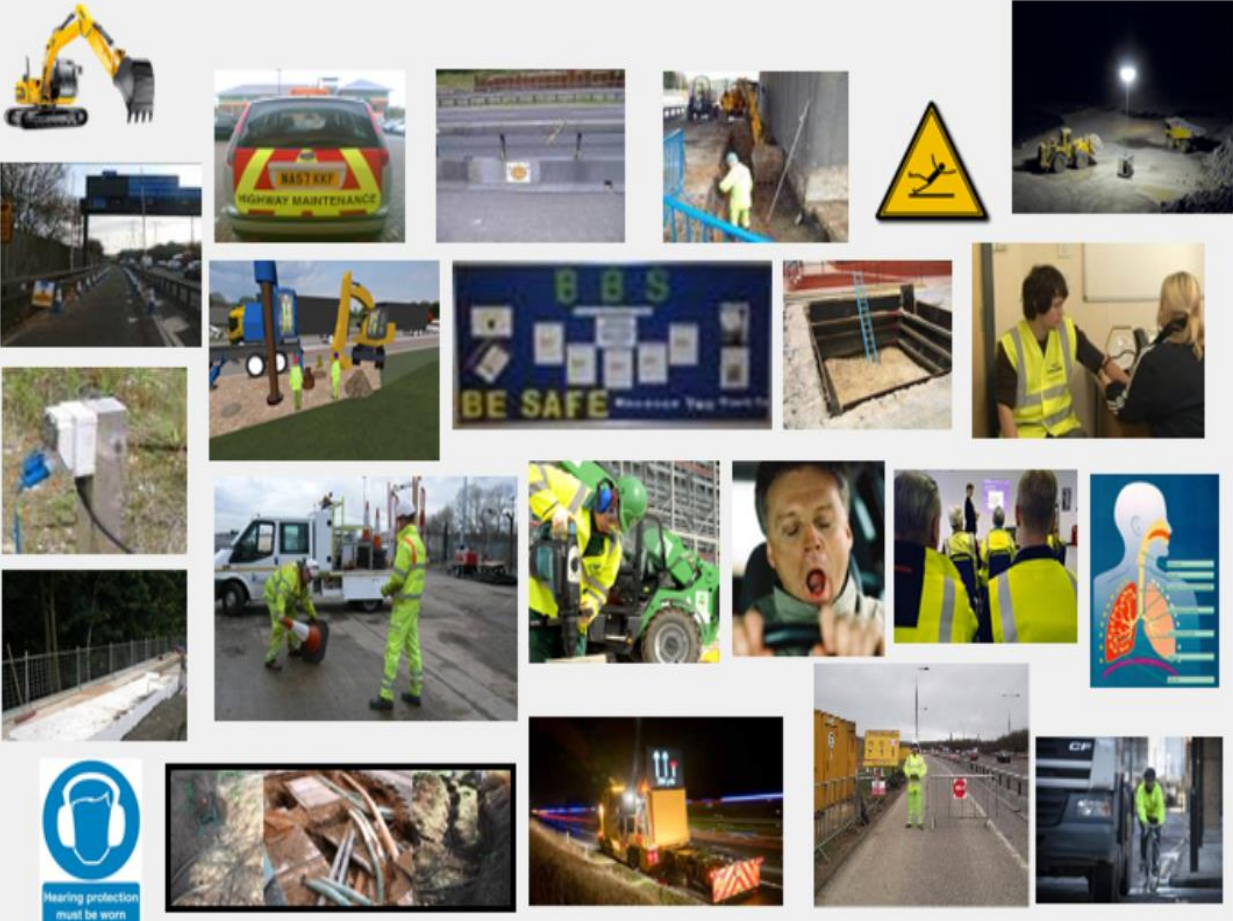




Highways Safety Hub



# Highways Safety Hub Team Newsletter

# December 2022

## Journey to Net Zero

**Success of an industry-first Skanska UK and National Highways low carbon concrete trial to be extended to permanent roads.**



Over the past year Skanska, alongside the National Composites Centre, Tarmac, Basalt Technologies and National Highways, have carried out a trial on a low carbon reinforced concrete solution.

The results show the solution has led to a reduction of more than 50 per cent in carbon. It has proven equally resilient when compared to conventional reinforced concrete using steel. A report with findings from the trial, carried out at Skanska's M42 junction 6 project for National Highways, has now been published. The trial has proved such a success that Skanska is now working collaboratively with National Highways and High Speed 2 Ltd (HS2) on the next phase. The plan is to trial the low carbon combination on a permanent road and capture all the data and analysis for future publication. The ultimate aim is to roll out the low carbon solution across the UK's strategic road network.

Skanska is also working with HS2's innovation managers to progress learning from the trial and use the innovative combination of materials in other structural reinforced concrete elements beyond roads.

Skanska's Highways Director, Glennan Blackmore said: "The results of the trial are extremely encouraging. By working together, we have been able to speed up the process of testing and analysing a new solution for de-carbonising our road network, with the aim of getting it to market so the whole industry can benefit.

"By using a unique combination of materials, we are working to not only cut carbon, but also improve the structural performance of reinforced concrete, delivering better productivity, safety and cost outcomes. We're delighted at the success of this trial and we're now really looking forward to starting the next stage."

The trial also provides a better understanding of the impact of using the new materials – including the use of composites in the design of concrete structures – ahead of the proposed revision to Eurocode 2 standards.

Adam Gallis, National Highways Project Manager said: “At National Highways, we were delighted to use our Innovation and Modernisation Designated Fund Pot to help make this trial a reality. In utilising this funding, we can go above and beyond what we would typically deliver on our schemes and in this instance, working alongside the supply chain, we have made great strides in the development of a low carbon reinforced concrete alternative. We will look to do what we can to facilitate further trials in this sphere, to ultimately drive down our carbon footprint and achieve our net zero targets.”

What was involved in the first trial

Tarmac provided two types of concrete for the trial: a mix comprising conventional blended cementitious material and a low carbon alternative mix incorporating an Alkali Activated Cementitious Material (AACM) in place of the cement. This low carbon concrete solution was mixed at a conventional concrete plant located close to the project and installed in exactly the same way as traditional materials. This new sustainable product delivers a carbon footprint up to 80 per cent lower than a standard CEM I concrete.

The reinforcement steel replacement was a basalt fibre reinforced polymer rebar. This is five times lighter and twice as strong as its steel counterpart and is naturally resistant to corrosion, alkalis and acids. The main components of Bastech® rebar is basalt fibre which is manufactured directly from the most common rock on the earth’s surface, basalt, in a single-melt process, and comprises only a single raw material. It has on average 60 per cent less CO2 emission than steel and is a cost-effective substitute.

The trial involved the construction of four concrete slabs at the M42 junction 6 highways improvement scheme. The slabs were laid in December 2021 and were made up of:

- Slab A – conventional concrete + steel reinforcement
- Slab B – low carbon concrete + steel reinforcement
- Slab C – conventional concrete + basalt reinforcement
- Slab D – low carbon concrete + basalt reinforcement

The road was heavily used by construction vehicles throughout the trial period, with in-situ and laboratory tests carried out over a number of months. Full scale specialist lab tests involved bending and shear testing of the four types of slabs.

The results have provided knowledge of the curing process, ease of construction, safety benefits, functional properties and structural behaviour of the various concrete and reinforcement combinations. This has given insight into the future use of longer lasting materials in construction.

The National Composites Centre calculated the carbon throughout the lifecycle of the structural element and carried out an environmental performance assessment.

## Focus on “Winter Driving”

Winter brings all kinds of hazards for the commercial driver. We look at you how you can prepare your drivers so that they always reach their destination safely.

Here are our top tips to share with your drivers for safe winter driving.

### Driving Tips for Winter

Let's start with the first 4 things to remind your drivers about.



1. **Don't wait for winter!** Falling leaves obscure hazards and markings, and they are very slippery. Autumn also brings earlier twilight, dark mornings and dazzling sun low in the sky.
2. **Check your vehicle** carefully – daily for vans, weekly for cars. Pay particular attention to tyre treads, lights and fluids – oil, water, and windscreen cleaner. Make sure you have de-icer and scrapers on board.
3. **Drive smoothly.** Hard acceleration, harsh braking, and sudden cornering all make skidding more likely. Allow extra anticipation and reaction time. Remember that, even if you are handling the conditions well, other road users may not.
4. **Drive slowly** in rain, mist or fog. 13% of all serious collisions involve poor weather, and **almost 80% of these involve rain**. Do not under-estimate how much you must slow down if it's raining hard – poor visibility, aquaplaning, much longer braking distances and flooding are all hazards. Don't drive through any standing water deeper than four inches – even an egg cupful can wreck your engine and leave you stranded. If the road looks wet, yet there's no spray from the tyres passing you, then there may be black ice. Ice in the top corners of your windscreen, and on your mirror arms can be an indicator. Finally, only 41% of roads run by local highways authorities are gritted. Local authorities are not automatically obliged to remove snow or ice from roads. Equally National Highways has extensive winter safety resources including 535 gritters – but they also have 4,300 miles of road to treat.

Your drivers will have heard all of this before but the change of seasons is a good time to reiterate these winter driving safety rules. Here's other tips to share with your drivers.

5. **Keep your distance.** In poor conditions, the two second rule becomes the four second rule. Leave twice the normal space between you and the vehicle in front and give extra room when passing vulnerable road users.
6. **Check the weather** forecasts regularly against your route. Be flexible and choose the safest route, not necessarily the shortest.
7. **Have a survival pack** on board. If you get stuck in snow, it could be a life saver. It should include warm clothing, waterproofs, a torch, energy bars or other long-lasting food, and bottled water. Chemical heat pads can be really useful for tucking into gloves or boots. Have a battery pack so your phone can remain charged.
8. **Signal early** and for longer than usual. Manoeuvre smoothly.



9. **Watch out for high ground.** In high winds, elevated positions or very open roads are particularly dangerous. If you are pulling an empty curtainsider, open the curtains before leaving – this stops the trailer acting like a huge sail. Equally in icy conditions, high ground like bridges often freeze first and may not have been gritted.
10. **Don't stop on the hard shoulder** unless the vehicle literally will not move. Take the first exit from a major road and find somewhere safe to park. Don't push on to your intended stopping place if the conditions are treacherous.

## DID YOU KNOW

### YOU SHOULDN'T USE CRUISE CONTROL IN WET OR SLIPPERY CONDITIONS

Cruise control is designed for normal road conditions; it doesn't know when the road is wet or slippery.

On most cars, cruise control is disengaged by tapping the brake. In an emergency, this adds a fraction of a second to your response time as well as the risk of the braking action itself causing a loss of control on a slippery road.

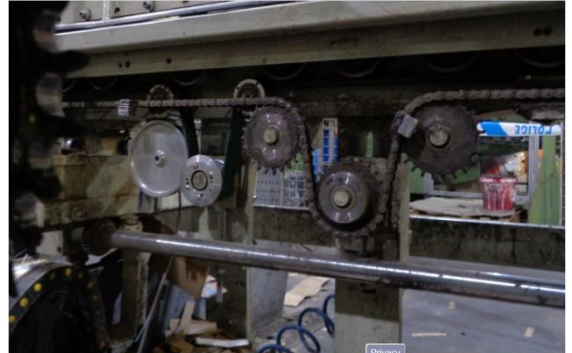
If you're driving in adverse weather, switch off your Cruise Control and stay in control of your vehicle - Stay SAFE.



## Lessons Learnt following HSE Prosecution

**This article published recently although not Highways related did show some valuable lessons learnt which could be applied to what we do.**

On 10 February 2021, an engineer was working for a Packaging Company at its factory when he was asked to look at a large case-making machine that had run into a problem. The operator of this fast-flowing machine, which can make 200 cardboard boxes a minute, had noticed that one of the conveyor belts had formed a loop and required an engineer to reset it.



The Packaging company's main engineer (IP), and a colleague went inside the fixed perimeter guard of the machine and closed its interlock gate. By closing the interlock gate; it meant that the machine could be restarted. The main engineer (IP) climbed within the machine to reset the conveyor belt and then remained in a section of the machine where it was possible to stand while the machine was running.

The main engineer (IP) asked for the machine to be switched back on. Within seconds of the machine starting up, he felt a tugging on his arm. It's thought the sleeve of his overalls became caught in a nearby exposed chain drive, which pulled his left hand into the chain mechanism and amputated his left hand at the wrist. His colleague pulled him out from under the machine and an Air Ambulance took him to a Hospital A&E. From there he was transferred to Hospital that had a Hand Centre, where surgeons re-attached his hand during an 11-hour operation.

However, more than 18 months later, IP still has very limited movement in his left hand, and he can no longer drive or do many of the things he previously enjoyed. He still suffers significant pain in the area of the amputation.

HSE was notified on the day of the incident by the Packaging Company and by the police. That all came through directly to the HSE Inspector, who went out to start the investigation on the afternoon of the incident. The HSE Inspector said;

- 'There's a mix of emotions when you receive a call like this because you are always worried about the outcome for the person involved. Even if it's reported as an amputation, I have seen amputations that have resulted in fatalities, sometimes a few days afterwards. So, the first thing that goes through my mind are thoughts about the injured person, what they have suffered and what their outcome might be.
- 'The second thing is, what have I got to start thinking about in terms of the evidence that am I looking for? What things do I want the company to produce for me that might give me some level of assurance that they have done as much as they reasonably could to prevent this from occurring? Some incidents happen for unknown reasons, but some incidents happen because companies take shortcuts.

- 'As an HSE inspector, we have to be focused and think about where we're going with this – who do I need to speak to and, sometimes, who do I not want to speak to right now? We have to be mindful that this might be – as it was – a prosecution, and therefore we don't want to be talking to the managing director too much at this stage, because I have to consider his rights later on if I go on to prosecute his company.
- 'We also have to think about what information the injured person's family has had, because that can be distressing as well. Sometimes they are very much in the dark. In this case, I spoke to the IP's wife fairly quickly – I think on the following day. The IP was very heavily sedated at the time, he wasn't able to give his wife the information she wanted, all she knew was that he had had his hand amputated. So, we are often the initial go-between for the family and the company in terms of what has happened."

The HSE Inspector asked for the risk assessment for the machine, followed by the safe systems of work for the operation, cleaning, use and repair of the machine. Then, asked for the maintenance log for that machine and the manufacturer's handbook – which was all in Italian so that was not much use either to the HSE Inspector or the company because there wasn't an English version available. Then, after asking for the daily inspection record for the machine," the HSE Inspector explained;

- From my initial enquiries, it was abundantly clear that there were several identifiable breaches of legislation
- **The risk assessment was given to me but unfortunately it wasn't suitable or sufficient because it didn't consider any repair or maintenance to the machine**
- **There was no safe system of work for either operation or repair and maintenance of the machine by the engineers**
- 'I also left a notice to leave the machine undisturbed, which meant that the machine was down for approximately two days
- To be fair to the company, because they had the perimeter guarding and they had the locked gates, the real issue here was the culture that had developed where people thought it was okay to go beyond that guarding
- The key thing was that the company confirmed to all of their employees that that practice was not safe, and they had to ensure that it did not happen again
- So, it was more of a cultural thing in respect of the machine, and we ordered the company to leave the machine undisturbed until they had taken that action with their employees. That went right up to the managing director himself because he had been seen within this perimeter guarding along with other senior managers **So, there was a significant cultural issue there**
- At a Magistrates' Court, the Packaging Company pleaded guilty to breaching section 2(1) of the Health and Safety at Work Act. The company was fined £115,000 and ordered to pay costs of £5,308
- The HSE Inspectors investigation discovered that the company's risk assessment was neither suitable nor sufficient as it had not considered the risks created from use of the machine, including during maintenance activities. There was no safe system of work in place to ensure safe isolation and access for tasks such as maintenance
- **It was also found that it was common practice to bypass the gate that kept people and the machine separated, and to stand within the fenced area whilst the machine was in operation, demonstrating a lack of adequate supervision. Employees hadn't received any instruction for the safe isolation of the machine**

The HSE Inspector said –

- ‘One important element in this story is that what was happening was reactive maintenance. The operator noticed that the conveyor had come off. That was a well-known problem on this machine and part of the reason for that was because the company didn’t have a proactive maintenance plan, they only dealt with things on a reactive basis’.
- ‘The problem is that the production process is always against the clock – employees are always time pressured to get things fixed because the machine is needed for production and there is a customer at the end who is waiting for their cardboard boxes. Again, when we’re looking at culture, that pressure on the engineers to get the machine up and running was quite significant.
- ‘If they had a system with planned preventative maintenance for this machine, the engineer felt that some of these issues could have been eliminated and, therefore, this reactive maintenance that they were constantly having to do could have been better managed.
- ‘The second issue is that while the company had erected perimeter guarding with working interlocked gates, employees had realised that if they went within that perimeter guarding and closed the interlocking gates, they could ask for the machine to be restarted and they could work out what the operational problems were.
- ‘But they hadn’t considered that they were at risk – and that was an activity that had been completed by the senior managers as well as employees.
- As usually happens over time, this became custom and practice because new employees follow senior employees and it becomes routine, even though it was blatantly unsafe because there was a variety of exposed chain and belt drives within that machine where the outcome would be either severe crushing injuries or amputation.
- ‘So, they should have prohibited employees at any level from entering the working area of the machine – that’s key. Had they done that, had they brought that up in the toolbox talk, it would have highlighted the danger to everybody else. But once a culture like that is established in a company, it’s then very difficult to stop it and say that it is wrong.’

#### **WHAT CAN WE ALL LEARN FROM THIS CASE?**

There are two messages here.

The pervasive culture is one. When you have an unsafe culture of people going into machinery to do unsafe tasks, it just becomes contagious. Unless you control that within the organisation, you will find that new employees will just follow custom and practice. And then we end up with this scenario where somebody gets caught out.

Secondly, there was the failure to appreciate that planned preventative maintenance can affect the reactive basis on which engineers are required to go in and routinely repair machines. That takes away the time pressure element, and it gives them the chance to think about what it is that they need to do and the risks that they might be exposed to. In this case, they could have come out of the machine, they could have been safely behind the guarding, and then restarted the machine and watched the conveyor from that safe position.

‘They didn’t do that because they were trying to shortcut getting in and out of the machine because of time constraints. Those time constraints are a false economy because it ended up with a really nasty accident and this machine was down for two clear days, which meant that all of the production had to stop, putting the company under further time constraints.

If they had just spent an hour maintaining this machine prior to this incident, it might not have happened, and the life of a worker wouldn’t have been so terribly altered.

*Source: IOSH*



## A Positive Story

### Telent's Training Academy Manager shows his commitment to 'Customer focus' is not just at work

Telent's Highways Training Academy Manager put his First Aid skills to work on his way to the office last week, demonstrating the Telent values and behaviours we are so proud of.

As Gary was driving to our Chorley Depot, he came across a cyclist who was lying face down on the pavement. Gary immediately stopped and, while his wife called the emergency services, went to see if he could provide help and assistance.

Gary was able to treat a small head wound and put the casualty into the recovery position, talking to the gentleman and letting him know that help was on its way.

Thankfully, the North West Ambulance Service were on site within 6 minutes and able to take over as the gentleman has epilepsy and it is suspected that he'd had a seizure while cycling.

After the incident, Gary said 'I hope he recovers well, it just frustrates me a little how many people drove by without offering assistance to somebody in need.'

Gary shared his eventful start to the day on [LinkedIn](#) and was widely praised for being the person who didn't walk by and who stopped to help, and from the comments it was clear that people weren't surprised that Gary would be that person.

As a trained First Aider, Gary was able to use his skills to help others and to really make a difference. First Aid is a life skill, you never know when you might need it – speak to your Line Manager or Health and Safety Team about First Aid Training.



## Sepsis Awareness

Sepsis (also known as septicemia or blood poisoning) happens when the immune system overreacts to an infection or injury. Normally our immune system fights infection – but sometimes it can attack our body's own organs and tissues. If not treated immediately, sepsis can result in organ failure and death. With early diagnosis, it can be treated with antibiotics. You can not catch sepsis from another person. Sepsis that progresses to septic shock has a death rate as high as 50%, depending on the type of organism involved. Sepsis is a medical emergency and needs urgent medical treatment.



Cut and grazes can allow bacteria into the blood stream and this can lead to sepsis. It is important to thoroughly clean any cuts or abrasions and to check for signs of infection while it heals.

Signs of infection include:

- Persistent redness or swelling
- Feels warm to the touch
- A high body temperature
- Increased or continued pain
- Redness spreading from the cut – draw a ring around the redness to track if infection spreads
- Pus or discharge.

Prevent infection by:

- Cleaning the wound by rinsing with water or using a sterile wipe.
- Clean the skin around the wound with soap and water or antiseptic, try not to get antiseptic into the wound.
- Pat the area dry and cover with sterile dressing or plaster.
- If working, wear gloves to keep hands and dressing clean.
- Change the dressing as often as you need; it can be removed once the wound has healed.

Recognising the signs of sepsis early could save a life:

### CHILDREN

A child may have sepsis if he or she:

- **Is breathing very fast**
- **Has a 'fit' or convulsion**
- **Looks mottled, bluish, or pale**
- **Has a rash that does not fade when you press it**
- **Is very lethargic or difficult to wake**
- **Feels abnormally cold to touch**

### ADULTS

An adult may have sepsis if they show any of these signs:

- S**lurred speech or confusion
- E**xtrême shivering or muscle pain
- P**assing no urine (in a day)
- S**evere breathlessness
- I**t feels like you're going to die
- S**kin mottled or discoloured

### WHAT TO DO IF YOU SUSPECT SEPSIS:

Call **111** or **contact your GP** if you're worried about an infection.

Call **999** or **visit A&E** if someone has one of the sepsis symptoms.

**JUST ASK "COULD IT BE SEPSIS?"**

Source: The UK Sepsis Trust

## Mental Health & Wellbeing Moment – Gambling Addiction

In the past, gambling was confined to racetracks, casinos and informal games, often held among friends and often accompanied by alcohol or drugs.

Nowadays, you can bet thousands of pounds from your phone in a matter of minutes, and every high street has at least one betting shop, often lined wall to wall with slot machines which can take bets of up to £300 a minute. While the old types of gambling are still popular, the new forms have widened its appeal and dramatically increased levels of problem gambling.



### Internet Gambling

Of all the gambling types on offer, internet gambling is the most closely associated with addiction.

This is in part because of ease of access – when you carry a mini casino around in your pocket all day, it can be incredibly hard to resist placing bets. But it is also because of how internet gambling sites are designed. Similar to slot machines, internet gambling often involves rapid play, with one bet rolling over automatically into the next, while constantly giving the illusion that the player is close to winning. These factors have been shown to be of high risk for addiction.

Further information is available on Gambling Addiction and how to spot the signs on [Gambling addiction | Gambling addiction help \(ukat.co.uk\)](http://Gamblingaddictionhelp.ukat.co.uk)

Source: Telent Highways

## Raising the Bar 15 – Task Lighting

Following a review of 'Raising the Bar 15 – Task Lighting' at the most recent Safety Hub meeting on 01/12/22 the decision has been made to retire this document. This is because the information contained within is seen as out of date or now standard practice on site.

A new RtB document is currently under development to provide guidance on light spillage and how it may affect the travelling public on the SRN.

If you feel you can contribute to this, then please contact [matt.wright@octaviusinfrastructure.co.uk](mailto:matt.wright@octaviusinfrastructure.co.uk) or any other member of the Safety Hub team.



## Raising the Bar Checklist

This will help check compliance with the guidance by highlighting significant elements. A link is posted below that will direct you to the Highways Safety Hub website where there are also a lot of interesting items. Also consider joining the Twitter group which gives out lots of useful information regarding changes and uploads including the latest safety alerts.

<https://www.gov.uk/government/collections/health-and-safety-for-major-road-schemes-raising-the-bar-initiative>



## Safety Alert Database

### Safety Alert Database - All Alerts

#### Safety alerts etc. index listing – Issue 15 (30 Nov 22): “The Crazy LEGO King”



This database contains **2,586no.** document entries, including SHEQ alerts, bulletins, learning, best practice, guidance and other docs, produced onto an Excel File, that provides links to each document.

Although containing messages that cover S, H, E and Q topics, for ease of reference the database is titled **“Safety alerts etc. index listing”**.

To use the database download the excel spreadsheet to your desktop, enable editing and then use sorting columns to find the information you need.

Please ensure your firewall allows access to Google Drive to view linked alert documents.

#### How to access

- The latest “Safety alerts etc. index listing”, has been posted on the Highways safety hub web site, nested in the alerts tab page; <http://www.highwayssafetyhub.com/all-alerts-database.html>
- It can be used by opening the Excel File copy held on the web site, or by opening after saving a copy onto your own PC.
- To access individual documents from the links in column “G”, users will need internet access – All documents have been uploaded onto the index listing from a Google Drive account

**Trivia note:** *Issue 15, containing 2,586 document entries, is referred to as “The Crazy LEGO King” >*

*2586 LEGO Chess Promotional Set also known as 2586 The Crazy LEGO King is a Castle promotional set released in 1998. It contains a king minifigure on a throne. It also features a chrome silver crystal.*

Source: Bob Tootell

