programme designed to update and over-haul Britain's roads network and including a motorway programme.³ Financial difficulties scuppered that particular plan but, by the early 1950s, economic recovery, the end of rationing, pressures from commercial interests and the general continued rise in car ownership all combined to put motorway construction firmly on the agenda.⁴ As a result, the architect and engineer, Sir Owen Williams⁵ was commissioned in 1951 to design an inter-urban motorway stretching from St Albans to Doncaster, a distance of over 140 miles. The first part of the route was a 73-mile stretch between St Albans and Crick, which was eventually published in 1955, as part of a wider £147 million programme.⁶ A more detailed plan by Williams for the whole of the London-Yorkshire motorway was eventually confirmed in 1956.

The first stretch of what would eventually become the M1 was made up of three main parts: the 16-mile St Albans by-pass, designed by Hertfordshire County Council; a 55-mile section from south of Luton to Crick in Northamptonshire, and a spur to Dunchurch designed by Williams; and the 2-mile long Dunchurch by-pass, designed by Warwickshire County Council. These contracts were put out to open competitive tender.⁷ Both county councils administered the tendering process for their sections, on behalf of the Ministry of Transport. Tarmac was awarded the contract for the St Albans by-pass and A Monk and Co. won the Dunchurch by-pass. The Ministry of Transport administered the tendering process for the Luton-Crick road. In order to encourage as large a number of contractors as possible, it was decided that this section would be split into four separate phases.

By the summer of 1957, press reports were beginning to provide some information concerning the proposed road and in September *The Contract Journal* outlined the project in detail, along with the anticipated dates for the tendering process. Four different types of tender were required – two that related to timescale, 19 months and 31 months – and two that related to the type of road surface – flexible (asphalt) and inflexible (concrete). John Laing decided to bid for all four phases of this part of the motorway, which meant drawing up sixteen separate tender documents. The company submitted its £14.7 million tender and on 20 January 1958 was awarded the lot. But the timescale was tight; Laing agreed a contract duration of just 19 months. At a press conference held a few days later, the firm predicted that around 3,000 workers would be needed for the project, many of whom would be recruited locally, and stated that most of the work for the remainder of the year would focus on excavation.

² For more on this see: John Frederic Allan Baker, (1960), *The General Motorway Plan*, Institution of Civil Engineers: London, p318; and George Charlesworth, (1984) *A History of the British Motorways*, Thomas Telford: London, p13

³ Charlesworth, op cit, pp23-24

⁴ Charlesworth, op cit, p34

⁵ One of the first to experiments with the aesthetic potential of concrete, the highlights of Williams' long career included the 1923 British Empire Exhibition at Wembley and the Palace of Engineering, which at the time, was the largest reinforced concrete structure in the world.

⁶ James Drake, HL Yeadon and DI Evans, (1969), *Motorways*, Faber and Faber: London, p27

⁷ In *A History of British Motorways*, Charlesworth points out that this method of tendering was replaced in 1963 by select tendering.



Laing site offices at Hanslope, section C1. Source: Steve Morris

The laying of the road and the construction of the bridges would begin simultaneously, with the bulk of the labour power being deployed on bridge-building.⁸ By the middle of February, less than four weeks later, the various project managers had been appointed and had begun the contract.⁹

Laing's HQ for the project was based at Newport Pagnell though the firm also maintained the separation of the contract into its four phases, setting up separate site compounds in each of the areas with smaller compounds for each sub-section. Laing's overall project manager was John Michie, with John Pymont as planning engineer. Because of the size of the project and the nature of the terrain, communication problems were acute so Laing chartered a helicopter, which allowed project managers and engineers to move between the phases fairly quickly. Shortwave radios were also installed in eight vehicles and at the four depots

along the route. In addition, there was a field telephone system.¹⁰ Overall, 40,000 square feet of office accommodation, for 300 staff, was built by the company in a three week period between the award of the contract in January and its commencement in March. Tarmac, in contrast, built a much smaller infrastructure to carry out its sixteen mile section: four section offices, and three concrete batching plants. Project managers and assistants used a fleet of land-rovers and field telephones to assist with communications throughout the site. Tarmac also recruited ex-coal board surveyors who had worked for ordinance survey to assist its own engineers.¹¹

⁸ The Times, 21 January 1958

⁹ Team Spirit, March 1958

¹⁰ Retired Employee's News, journal of the Laing Charitable Trust, Summer 2009, p12

¹¹ Northampton Archives, MA/ER/M1/4/1, DEG Redston, 'History of the Motorway Construction, unpublished notes.

GETTING STARTED

The M1 attracted workers from all over Britain and Ireland. These included fishermen from Aberdeenshire, farmers from Lincolnshire, lorry-drivers from Belfast, joiners from Inverness, steel-fixers from Limerick, and machine drivers from Mayo, as well as large numbers of workers from the towns and villages spread across the route of the job. There were also many different ethnic groupings, including recently-arrived immigrants from India, the West Indies, Poland, and Hungary. There was even an ex-Nazi concentration camp guard from Ukraine.¹² Occupations that were involved in the building of the M1 included excavators, fitters, steel-fixers, asphalt gangs, shuttering carpenters, electricians, pipe layers, scaffolders, banksmen and machine operators. Many of these workers came from areas of endemic unemployment and were desperate to find work, even if it meant moving far away from home. Most were attracted to the job as a result of the higher wages that could be earned.

Barry Crisp from nearby Market Harborough had been earning around £8/ 10s per week working as a maintenance carpenter repairing railway stations. He had been doing this job for a few years and felt that the time was ripe for the type of change that might earn him some money.

I began to get a bit bored, so my mate says to me, "Why don't you come with me?" I said, "Well, where are you?" He said, "I've just started on the M1. They're crying out for tradesmen." He said, "Real good money!" He said, "Twice what you're getting!" So, I thought, oh, don't sound bad...I'm just starting off in life, just married, and could do with every penny. I went with him... and that's

when I started, in the '50s. It had started. I mean, they'd got up to the Watford Gap, alongside of the A5.

Eric Longhurst was aged 20 when he started on the M1. Like a lot of young men on the project, he had no previous experience in the construction industry. He had been working as a tractor driver on farms in Northamptonshire for just a few pounds a week when he managed to get a start after a tip-off from his uncle.

I just done my national service locally. I drove the crash fire engine on one of the airbases in the end, at Upwood, which is closed now, near Huntingdon, and then, I come out there, and because I could drive tractors and things, and the M1 were just starting, well, my uncle, he used to work in Stewart & Lloyd's on the bulldozers when they were doing the iron ore and covering, filling things in, and they all went from there, and he said, "Why don't you come up there?" He said, "There's a load of bulldozers up here," and he said, "There's people coming up on motorbikes from London – tell me where the starter button is – and chancing their arm!"

¹² Interview with Richard Sisson, 24 October 2011.



Jenkincler Singh, Fedir Duran, Josef Famulski, Gurdial Singh, all of whom worked on the M1. Source: John Laing Archive

So the M1 was the first job you had done in the building industry?

Exactly, yes. I'd been on crawler tractors on farms and things and I sort of bluffed my way through and got on alright and stayed till the end!

Eric Longhurst worked as an excavator driver. As his comments indicate, there was no formal route into this type of job; in his case it was the experience gained working on the farms and the assistance of his uncle that had got him the job. One informal way that could allow workers to become excavator operators was to work first as a banksman, a maintenance job that involved 'learning the grease-points, changing equipment, changing ropes etc. on the excavators'¹³. After a period of this type of work, which could range from six months to two years, it was sometimes possible to get started on the driving itself.¹⁴ Eric's uncle, Vic Longhurst, was an experienced digger driver who worked for one of Britain's biggest steel producers at their iron ore pits in Corby. He had had no formal training on how to use these machines, but developed his skills after working alongside more proficient drivers.

They put me with another two men, so I went where there was two machines and three drivers. I used to stand on the back and watch them, how they went on, and so then the guy would get off and say, "Righto, you're in charge now – you take it. And that's it, so that's how you went on, and you went on for about six months, and then the big man would come and say, "And how is he getting on?" "Oh, he's doing alright." "Can he drive then? Can he go on his own?" "Yeah, yeah." That's how it was, you know – they'd tell you.

Vic, a part-time footballer for Corby Town FC, got his job on the M1 after cut-backs at Stewart & Lloyds left him with a shorter working week and lighter pay packet.

Well, it came about by the fact that at that period of time I was working on the mines and it was something similar to the Suez Canal closed down and we got put onto four days a week, and there was quite a few of us lads who were kind of young, got families, just got a house, and, at that period of time as well, the Vickers' tractors were coming in, and these guys were coming from Wolverhampton, doing repairs on them, and we said "Ah, we're going onto four days a week next week – we're being cut down because we haven't got the diesel." So they'd say, "Well, why don't you go onto the M1? There'd be about 15 machines standing out at Watford Gap with no drivers, Vickers' tractors and scrapers, because at that period of time they didn't have that many drivers about, you see. It was a good job in them days, you could command quite a decent wage. So we had a bit of a chat and seven of us went and gave our notice in, and, went off to the motorway, on a Sunday morning. There stood all the machines, eh, no drivers. We went in, went in, knocked on the door, "Yeah?" one of the blokes come out, one of the bosses on Dowsett's come out and said, "Right, you're just what we're looking for – we're looking for men to drive these machines! When can you start?" We said, well, you know, we'd have to work a week's notice. So, we went back and gave in our notice, seven of us left and went out to Watford Gap.

¹³ Birmingham Central Library archives (BCL), MS 4000/6/1/14/4/C, Parker/MacColl interview with un-named Irish worker (1). In 1958, the BBC's Charles Parker and folk singer, Ewan MacColl visited the M1 site and interviewed several workers, as part of their research for the BBC Radio programme, *Song of a Road*, which was broadcast in 1959. Extracts from these recordings are available in this archive.

¹⁴ Ibid; and MS 4000/6/1/14/6/C, Parker/MacColl interview with un-named Irish worker (2)

Brothers John and Bill Swan were carpenters from Scotland, who came down to Corby in the mid-late 1950s to work on the building of the new town housing estates. Their route onto the M1 job was conventional.

So how did you get your job on the M1?

Just by word of mouth. Laing's was looking for joiners. (Bill Swan)

The M1, you just applied to...to Laing's, you know. You could take a half a day off somewhere and nip over to the office and say "Are you needing anybody?" and they'd say yes, you know...and we worked on the Crick section. (John Swan)

Fitter mechanic Dave Culpin started on the M1 when the company he worked for began hiring out excavating machinery to the various sub-contractors who had been awarded work by Laing. His work involved repairing machinery or engines that had broken down or been damaged.

Yes, because when the M1 started, we hadn't got the equipment, not like they have nowadays. So, when the M1 opened up the bigger firms hired in machines off us so, at any one time, I could have perhaps five machines on the M1. There was no mobile phones. If a machine broke down, the driver would have to hitch a lift or walk to the telephone box, down towards Ridgemont somewhere, that area, and try and contact our firm. I was normally based at our workshop. "Oh Dave, so-and-so has broken down, so-and-so." Then you'd get up there and you'd find that probably vandals had been there the night before and drained all the fuel out of it! There was quite a bit of that went on. Although not many machines had cabs or windows what there were, were very often

smashed. Or, you'd get those who were after scrap metal would have brass fittings off the engines. And of course, the machines then were not hydraulic as we know them today. Hydraulic works on oil pressure. These were all wire ropes. And that particular machine would carry a reel of 300 yard rope on it, and it would carry a reel of 500 yard on it, because there was two separate operations for it. Now, a good driver would go a week or a fortnight without breaking a rope, but a poor driver would probably break one every few hours, and if you imagine wire rope, covered in grease, hundreds of yards of it [laughing], so you re-threaded it.

As Dave Culpin points out, many of the excavators on the M1 were rope based, and not hydraulic. These lacked the power of the newer hydraulic machines, but were preferred by some of the drivers, who had developed their skills on them. There were some hydraulic excavators on the M1. One fitter, a man in his forties from Newcastle and someone who could recall working on the old steam excavators, spoke about the ways in which these new machines were changing his job:

They try to improve things, but they put more and more bits in and make them harder to maintain. More of your work is replacement of parts and not so much fitting. You don't get the same type of satisfaction. There's none of your workmanship in it – more a matter of putting someone else's in. There's more work in diagnosis – that gives satisfaction.¹⁵

¹⁵ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with un-named English worker (2)

THE CONSTRUCTION PROCESS

EXCAVATION

With the project facing a remarkably tight deadline, the shifts were long and the work was hard. Both Eric and Vic Longhurst worked for Dowsett's engineering, a sub-contractor which had received from Laing the contract for excavating one of the sections. Dowsett's men worked long hours every day.

Well, we worked 12-hour shifts, and you got like time and an eighth or time and a half and that. I think on one of my pay-packets, with your time and a half and your time and eighth or whatever it were, on a full week, I think it were 93.25 hours or something. And I enjoyed it! I mean, I'd never had money like it.

You were working weekends as well?

Oh yeah! You worked every Sunday. You got changed over on a Saturday, so, if I remember right, if you were on nightshift you had Saturday off. If you were on nightshift Friday night, the dayshift on Saturday morning ...starting off, had Saturday afternoon off, the scrapers were all parked up, and then you'd do your next shift on the Sunday, so that's how it worked. (Eric Longhurst)

As Eric Longhurst indicates, excavation work continued on this job twenty-four hours a day. The day shift started at 7am, with the night shift starting 12 hours later. Shifts were rotated, meaning that all the digger drivers worked both days and nights. According to Vic Longhurst, it was not always possible to do the same amount of work at night:

They had floodlights and that, and you could probably take off the rough, but once you got down to kind of coming near to the finished article, you had to leave it because you couldn't see properly.

Those working on the excavation used a variety of different machines, some of which they had used on the iron ore pits, but also others that they hadn't used before.

Dowsett's had a Caterpillar D9 that pushed the Caterpillar DW21 motor-scrappers. They had Vickers's bulldozers and scrapers, and they got pushed as well. They had some subcontracted D9, Caterpillar D9, scrapers and some D8s, and various others, some Euclid S21s, S18s, motor-scrappers, single-engined ones, at the time. And smaller machines, obviously, and in the end, at the last minute, they had to do the batters, because everything was roped on the blade, they had these hydraulic little tiny track-marshals, from Wards, with hydraulic blades, and they used to trim some of the batters up, you know. (Eric Longhurst)

The actual process of excavating was carried out in several stages. Contrary perhaps to public perception, this kind of work was skilful and required precision.

They had obviously been there for about a year before pegging out the actual motorway with outer line pegs, and the outline pegs, which takes in the full width of the motorway, which includes the batters and the surcharges as well. So, mostly, you allow kind of a metre between them pegs and your inside, so that your pegs don't get knocked down, so you work inside of

them. Then you get where you've got a bank to cut through for what they call the batter, and then the verge at the bottom, and then you've got your piece between that and where your actual motorway starts. If you're going through a bank of muck, say like you was coming through the middle of this house, you would have a batter that side and a batter that side, you know, and then you'd have your verge and then your road surface, outside, and then your actual motorway would start. So when you went along, it was all fenced off, and your pegs would be inside, and then you'd scrape the topsoil off that, and then you'd come in so many metres, and then you'd have what they called your verge, and then you'd start your edge of your motorway, and work in then to your centre, reservation, right, and then, on the other side...you just put it 20 or 30 yards just off the side of your motorway, up on top of the banks. So, most of this was taken into account with the farmers and people like that, to allow you to put this, that and the other, and they were paid well for it. So that's how it went. So, then your verges would be cut. When the topsoil was off they'd put the profiles in, and you'd look along – and you'd have profiles down the side, profiles down the middle. So what you did was, you had foremen, who were in charge of that, and they looked across, and you had a row of profiles... at the level you were going to set your verge at, because then you were going to put topsoil back on again when it was finished, you see. And then you had your next piece, which came up to the edge of your motorway, and then... your motorway was cut lower because it'd got to get gravel, concrete, and all that stuff for your base. (Vic Longhurst)



Excavating the M1 . Source: Steve Morris



Machine hired out by Herts. Plant Hire, Dave Culpin's employer. Source: Dave Culpin

Both Vic and Eric Longhurst carried out the more precise aspects of excavating work. As we have seen, Vic had developed the necessary skills for this whilst working on the iron ore pits in Corby, whilst Eric picked them up on the M1 job itself.

And after a spell of about, I suppose six months, once the main motorway was starting to take place within the 12 months, I then had a blade on. I dropped the scraper off and I put a blade on, and me and another chap, who lives in Corby, went on the batters, doing the batters, you know where you cut through a bank? And doing that, and then once a lot of that was done and a reconstruction of the motorway was starting to take place, and then they started to come along to do the actual finishing, so they could actually spray it with the tar and put grit down, to put the surface on, I was then brought back, and several more lads who were there, with a blade, skimming it off down to the actual level. It is precise, you know. And you had to know what you were doing. This chap who I was with most of the time, doing these jobs, was a chap called Jock McCallum. He was kind of a foreman. So he got me back and he must have said to somebody there "Well, I want Vic back because now we're going to start doing it," and we had to give them 400 metres a week, so that they could come along and start to put the tar spray down, ready for putting the surface. So, we used to go along, skim all this off, and it was only like peeling off that much, but what they used to do, because of the type of ground it was, the clay kind of silty surface stuff, if you left

that much, right, that was probably the right depth to leave, because then, if you got a vibrating roller come along, it would knock that down because of the vibration of a 30-ton roller. When these rollers go along, when they've got the vibrator on, 30-ton bumping up and down, it'll soon knock half an inch off. So, therefore, you could be low, you see. So if you scraped dead to the level, and that comes along, it's gone low, so you're better off just to leave a wee bit.

How did you learn how to use the blade then?

Well, when I was in the steelworks, right, and I was on the same machines there, Vickers' scrapers, Vickers' tractors, they were rope blades. They weren't hydraulic. They were rope, and it went to a winch on the back of you, and you used to have a lever on the side, like that, and you'd pull it, and that would lift your blade up and down like that, you know. (Vic Longhurst)

...at the end, if you wanted an inch off the formation, you could. They used to have a profile up and a travel, what they called a travel, another profile, and then you'd look between the two and you'd say it wants an inch or something and at the end, I could take an inch...Yeah, even less sometimes – you know, you'd just scrape... And then the grader would come up behind you and finish it off. But they used to have two or three blokes who actually did the formation, and in the end, I done some of it as well. (Eric Longhurst)



Excavating cutting in chalk near Luton. Source: John Laing archive

As the above testimonies reveal, the work of excavating demanded high levels of skill and accuracy, even to tolerances of within an inch. Some of the people driving the diggers had little experience. But many others came onto the M1 job with considerable experience of this type of work. Englishman, Neville Rees, spoke of how he had worked for John Laing since 1926, and had driven his first excavator in 1929, when they were first used by the company.¹⁷ Another such example was a gang of drivers from Newcastle, recalled by Eric Longhurst as being men in their forties, who had worked on the opencast coal pits in the north east and were highly skilled machine operators. Eric worked with the Newcastle men as part of their gang, but it took him a bit of time before he was accepted by them.

There'd be probably about, I don't know, 12 of you working together, and on one shift, it was all the Corby lads, and on the other shift, it was all the Geordies. I got put on the Geordies, didn't I? And they wouldn't accept you for a while until you stuck up for [them], and one day – they used to bring the tea in a Jeep. It were an Austin Gypsy. In a galvanised bucket, and you used to dip your mug in it, and if you were last down the line, it were cold by the time you got there. And it didn't come one day. So, me being the youngest lad on the job, the Geordies said, "Right, go down to the main office and tell them we're doing no more until the tea comes." I thought, bloody hell. I were only young, didn't know much, and I went down to the agent, and he said, "What's up?" and I told him, and he said, "Right, get back up there and tell them the tea will be there in 10 minutes, and tell them to get on with the work," and from that day, they accepted me.

So you had to prove yourself?

Kind of, yeah. But I got on with them alright. They were great blokes really.

Most of the digging on the M1 was done with machinery, but not all of it. During heavy rain, it was difficult to operate machines, particularly on certain types of soil. Rather than cut into the soil, the machines would turn it into paste. As this worker from Strabane in County Tyrone commented during a brief break on the site in 1959, this meant a return to a more traditional and laborious way of working:

The blue clay needs to be shovelled, not cut with machine. [You have to] shovel muck out for the bridges. The machine cannae do it, the water gets into where the muck has been lying. It has to come out by hand...and every time you lift your foot, you leave your wellington behind.¹⁷



Building the marginal haunches.
Source: John Laing archive

¹⁷ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with Neville Rees

Following excavation, the road itself was built in the following stages. First, a six inch deep granular concrete base, known as hoggin was laid. This was followed by the construction of marginal haunches, which marked the edge of the carriageways, but also set their width and depth. These were made of re-inforced concrete, poured into steel shutters, stretches of which were around 240 feet long. The top layer of this concrete was mixed with titanium oxide, to give it a white appearance, distinguishing it from the rest of the carriageway. The next stage was the laying of a 14 inch dry lean concrete base, on top of the hoggin. Very little water was added to this concrete and it mainly relied on moisture present in the aggregate. The term 'lean' refers to the low ratio of cement in the concrete, which was an 18:1 mix. The dry lean concrete was laid mechanically with a Blaw Knox paver finisher, which Laing had used previously on the London Colney by-pass contract. As it was not possible to put down a 14 inch coat with this machine in one operation, two separate seven inch coats were laid, being rolled in between, with care being taken to leave no more than 90 minutes between coats. Both the hoggin and the dry lean concrete were sealed with sprayed bitumen, before the finish was applied. The finish was initially planned to be a tar macadam base with an asphalt wearing course, but in the event it was decided that two coats of asphalt would be laid, a two and a half inch base, followed by a one and a half inch wearing course. The asphalt left

the plant at a temperature of around 300 Fahrenheit (ca 149 Celsius), with the two layers being put down in quick succession for maximum integration. Both the concrete and the tarmac were rolled with an Albaret Compactor, which was capable of placing 30 tons of pressure on the surfaces. All of the concrete was mixed at eleven batching plants, which were stretched out across the 55 miles and carried by tipper lorries to the site.¹⁸

¹⁸ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with un-named Irish worker (3)



Workers building a railway bridge.
Source: John Laing archive

THE FORMWORK CARPENTERS

Carpenters on the M1 built the shuttering for the bridges and other concrete structures. There were 132 bridges spread across the four Laing contracts, all of which corresponded to one of six universal designs, including wall-and-slab bridges, two-span overbridges, one-span underbridges and mass concrete arch bridges. One of the justifications for this uniformity was that much of the shuttering could be used repeatedly, allowing for the work to be done much quicker. Each of the phases also had its own carpenters' workshop, where the formwork was made. The designs for this were drawn up at the Laing Formwork Department in Mill Hill. Wherever possible, arch designs were used, as these could quickly become self-supporting. The Laing engineers believed that the mobile timber and scaffolding used in the pouring of these arches could be moved on and used quicker than formwork for re-inforced slabs.¹⁹

In terms of the design and construction process, one of the early difficulties was the curve in the face of the bridges, as they met with the abutments at the side. Another difficulty concerned the canals, the need to allow barges to move under the bridges while the concrete was curing. To overcome this, sections were poured on a steel framework, which was lowered and moved on wheels once the concrete was strong enough. The wheels were on the towpaths, and the framework over the canal was extremely slender.²⁰ This left enough space for the traffic to move under the bridge whilst the pouring was taking place above. Overall, it was estimated that around 400,000 square yards of shuttering was used, with a further 460,000 for the marginal haunches. For the bridge abutments, a shutter panel 10 foot high was built that could enable walls from 4 foot to 10 foot in thickness and 20 foot in length to be poured in a single lift,

in one day. Shutters for the 4 foot 6 inch central supporting columns of the bridges were designed also to be poured in one lift. The deck shuttering was $\frac{3}{4}$ ply on timber runners supported by scaffolding that could be adjusted to suit thicknesses varying from 18 inches to 42 inches.²¹

Normally, the shutters would be built in a site workshop, and then moved and erected on the site itself. Some of the carpenters, like Barry Crisp, who was directly employed by Laing on the M1, had never done any shuttering before and had to learn it quickly:

They... put me in the workshop, making the shutters. It was the first time I'd ever done any.

Did you get given plans for the shuttering?

Well, we did do, but not us so much as the foreman. They'd got a foreman and a chargehand, and there was about, oh, 10 chippies in the shop. It was such a vast enterprise, you know, 10 of us working in the joiners' shop.

And did you get instructions then on how to build shuttering?

Yes. I was paired up with another man. He come from Thetford, somewhere out there. Everything had been thought of I think, more or less. They'd all got templates... we'd fetch – you'd got a big stack, a big rack of timbers and you'd fetch some out, take them in the shop, and then you'd do the template, and we'd got band saws, circular saws, planers, everything and sheets of ply. It was...eight by four, the sheets were eight by four, by three-quarters thick, and we used to cut the radius

¹⁹ Team Spirit, September 1958

²⁰ Ibid

²¹ LTC Rolt, op cit, p22



Laying and rolling the lean concrete base. Source: John Laing archive

shutters on a band saw. They'd be about seven or eight foot long, the timbers about that much left either end, and then they'd be hollowed out, probably to a depth of about [six inches] and leave the same underneath at the narrowest point. And then you had to get a sheet of ply and nail it round, like that. You set them up so there were about three or four of these which you nailed.

Barry Crisp recalled one bridge in particular, where the concrete had to have a feather-edge finish.

Big bridges—there was one right outside the workshop. Yeah, a massive bridge that we did there, because that's where they've now got a service station...so it had to be quite a big elevation there, it were, and a canal bridge as well.

Was it a hard job?

Yes, it was hard, but interesting, these great big columns holding the decking up, which of course you had to put up before you got up to the deck heights. All these columns had to be in the right place as well. When I talk about columns, I'm talking about six foot across—each one was six foot across. And there were quite a few, and all on a big concrete base, which you had to put in first....And then, when we got up and done the decking, when that was done, they put like a retaining wall, the full length of the bridge, which had to be shuttered, but it had to be like feather-edged. Like a feather-edge fencing... but sort of horizontal and so difficult to do. It was difficult because, the least knock, you'd take the edge off. You know, if the shutter wasn't low and you went to move it, and the concrete had stuck, it'd pull the edge off it.

So that required skill then...

Yeah, it did, yeah.

Reflecting on the work that he did on the M1, Barry Crisp said it had led him to alter his views on the levels of skill required to build formwork.

I remember the lads from Corby, real nice lads, you know, some of them...similar to me, good tradesmen... When you say shuttering, you'd say shutter-hand...you'd think, well, you're not a joiner, you're not a carpenter, joiner, just shutter-hand, but believe you me, there was a lot of skill in shuttering, yeah, there was, which I found out. Yeah, I changed my opinion a bit!

Bill Swan had never worked on shuttering before but picked it up quickly and also had to produce a high quality finish on the bridge he worked on.

To do this escalator finish, everything was done in two by two timber, to give you the bend...And then, just give me one of them mats, we had to finish it, so give me another one – I'll show you better.²² When you finished the bridge, the escalator finish, that's the way it had to look. That was four-foot to there. Four-foot all the way round, till you came to the top, right, and all that was done with two by two. That took us about, just the one... I would have said, three days, because once they started pouring that escalator, they didn't stop. That part of the bridge was finished.

²² Here, Bill Swan partly covered one table mat with a second mat, to show how the escalator finish would look.



Formwork compound. Source: John Laing archive

Had you ever done shuttering before?

No. You pick it up.

Was it difficult to do the escalator-type shuttering?

It was difficult, yeah.

So that was you and another joiner did that bridge yourselves?

Yeah, we did all that end. You couldn't have people because there's no room, as I told you. It was so tight. You had no room. Then you built the bridge to the shape you wanted, right, and then you had to strengthen it. All four by twos that was strengthening the bridge, the shuttering, the bolts that were keeping it together, that all had to be done, and then we put a plywood finish to get the escalator finish. It was only hardboard, because your two by twos would only be that far apart, some of them just an inch. At the bottom, where the heaviest part is – as you go up, there's no weight you see, because what you've

already put in is holding what you're putting in and everything was angled. Everything, all your timber for the escalator was all angled, a bugger to cut! You had to cut them inside, and then the bloke, when we finished, had to go in there and suck all that sawdust, cuttings. The labourer used to come in and tidy it up, after we'd finished.

DUBLINER, Joe Keeley, also spoke of the challenges posed by the type of shuttering used on the M1. He said that most of the carpenters he knew on the M1 had worked in housing, general building and in shop joinery. Keeley himself had experience of formwork on previous jobs, back in Dublin, and in Britain, but maintained that the shuttering on the M1 was not the same:

It's the first time I've met bridge work...the radius, the different type of curvatures on the structure...you don't meet this all the time... it's is different to shuttering on housing and most civil engineering.

In answer to a question that, as someone who had trained in mortice-and-tenon work, how could he possibly take pride in the 'rough and ready' work he was doing on the M1, Keeley was clear. He pointed out how the ply-wood finish on parts of the shuttering was designed to provide a smooth and attractive finish, and how all the men he worked with were keen to make the shutters as close-fitting as possible, in order to prevent concrete overspill. Keeley also said that the various different carpentry gangs—who normally worked in groups of five—vied with each other to see who could

build the best-quality bridges and concluded by saying that he took a 'great pride' in the work and found it a 'great satisfaction'.²³ John Swan had considerable prior experience in this kind of work. He had worked on the construction of dams and reservoirs at Whinhill, near Greenock. Two other major jobs he had worked on involved building shutters, both the pre-stressed concrete at the British Thompson Houston engineering plant and the roof of a factory near Corby - now occupied by Weetabix. This particular factory roof is striking, a row of ten concrete convexes, each around 4 to 6 inches thick. The shuttering work John undertook on the M1 was physically demanding.

Depending on the size of the wall, some of them would be very big. You could get... panels, oh, 20 feet by 10 feet, which had to be lifted. You would make them on the ground and it was lifted in with a crane, and then they were tied, ...propped, to the steel, and props against it, until the other side went in, and then the two were bolted together kind of thing. Yes, it was very heavy.

The carpenters did not just build the shutters; they had to be there when the concrete was being poured in case any of the shutters moved. This not only added to the working day, but could also be quite dangerous:

The safety aspect in them days was rather poor. A lot of things that we did then, we would never be allowed to do now. They would close the site, things that were done then.

What was the most common type of accident?

²³ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with Joe Keeley



Spreading the concrete at river Ouse viaduct. Source: John Laing archive

With shuttering, moving the shutters, because you were standing on the shutter... You wouldn't be allowed to do that now. I had a lucky escape because when you finished a section of the bridge, you stood by that bridge, right? You didn't do any work. Your job was to make sure that everything was secure while they were pouring. And I remember when we did the main bridge, over Collingtree, and it set them back four weeks because they had to jack-hammer it out. The scaffolding went, and I heard it going. And that was good for me, because I hadn't even got a hearing aid in them days. What you did was you walked up and down the scaffold and you listened and you watched, and you would tap something with your hammer that was a wedge or something like that, and all of a sudden, I heard this bloody bridge go. I saw it going. I was down there

like a rat out a drainpipe [laughing], shouted the gaffers, "Stop pouring!" but they never, till I got up the top of the bridge, and by that time, you know, you've got lorry after lorry after lorry pouring the bridge. If you're doing the top of a bridge, you're pouring something like a whole day, 24 hours, if you were doing the last section...

Some of the pours were, what, 24 hours?

Oh, 24 hours would be nothing for the top of the bridge, nothing! I've seen it going on over that... I did two days in one go. Two days, we were on that job. Just to get ready for the pour, because everything was dated, and if you didn't get the dates, the gaffer was in trouble. If the gaffer was in trouble, so were you! (Bill Swan)

THE STEEL-FIXERS

Another key occupation on the M1, and all other civil engineering and building projects, was steel-fixing, to reinforce the concrete. Ted Jones from Flint in North Wales and Charles Lenihan from Limerick in Ireland worked as steel-fixers and pointed out how all their work was done off engineers drawings and schedules, 'you've got to use quite a bit of your intelligence', pointed out Lenihan, 'and you get on pretty well'.²⁴ The bars were 54 foot long, and were moved about by winches, and fixed lengthwise at 3 inch centres, (3 inches apart) with six inch centres across, tied with 16 gauge wire. As we have seen, the bridges were all built to one of six universal designs. This common design was a help to the steel-fixers:

Oh yes, once you've done the bridge, its more or less repetition, except of course different diameter steel for different kinds of bridges.²⁵

Steel-fixing at this stage was regarded as semi-skilled work, with no formal apprenticeship, or training. But according to some, an 'improver' steel-fixer still had to serve two years before he could be regarded as fully-qualified to do the job.²⁶ Richard Sisson worked on phase two of the M1, on the McAlpine contract, in the mid-1960s, which ran between junctions 22-24. He got his job through his father, who was a foreman carpenter on the M1. Richard had no experience of steel-fixing but had to learn quickly by working with the other steelfixers:

It was only six weeks and you were on full money. We built the steel. They [the carpenters] put the shutter round it. In those days, there weren't these big strong-back shutters which you've got today. They were all made up from eight by fours, eight by four sheets of ply bolted together, and they'd have six by threes and nine by threes as...whalers,...you'd set it up with some good double wires, and you'd do a couple of runs there and two laces. First of all, you'd bring all your steel on and lay it out, at the centres, roughly, where it's going to go, and position it roughly where it's going to go, because – and then you'd drop two laces on top. You'd have two blocks, underneath the lowest ones, so that...you didn't need to block it up after. So, you picked a single wire up, rather than fix it flat...there wasn't much pre-fabbing in them days. It was more or less all fixed in-situ.

Did you enjoy doing that work?

Oh yeah! It's like a Chinese puzzle, isn't it? You'd fix the whole thing and then go away, and then the chippies would swing their shutter – there was only one bridge they had strong-backs on, and that was 204, and that's at Shepshed. That was only an underpass. But all the rest were eight by fours and whatever. There was very, very few pre-made shutters.

²⁴ BCL, MS 4000/6/1/14/15/C, Parker/MacColl interview with Charles Lenihan

²⁵ BCL, MS 4000/6/1/14/15/C, Parker/MacColl interview with Ted Jones

²⁶ BCL, MS 4000/6/1/14/15/C, Parker/MacColl interview with un-named steel fixer



Workers arriving at site on bus.
Source: John Laing archive



Worker with priest (Father Nolan).
Source: John Laing archive

The big attraction of this job was the potential earnings. Hours were very long and exhausting, and conditions were poor. Wages varied but were all far higher than those on other sites:

A farm labourer, at that time, with a tied house, cottage, would probably clear £5 a week, if he were lucky, especially if he were milking and things like that. My father was a plate-layer on the railway. He used to start at 7.30, finish at 4.30, finish at 12 on a Saturday, and if he wanted to, he could go re-laying on a Sunday, and you were out as long as it took, and he cleared £10 a week. My first wage was £36, clear. I bought a 1936 2.5l Jag for 18 quid, with 10 gallons of oil in the boot, off the bulldozers, and still had enough money to go out and pay my lodgings and that. (Eric Longhurst)

What kind of money would you have been getting on this job then?

I think in the region of around about 24 or 26 quid a week, which was good money in them days.

Was there a bonus system in operation or was it just based on hours?

No, no, no, there wasn't. What they did was, because we were travelling from Corby, which was roughly about 28 mile, to Watford Gap or down the motorway – it didn't matter which way we went, whether we went Northampton way or through [Bugbrook] or wherever we went, whichever way we went, it was round about 25, 28, 30 mile, so we got lodging allowance. We didn't lodge out, we travelled and at that period, at that time, it was three guineas a week, you see. (Vic Longhurst)

Dave Culpin also spoke of the high wages on offer for fitter mechanics:

Were you in with the bonus scheme at all?

No, no, I wasn't, but my gov'nor, he was very good at the time. I mean when I left the agriculture firm to go on this big, these big machines, I was under £20 a week. The basic wage for a good mechanic then, an agricultural mechanic, was about £20 a week. That, as I say, was 47 hours. But this job was totally different. I mean, my old gov'nor was paying me £48 clear money, plus he was giving me £10 a week out of his pocket. You know, back in 1959, '60s, that was an awful lot of money. So, the drivers were getting, sometimes, more than that, if they were on bonus, so you can imagine, money was no object.

Carpenters' were also paid high wages, particularly those who worked long hours of over-time.

How many hours a week would you have been working at this point then?

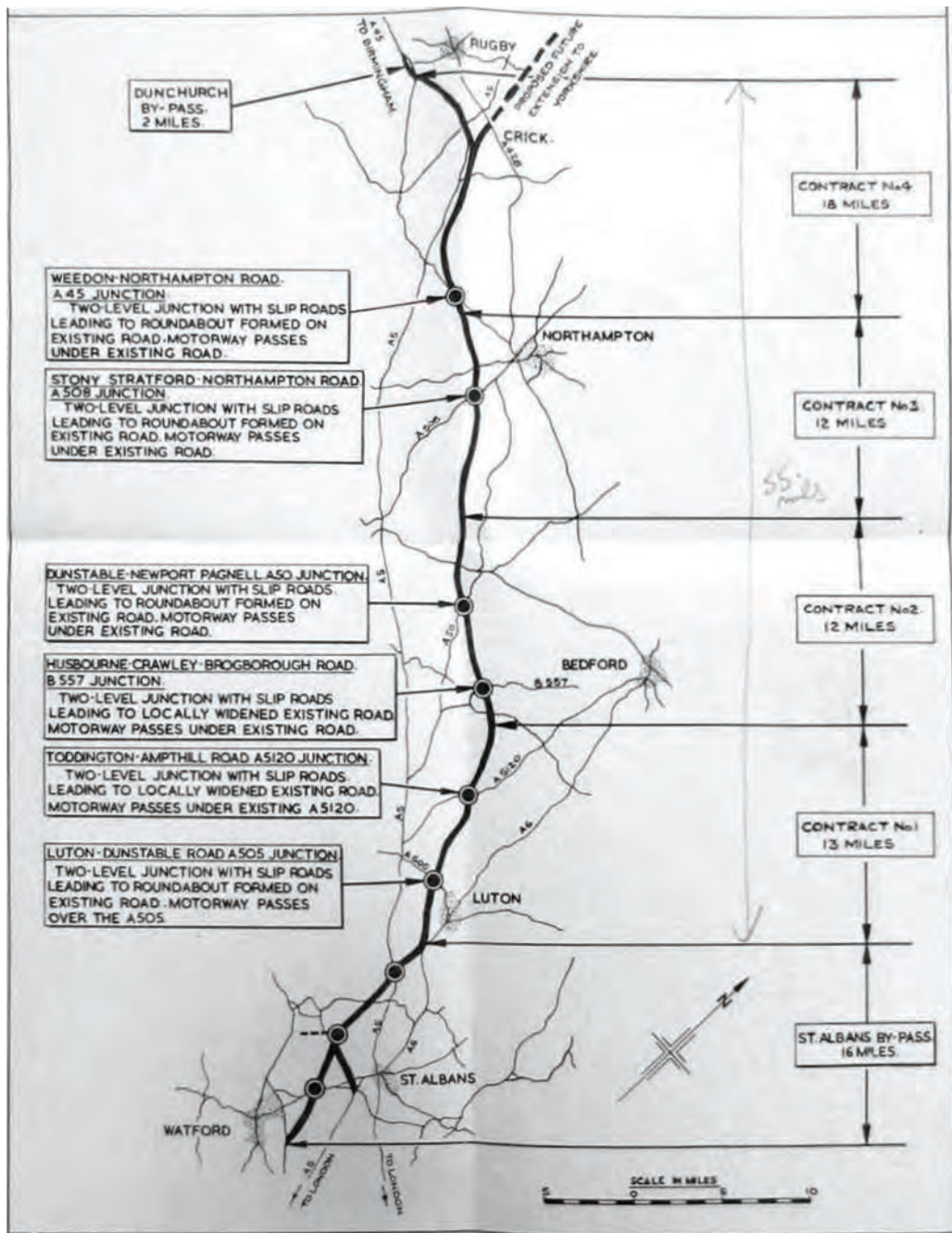
Whoo...blimey...80, 90...

How much would you have been getting then, at this point, if you were working 80 hours a week or 90 hours a week?

Oh, a hundred quid!...Sometimes, yeah – not always,...I've been there two days... we stopped there, called it a ghoster, where we worked all through the day, all through the night, and through the next day. ...That was when they were doing the big pour on these abutments, you know. (Barry Crisp)

So you could get any amount of overtime?

Any amount we wanted, yeah...The time I did that...before tax, was £142. That's what we earned, my mate and I, before tax. By the time they taxed it, it was down to about 80, wasn't it, but it was still brilliant money. (Bill Swan)



John Laing and Son contracts on the London-Yorkshire motorway. Source: John Laing archive

Only some of the sites on the M1 worked bonus schemes for carpenters, whilst others simply paid them a higher hourly rate. Both Barry Crisp and John Swan were clear that there was no bonus in operation on their sites, and that pay levels were determined solely by hours worked. However, John Swan recalled a fairly complex bonus system, which included all categories of worker involved in the construction of the bridges:

We were paid a basic rate and...the bonus was on the amount of concrete poured on the motorway. On other jobs I've been on, you were paid by the square yard for the amount of shuttering you put up.

How many people were they dividing this amongst?

Well, you'd have to divide it between everybody involved – the blokes making and pouring the concrete. Laing's had a central depot for concrete on each section, and it came in sort of doodlebugs, we called them – they were just smaller versions of the normal concrete skip that you see, concrete ready-mix wagons you see now, so smaller versions of that. There was no mixing on the machine itself. That travelled from the central, batching plant. Now, so your bonus had to be the...the steel-fixers, the scaffolders, the chippies, the labourers, everybody, all had a cut in this.... I would think it would be...getting on for 50 at times on a big bridge.

Did they all get the same?

No, a labourer got less. But the trades, like the steel-fixers and that, they would get the same as [a carpenter]...And you had to

make sure everybody was doing their share, you know, that was the thing...but that was up to the foreman to do that. The foreman should have whipped that up, or the lead hand. If the lead hand was seeing somebody was slacking, he could tell the foreman, "Look, the steel-fixer's holding us up." "Right, I'll get them going then," sort of thing...

Cost surveyor, Steve Morris, who joined Laing as an apprentice and was aged just nineteen when the M1 was built, worked on contract C1, where his duties included calculating production and bonus levels. His description of the bonus system is detailed, albeit different from that outlined by John Swan:

Our particular job was to look at the resources that were used in building that, cost all that out, so we had basic labour rates, and we also had to deal with targets for placing concrete, erecting formwork, erecting steel, so you could say, well, this gang of concreters had placed so many cubic yards of concrete in that week – we'd work on a week by week basis. They would be allowed so many hours to do that. They've done it in...so many hours less, if you like, so they then earned a bonus... typically, well, it was based on a 50% bonus scheme. So, if the basic labour rate was...whatever it was in those days, then they would get so many hours at 50% of that labour rate, and that would be spread amongst the gang, based on the number of hours that they worked....They were hourly employees of Laing's... some of these people were fairly transient and had come on buses out of... Northampton Labour Exchange. There were other people there who had worked for Laing for donkeys years and sort of moved around.

Clock No	Name	M	Tu	Wed	Th	Fri	Sat	Sun	Wkly hours	Bonus Est	Qty	Unit	Task	M	Tu	Wed	Th	Fri	Sat	Sun	Total	Rate	Bonus Hrs
275	Smith J	10	9.5	10	10	10	6		55.5	2/1/9	38	cu yd	Excv Fnds	1	1	10		16	10		62	-2.5	95.00
390	Jones H	10	10	10	10	10			50	1/17/6	1170	fs	Fix Shut-ters	6	5	10		5			26.5	-.025	29.25
336	Jones G	10	10	10					30	1/2/6	80	cu yd	Conc Fnds	8	18	15	6	12	6		65	1	80.00
491	Adams				6	10	6		22	16/6			Waiting for Conc	5		2		3	2		10		10.00
867	Wil-liams	10	10	10	10	10	6		56	2/1/7			Dewater	5			6				11		11.00
	Totals	40	39.5	40	36	40	18		213.5	8/0/0	9	cu yd	Excv Drains	2	6	3					11	-2.5	22.50
											57	job	Lay Pipes								4	0.1	5.70
													JWT								24		24.00
	Bonus calculation													4	3	40	36	40	18		213.5		277.45
	Bonus Hours								277.45														
	Actual Hrs								213.5														
	Bonus								6436														
	Rate								2/6 hr	8/0/0													

Steve Morris bonus sheet facsimile. Source: Steve Morris

These particular gangs, would that include everybody that was working on this structure then?

Oh, no. What you'd have on a structure, you would have a gang of formwork carpenters, you'd have a gang of bricklayers, you'd have a gang of concreters, you'd have people who worked with the heavy plant, the banksmen... you might have...eight or nine different gangs working on that structure, in that week, and the following week, one of them may have moved off somewhere else. Now, it may have been that they've gone 200 yards up the formation and I would take on that structure as well.

So how would you be able to work out, say, how much bonus a formwork carpenter should be getting?

Well, they would have a rate for constructing different types of formwork, it was a foot-squared, in those days. So, if it was, say, the shuttering for the underside of a bridge, which is fairly flat, then that was...one rate. If they were doing shuttering for the round columns, I seem to remember that there was a centralised...carpentry shop, who made those up to the right size, and then they would be erected and ...strutted and fixed in position by a gang on-site. So, there would be somebody else doing all the bonus calculations for the central formwork group, and I would be looking at transport costs of getting them from the central point down to that particular structure, and then fitting that formwork.

TRADE UNIONS

Trade unions do not appear to have been especially evident on the M1. The Amalgamated Society of Woodworkers (ASW) did represent the carpenters, but, as Barry Crisp explains, was not particularly active or visible:

I was in the trade union, but I never bothered on that job with it. Oh, tell a lie! In the shop, in the workshop, they got somebody from Corby was the trade union executive, a... union man, through and through, and we did have to...join, while we was in the shop. But out on the site, nothing!

For many other occupations, particularly those employed by sub-contractors, there appears to have been no union presence at all. This was certainly the case for the digger drivers employed by Dowsett's.

Was there a trade union on that job?

No!

Were you in a trade union?

No, never. If our boss, the boss I worked for 38 years, if you didn't come up to scratch, he got you round the neck and took you to the gate and said "Don't come back in!"... As simple as that, and if you couldn't do your job, you were out. (Eric Longhurst)

Were you members of a trade union, the people employed by Dowsett's?

No. No, they didn't have a trade union.... Unions weren't really popular with contracting companies, because they was always kind of on the move, no set job, sacked, sacked one

minute, start again the next. People would be on the job one minute, and then there'd be another job down the road paying 10 quid a week more, and off they'd go. The guys on most of these machines were ...on the move guys, there were no set...type of thing. We were different, because we had families and we had houses and we had to have a wage. We had to know what we were doing. But a lot of the lads who were Geordies and young Irish lads and that, they didn't give two bloody hoots, you know! If you...if they... if something didn't suit them, they'd just say, "Oh piss to you!" and step off the machine and away and get a job with somebody else. (Vic Longhurst)

The situation on the second phase of the M1 appears to have been very similar.

Were you ever in a union on the M1 job?

No, you didn't join the union...there was no union. You wouldn't even have thought of joining a union. The only place that was union in this area was Leicester...If you had a dispute...Well, you didn't have a dispute, because if you didn't like it, you packed up and went somewhere else. (Richard Sisson)

Were any of you in a trade union?

Oh, no [laughing], no! Of course, I don't wish to get political, but in 1964, a Labour Government had been elected, and by '65, '66, the unions were starting to flex their muscles a bit.... the Government's on our side. And we had a union visit one day – I don't know what union he was, I can't remember. But anyway, he came to tell us that basically, what we were doing was wrong – we were

being exploited by the employers, we were working these huge hours, with very little conditions, it was bad, and... You try and tell a young Irishman, who's earning nearly three times the national average, to cut his hours and have less money.

Well, quite honestly, he was lucky to get away alive. That's the only time we had a union man around. We were young, single, no ties. So we were working 12 hours a day, but by God, we were having a good time – the money was good, and the crack was good, and we were having a hell of a time! So yes, the union man, they fell on very stony ground and basically, we had no truck with them, didn't want to know. So what if it's an old bus! It doesn't matter - we're not in it long. No, we haven't got toilets, but who cares?! You haven't got mobile toilets. We're working over a seven mile section across country. We dragged the bus with us wherever we go. (David Grey)

As David Grey indicates, it may well have been the case that many of the workers were earning high wages and may not have seen the point or relevance of a union. But conditions could be dangerous and these high wages were dependent on continued long hours. Barry Crisp's story shows that, if workers wanted a break from the long hours, management could and did dispense with them with ease:

Me and my mate, we were fishing mad, and we worked – I'm telling you, we used to work these fantastic number of hours, Saturdays and Sundays...we didn't know which day were which! And, he used to say, some days, "Oh, let's have a day's fishing, shall we?" So we used to go and have a day's fishing.

Well, I think we must have [gone fishing] a bit too much, because one day when we were there, ever such a nice guy the site foreman were "You'll have to finish tomorrow," he says. Dusty Roads had found out that we were having these days off. He said, "We can't afford to have days off."

They wanted you to work every day then?

Oh yes! Saturday, Sunday, particularly Sundays.



Workers taking tea. Source: John Laing archive

WORKING AND LIVING CONDITIONS

Working conditions on site were rudimentary. When asked about canteen facilities Barry Crisp replied:

The canteen we had was an old boy, used to call him the tea-boy and he used to come round all the lads, "What do you want? Do you want anything from the shop? Do you want anything from the main canteen?" He used to have, you know, sort of bacon sarnie or whatever, if you wanted – not always. I used to take most of mine with me, but you needed a drink, and he used to make – he'd got a copper, one of the old boil-up coppers that he'd boil the water in, and of course, labourers went in one shed, carpenters went in the other – tradesmen in one, labourers the other... Two different sheds.... And when you went in [laughing], I'll never forget the first time I went in, there was this big galvanised bucket standing on a table, a few cups, a few tin cups, and a load of jam-jars, and it were strong, it were like varnish, and you had stacks of tealeaves all floating on the top, you know, so you'd got to scutch it about, dip yours in, and that were your cup of tea... and he charged you plenty! He made a small fortune... we had that morning, and dinner-time, and in the middle of the afternoon, we had a drink there.

If you were working long hours, you'd have something to eat later on again?

...you used to have a half-hour break about six o'clock at night, and then you'd work through...nearly dawn, or maybe dawn, it may be after dawn, depending on how things were going. We never had [cooked food] – well, apart from bacon sandwiches. And that's how we went on, you know, rough and readies.

Eric Longhurst recalled the dirty and unhealthy aspects of his job. Most of the excavators had no cabs, which left the workers unprotected from the wind, rain, sun, snow... and the dirt:

The dust were unbelievable! I were off for a month with dust on my lung. Couldn't see, because you'd got no cabs...you had your handkerchief and you used to have your sandwiches in a box, on the side of the bulldozer, and when you got your sandwiches out, there'd be traces of dust even in there then. Of course, the Caterpillar tractors we were on used to kick the dust up, and the motor-scrapers come whizzing by you, and you'd come out looking blue, because it were all blue clay.

John Swan recalled how, unlike a lot of other sites, many of the workers on the M1 were expected to be out in the heavy rain:

On most jobs, when it was raining, you were rained off. But you had to sit there in the cabin, and if it was still raining at two o'clock and unlikely to clear, you went home. But most of the time on the motorway, you were given protective clothing and expected to work in certain situations, most situations, so there was very little wet time on – you got paid wet time, incidentally, on these other jobs.

You were expected to work in the rain?

Yeah, especially if you were just shuttering. You couldn't pour very often because of the rain, because water content would be too big. Every now and again, the engineer takes a sample of the concrete, and it's got to pass certain stress tests. So, if the water content was too high, that would split before it should do. So you had to stop the pouring. But you could still build the shutters.. and the steel-fixers could work. Usually you had donkey jackets on and hats and wellies and things.

As Dave Culpin shows, the work could also be dangerous:

Thinking back, yes, there was accidents. There was novice drivers, so there was bound to be accidents. It wasn't unusual to see an ambulance come up what we called the cut. That was where the main drag was, you always called it the cut. And topsoil, in particular, was a dangerous job. People didn't realise, because topsoil was put back down. You know the slopes down the side of the motorway? Batters they called them. And that was all stockpiled. So, basically, you took about... depends on the conditions, but sometimes six to eight inches would have to come off, miles of it. We stockpiled that in heaps. Now, when you started off, you'd have a heap perhaps as wide as this bungalow, and you'd finish up going as high as a two-storey house, on soft earth. So, it wasn't unusual to see a machine roll down the side at all – it never happened to me, but the practice was tuck yourself under the steering wheel, don't try and get off, because if you try and get off... That happened frequently, because you'd get a nervous driver, and he would go up and he would tip the load in the middle of the heap, so you finished up like that. Now, the proper way to do it was you always tipped as near as you could onto the edge first, both sides, and then filled in the middle. But that didn't always work.

Did anybody give any training?

None whatsoever! Just go as fast as you could.

Did you ever see one rolling over?

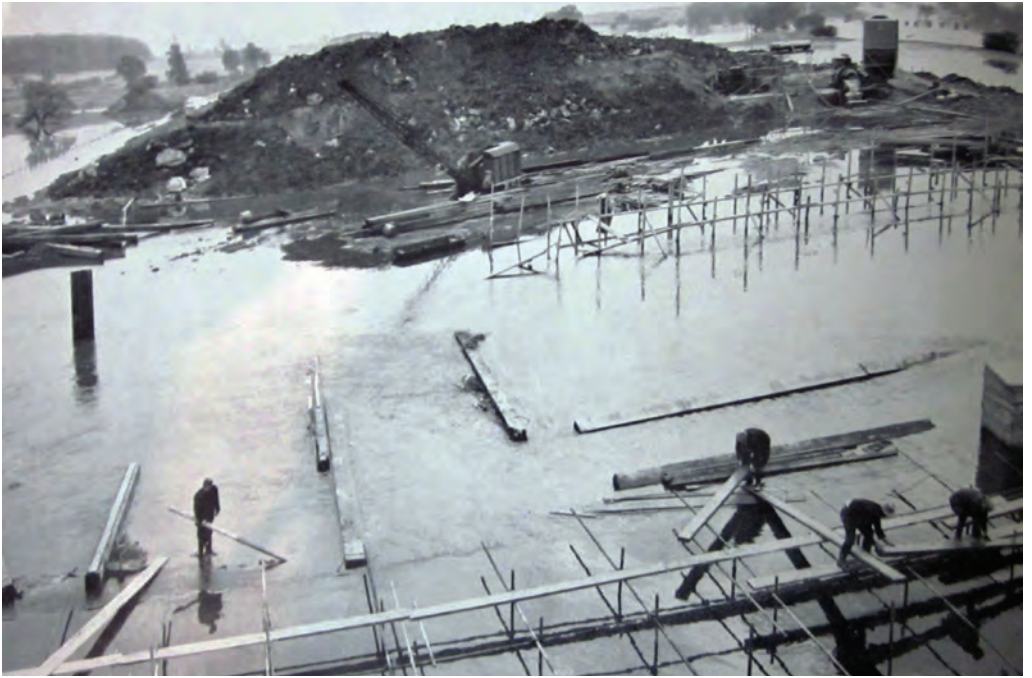
Yes. It was a horrendous noise and a crash. But I didn't know the driver actually. And I can see him creeping out now, creeping out there. And he crept back in he said, "I've left my fags in there."

Living conditions for the workers varied. The M1 workforce was split between locally recruited labour and travelling labour. The locally recruited men tended to live at home and were normally picked up in the early morning by buses organised by John Laing. They were paid travelling money, which some saw as an extra bonus to their wage. For those who travelled, various types of accommodation were available, including guest houses, digs, and camps in places such as Letchworth, Bedford, Leighton Buzzard, Baldock, Aylesbury and Rugby. Bill Swan lived in digs near Collingtree, which he re-called as comfortable:

About three or four miles... lovely place, lovely couple. They did everything – they gave us a breakfast, supper when we came in.

David Grey's recollections of life as a travelling worker on phase two would have been similar to some of those travelling men working on the first part of the motorway almost a decade earlier:

There's lads from all over the UK, Wales, Scotland, Ireland, both sides of the border – never any trouble, and yeah, we're wild. We've got money, we work hard... At night, Guinness, pints and pints of it! We were wild, we were noisy, we were brash... we were muck-shifters. We went through a pub once – I think it was called the Grapes in [Hackenthorpe]. Cor, we had a hell of a bust-up in there! The police were called and all sorts [laughing] – happy days! We used to go to a pub in Rotherham, long since gone – the new Meadowbank thing, they've knocked down half of Rotherham and Sheffield to build that. But it was a back street pub, and



Workers in flood water at river Ouse. Source. John Laing archive

it was popular with the old Irish boys, and we used to go in there when we got rained off. When you were rained off, you were guaranteed eight hours, and they'd let you go, oh, probably half-past nine, 10 o'clock in the morning, so off to a café, have a blinking great breakfast and then straight in the pub, dinnertime, and we'd be there all day. There was always somebody on a fiddle and an accordion, and we'd sing and...drink and drink [laughing] and drink! Bearing in mind the pub hours in those days, they were only supposed to open for two hours, midday, 12 till two, but, yeah, we were there all day, and half the night.

The recollections varied. In the hostels, workers got a breakfast at 6am and an evening meal at 8pm. There was a club that some of the men went to in the evening or at weekends. There was also an Irish priest on the M1, who visited the workers 'for the craic' and gave mass services during the week, for example a Wednesday morning at the Leighton Buzzard hostel.²⁷ Many of the travelling workers were married and visits home could be anything between a couple of weeks and couple of months apart. Some, especially the Irish workers, often had to go much longer than that. One worker, Robert Stewart, a 64-year old labourer, said that, if

²⁷ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with un-named Irish worker (4)

he went home too often, he would often feel extremely unsettled when he came back.²⁸ In these circumstances, the hostel was the home and, in conversation with MacColl and Parker, some expressed satisfaction with the arrangements, with one pointing out that 'you could go when you like, you can come when you like, and it is clean'.²⁹

However, others were of a different mind. Irishman Jack Hamilton, an excavator driver of sixteen years standing, who had worked on 'every kind of job, dams, reservoirs, aerodromes during the war, all over the country', was positive about most aspects of his work, expressing how much he preferred the 'muck, dirt and grease' of construction sites to a factory job, and how he didn't think he could ever do any other type of work. But he was scathing in his comments about Leighton Buzzard, describing his bed as a 'camels back', full of hollows and lumps, 'I thought I was in the desert... Me arse was all blisters and carbuncles...it's an awful joint' and criticising the way that it was run. '[It's like a] concentration camp. All they want is some gas chambers and they'll smother us, that's all they want here'. In his interview in 2011, Bill Swan recalled an incident where Irish workers living in digs were being fed pet food on their sandwiches by the owner.

Steve Morris, who, as an apprentice cost surveyor was on a wage of just £4 or £5 per week, lived in digs in a pub in Northampton. His account is of interest because he suggests that there was little mixing between white collar workers and the manual workers off site:



Re-inforcement steel for bridges.

Source: John Laing archive

The workers that typically one socialised with were either other people in the same department or perhaps some of the junior quantity surveyors, but there wasn't much... fraternising with the hourly paid staff.

So you wouldn't socialise with the people working on the machines?

No, not particularly, no.

²⁸ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with Robert Stewart

²⁹ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with un-named Irish worker (4)

³⁰ BCL, MS 4000/6/1/14/6/C, Parker/MacColl interview with Jack Hamilton

³¹ Ibid. John Laing and Sons tried, unsuccessfully, to force the BBC to delete the concentration camp comparison. See Peter Merriman, (2007), *Driving Spaces: A Cultural Historical Geography of England's M1 Motorway*, Blackwell: Oxford, pp136-137

THE PROJECT IS COMPLETED

In the summer of 1958, progress was stalled. This was one of the wettest summers on record and the continuous torrential rain wreaked havoc with the excavation work. In the Luton area, the permeable upper chalk, normally hard, was reduced to a soap-like consistency and almost impossible to dig with machines. Watford Gap was said to have had the worst of the rain, with 'indescribable' conditions and pumps working around the clock all over the place. In Kissingbury, the Northampton Fire Brigade pumped half a million gallons of water off the formation in one day.³² This slow-down had its effect on labour, and between August and October 1958 around 1,000 men were laid off. By October the weather had improved, but by that stage the ground was waterlogged and needed to dry out. The onset of a cold winter soon after added to the difficulties.

By the end of 1958, 75 bridges had been completed and 88 culverts. 140,000 linear feet of marginal haunches had been laid and 140,000 feet of carriageway. Over 1.5 million cubic yards of topsoil had been removed and 8.3 million cubic yards of cut and fill had been completed.³³ This was behind schedule but, as the winter of 1958 passed over into the spring-time of 1959, the weather improved. There was little rain in February, which helped to dry out the water-logged land and allowed for an earlier than expected resumption of the excavation work. Recruitment levels rose sharply once more, with around 1000 workers being added to the 1500 or so that were retained during the winter months. The weather held up and by early summer significant progress was made. In order to speed up production, Laing decided to build



Site is flooded during summer of 1958. Source: John Laing archive

new concrete batching plants of a different design, originally planned for nuclear power station construction. Two of these plants were built and were soon producing around 24,000 tons of concrete per week—more than the other 9 plants combined.³⁴ By June, around 40,000 cubic yards of dry lean concrete was being laid per week. In the spring of 1959, the asphalt sub-contractors were on the job and by June were spreading around 20,000 cubic yards of asphalt per week.

The seventy-five mile St Albans-Crick section of the M1 motorway was finished in October 1959, just ahead of the 19-month schedule. In August, Williams was commissioned to begin work on the next phase of the road and soon produced a detailed plan for the remaining 87 miles of the road, which would end around Doncaster. This included a section

that now forms part of the M18, but was part of the original London-Doncaster route initially planned by Williams in 1951. This phase of the M1 was split into eleven separate contracts, worth a combined total of £60.4 million, and went out to tender in 1962. Three of the contracts were won by Wimpey, two by RM Douglas, and one each for A. Monk, Robert McAlpine, Brims and Co., Tarmac, John Laing and W&C French. All of these firms used sub-contractors for various parts of the building process. As with the Luton-Crick section, this phase was built with a flexible finish, two coats of rolled asphalt on top of an 18:1 lean concrete mix. Work began in August 1962 and all of the contracts were completed by December 1967.

³² LTC Rolt, *op cit*, p38

³³ LTC Rolt, *op cit*, p49

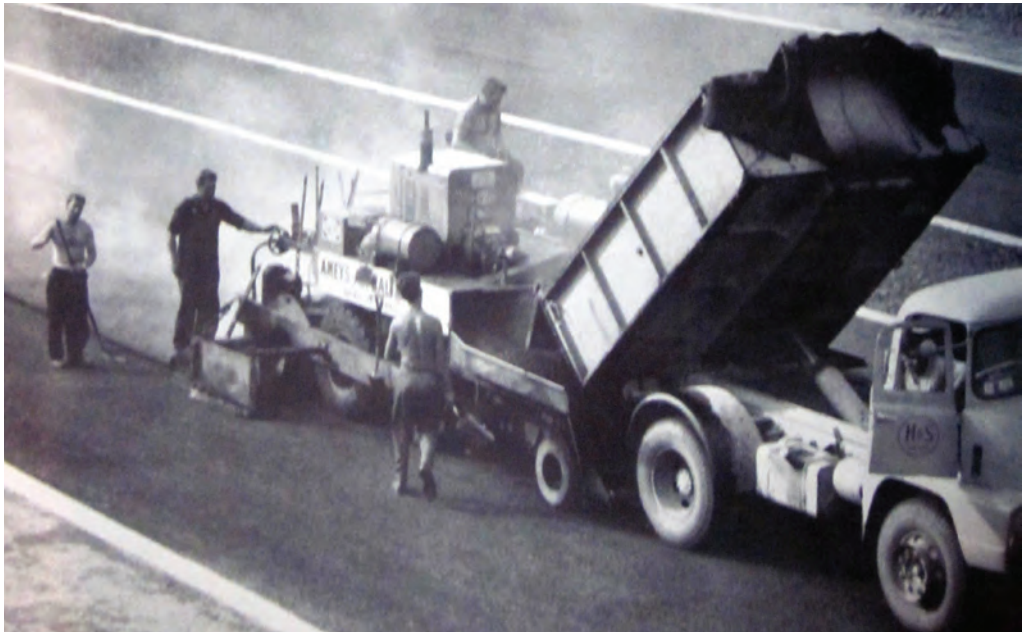
³⁴ LTC Rolt, *op cit*, p59



Concrete batching plant. Source: John Laing archive

While this second phase of the M1 was being prepared, another section, stretching 35 miles from Aston (South Yorkshire) to Leeds via Sheffield, was being planned by West Riding County Council. The Crick to Doncaster road passed Aston and it was just past this point, between Junctions 31 and 32 of the M1, that the two roads separated. A preliminary scheme was published in 1962, which was followed by a fairly lengthy and detailed planning process. One of the difficulties was the prevalence of mine workings, deep and shallow seams, opencast sites and old iron ore and bell pit workings. This eventually led to a different

specification for the road, which avoided the use of dry-lean concrete and used a tarmac base instead. The scheme was separated into seven contracts, worth a total of £35.4 million, and went out to tender in 1965. Two of these contracts were won by Dowsett, now called Dowsett Engineering Construction, and two by A Monk. The remaining three were secured by Costain, Alfred McAlpine, and Holland, Hannen and Cubitts. On all of these contracts, sub-contracting was commonplace. Work on the contracts started in May 1965 and the 35 mile scheme, the final part of this second phase of the M1 motorway, was completed by October 1968.



Workers spreading the asphalt finish. Source: John Laing archive



Motorway at Chalton Cross. Source: John Laing archive

The completion of the M1 was regarded as a hugely important civil engineering achievement. The first phase of the road was opened in November 1959 by the Minister of Transport, Ernest Marples, to much fanfare and celebration. It was a significant project, not simply because it was the first inter-urban motorway but also because of the manner in which it embodied new technologies in civil engineering generally—around £5 million worth of new machinery was used in this job—and road building in particular. The fact that the original tenders asked for two specifications, one hard and one flexible, the former used on the Tarmac contract and the latter on the Laing section, suggests that British construction engineers at this point were unsure regarding the best surface for motorway construction. In many ways, therefore, the M1 was an experimental prototype, with the knowledge gained by its construction proving crucial to road building thereafter.

The M1 also encapsulated changes in construction labour. It was dominated by occupations, such as machine operators, excavators, scaffolders and steel-fixers, none of which were regarded by employers or unions as skilled, but which were becoming increasingly important in the construction industry generally. The importance of formwork, and the manner in which many carpenters were learning new and important skills in this area, was also evident on this job. Some of the carpenters who worked on the M1 had never built shutters before, but most left this job with an appreciation of the skills involved and which they had now learned. One recalled how his work experiences on this particular site made him aware of just how wrong was the view, commonly-held in the trade and which he had shared prior to coming onto the M1, that formwork

carpentry was semi-skilled work, carried out by rough, or semi-skilled workers. It also opened up a new direction for him as a carpenter, and in the years that followed he drew on these experiences, and worked on many more shuttering jobs, some of which were very complex.³⁵

Since the M1 was first opened in 1959, attitudes towards motorways in Britain have changed. At best, they are seen as relatively straightforward, common-place developments, built and opened with little fuss, and certainly not by government ministers. On the other hand, as with the extensions to the M3 at Twyford Down and the M77 through Pollok country park in the 1990s, they have also on many occasions provoked concerted opposition and civil disobedience from a wide variety of organisations and individuals, reflecting a far greater awareness in society generally about the dangers posed by environmental damage. Although none of the men we interviewed expressed any views on that particular question, with the exception of one who did state that, had a Swampy-type figure climbed a tree on the M1, it would have been knocked down with him on it,³⁶ attitudes towards the iconic development that they helped to bring to life did vary. Some saw it as simply another job, albeit an important one, whilst for others there is a degree of pride in the scale of the project and the work that they did on it:

³⁵ Interview with Barry Crisp interview, 13 June 2011

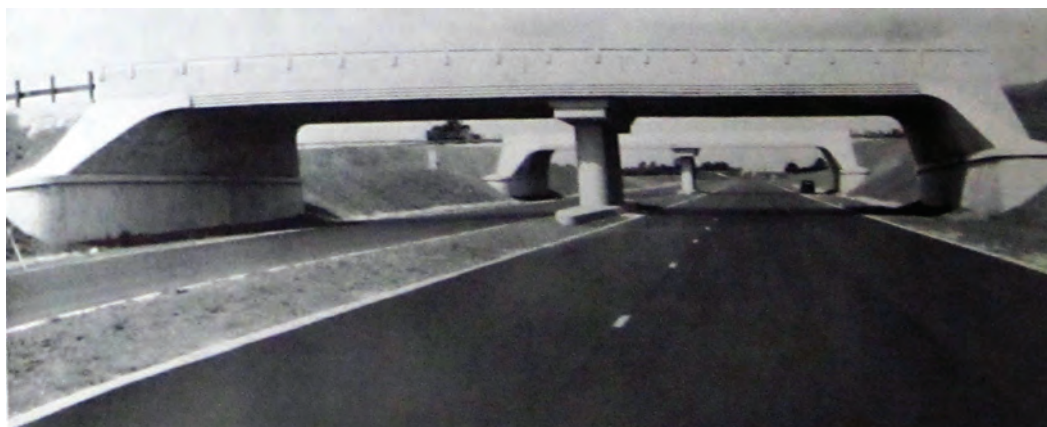
³⁶ Eric Longhurst said this jokingly in his interview, 27 June 2011. 'Swampy' (real name Daniel Hooper) was a leading activist involved in the campaign against the Newbury By-Pass in the early 1990s.

To me, it's just been...a job. I don't kind of... put any praise on any one or particular thing. The M1 was a big experience... and I really liked it, and if the M1 had have carried on for another...few years, if they'd have done another stretch nearby, I would have certainly have went, but I wasn't going to go up to Sheffield because it meant lodging out. (Vic Longhurst)

Oh aye! When I go over that, [bridge] boy, I'm happy, because I know I was there, and I go over it quite a lot [laughing]! (Bill Swan)

I wouldn't have missed it for the world. You made a lot of mates. You see how the half lived. You seen a big construction job, and were part of it... It stood me in good stead for the rest of my life, on the scrapers. I used to cut roads out on my own, and do the levels. That taught me a lot. I mean, you learnt the hard way on the M1. (Eric Longhurst)

I sometimes say to Cath here, "We worked on that – that's one of ours, we did that... it's lovely really, you know. You feel a sense of achievement, knowing what I know now, how things are, and how we performed. We did work damn hard...And with basics really, although, at that time, you'd think you'd got everything...But these days, it would be just basic stuff. I mean, they've got everything for everything now. It was skill...A lot of skill went into it, yes, it was, not only on our side, but the steel-fixers, the scaffolders, whoever... it was quite a skilful job. (Barry Crisp)



Section of completed road at Collingtree.

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PICTURE SOURCES

- p.6 Laing site offices at Hanslope, section C1. Source: Steve Morris
p.7 Jenkincler Singh, Fedir Duran, Josef Famulski, Gurdial Singh, all of whom worked on the M1. Source: John Laing archive.
- p.11 Excavating the M1. Source: Steve Morris
- p.11 Machine hired out by Herts. Plant Hire, Dave Culpin's employer. Source: Dave Culpin.
- p.13 Excavating cutting in chalk near Luton. Source: John Laing archive
- p.14 Building the marginal haunches. Source: John Laing
- p.15 Workers building a railway bridge. Source: John Laing archive
- p.17 Laying and rolling the lean concrete base. Source: John Laing archive
- p.19 Formwork compound. Source: John Laing archive.
- p.21 Spreading the concrete at river Ouse viaduct. Source: John Laing archive.
- p.23 Workers arriving at site on bus. Source: John Laing archive
- p.23 Worker with priest (Father Nolan). Source: John Laing archive
- p.25 John Laing and Son contracts on the London-Yorkshire motorway.
Source: John Laing archive
- p.27 Steve Morris bonus sheet facsimile. Source: Steve Morris
- p.29 Workers taking tea. Source: John Laing archive
- p.32 Workers in flood water at river Ouse. Source: John Laing archive
- p.33 Re-inforcement steel for bridges. Source: John Laing archive
- p.34 Site is flooded during summer of 1958. Source: John Laing archive
- p.35 Concrete batching plant. Source: John Laing archive
- p.36 Workers spreading the asphalt finish. Source: John Laing archive
- p.37 Motorway at Chalton Cross. Source: John Laing archive
- p.39 Section of completed road at Collingtree.

Back cover: Excavating the M1.
Source: John Laing archive



The M1 motorway was the first long-distance, inter-urban motorway built in Britain and one of the great civil engineering achievements of the twentieth century. The first phase, a 73 mile stretch, ran from St Albans in Hertfordshire to Crick in Northamptonshire, employed thousands of workers, many of whom lived in temporary accommodation and camps dotted along the route. The speed of the project was remarkable and was completed on schedule in just 19 months, from March 1958 to October 1959. The second phase of the M1 was built between 1963 and 1968 and included an 87 mile stretch between Crick and Doncaster and a 35 mile road from Aston to Leeds. The M1 was a construction project which encapsulated changes in construction labour and the building process. It was characterised by exceptionally long working hours and dominated by occupations such as machine operators, excavators, scaffolders, carpenters and steel-fixers. This pamphlet is the story of how the road was built, in the words of some of the workers who did the building.