VYSOKORYCHLOSTÍ TRAŤ V ANGLII

HIGH SPEED RAILWAY – HS2

příklady zrychlení stavebních postupů pomocí prefabrikace

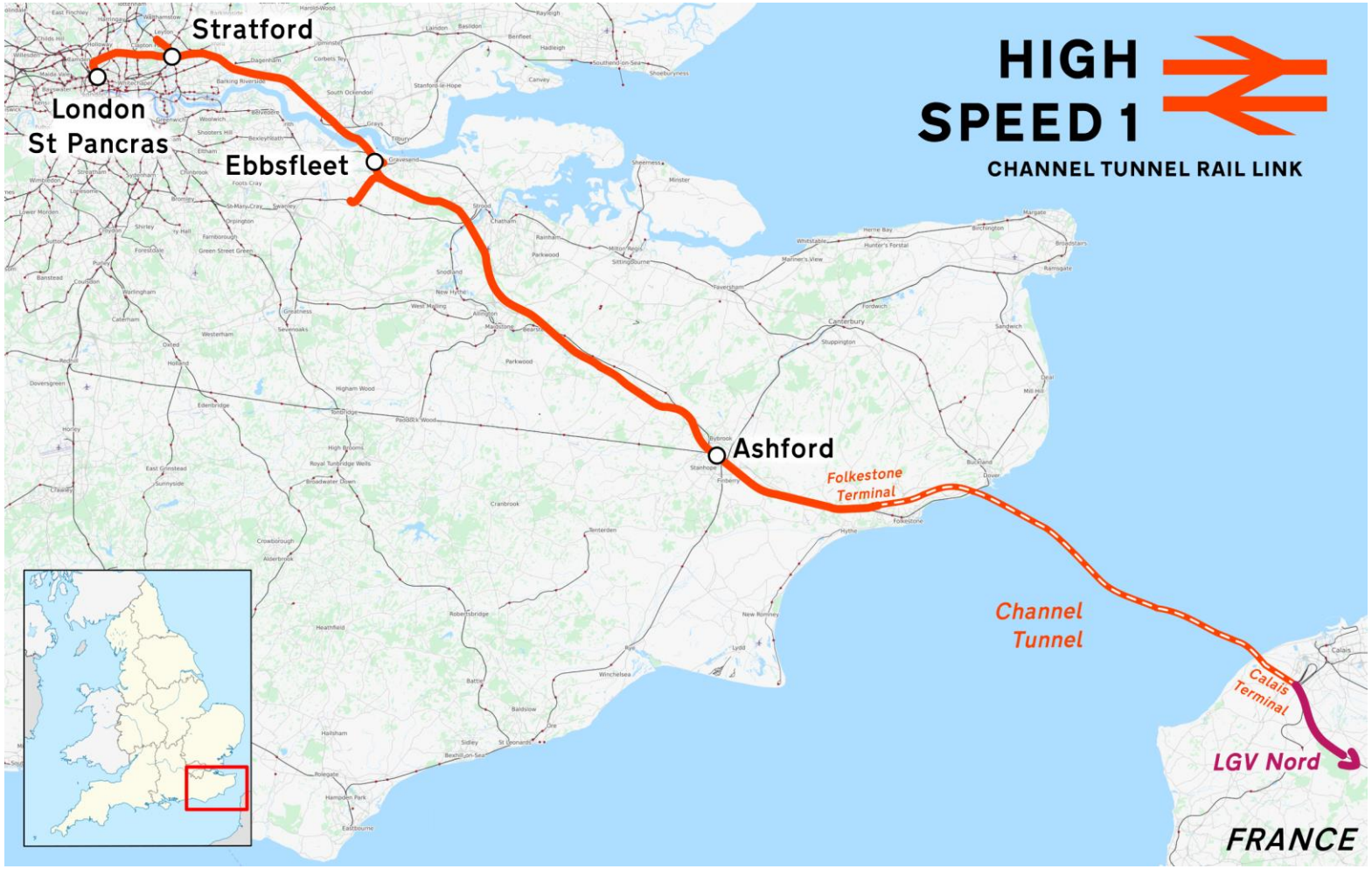
ŽELEZNIČNÍ MOSTY A TUNELY 2026

21.01.2026, PRAHA

autoři: Andy Parkin, Michael Train, Pavel Bulejko

abmeurope.com

ÚVOD – ZÁKLADNÍ INFORMACE K PROJEKTU



zdroje: www.hs2.org.uk, wikipedia.org

ÚVOD – ZÁKLADNÍ INFORMACE K PROJEKTU

Délka 110km

Zprovozněno 2007

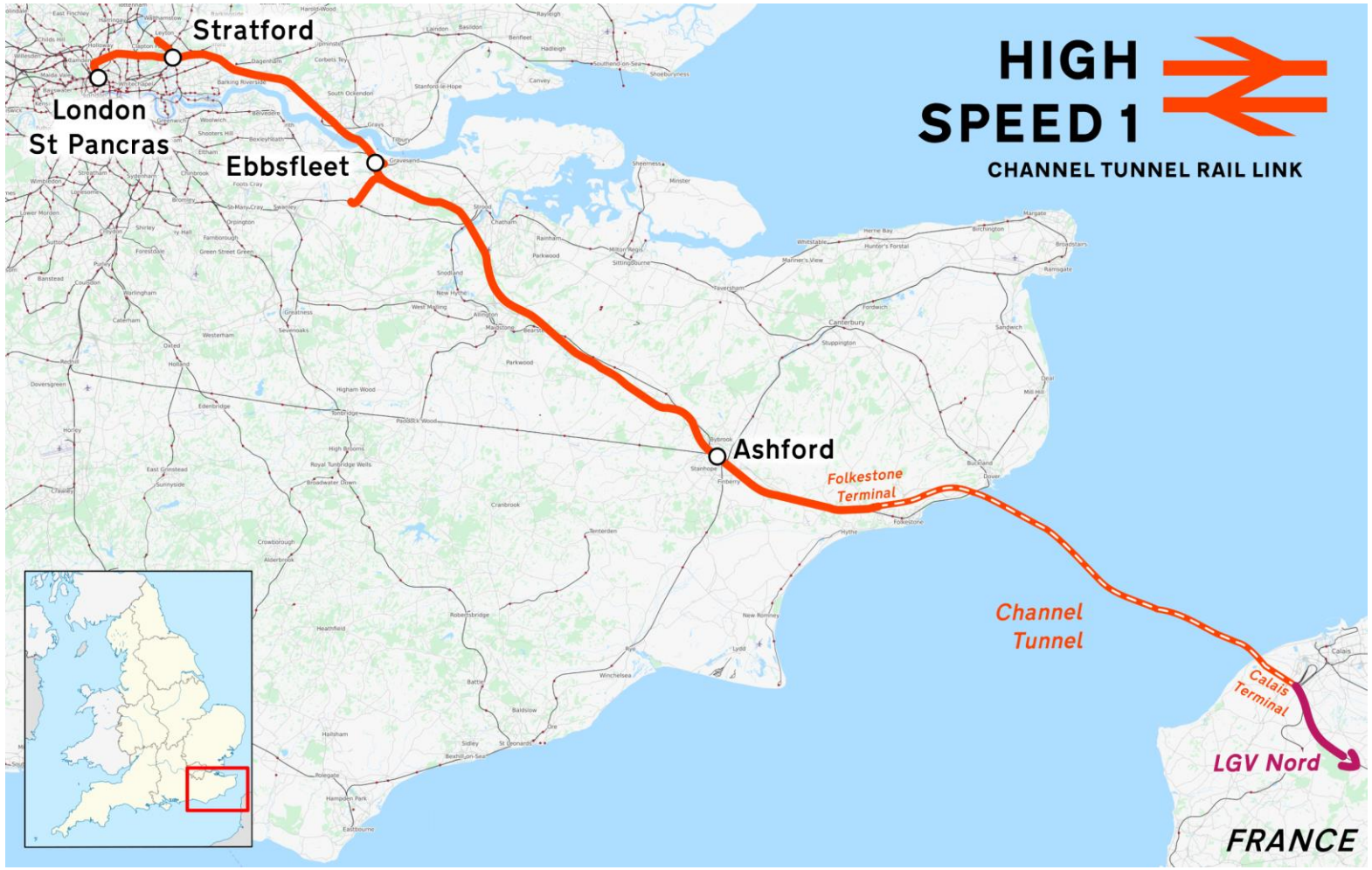
Náklady £ 6,84 mld

Můj odhad:
dnes asi £ 10-12 mld
= 300 mld Kč

cca 2,7 mld Kč / km

vč. výkupů pozemků

Financování formou PPP



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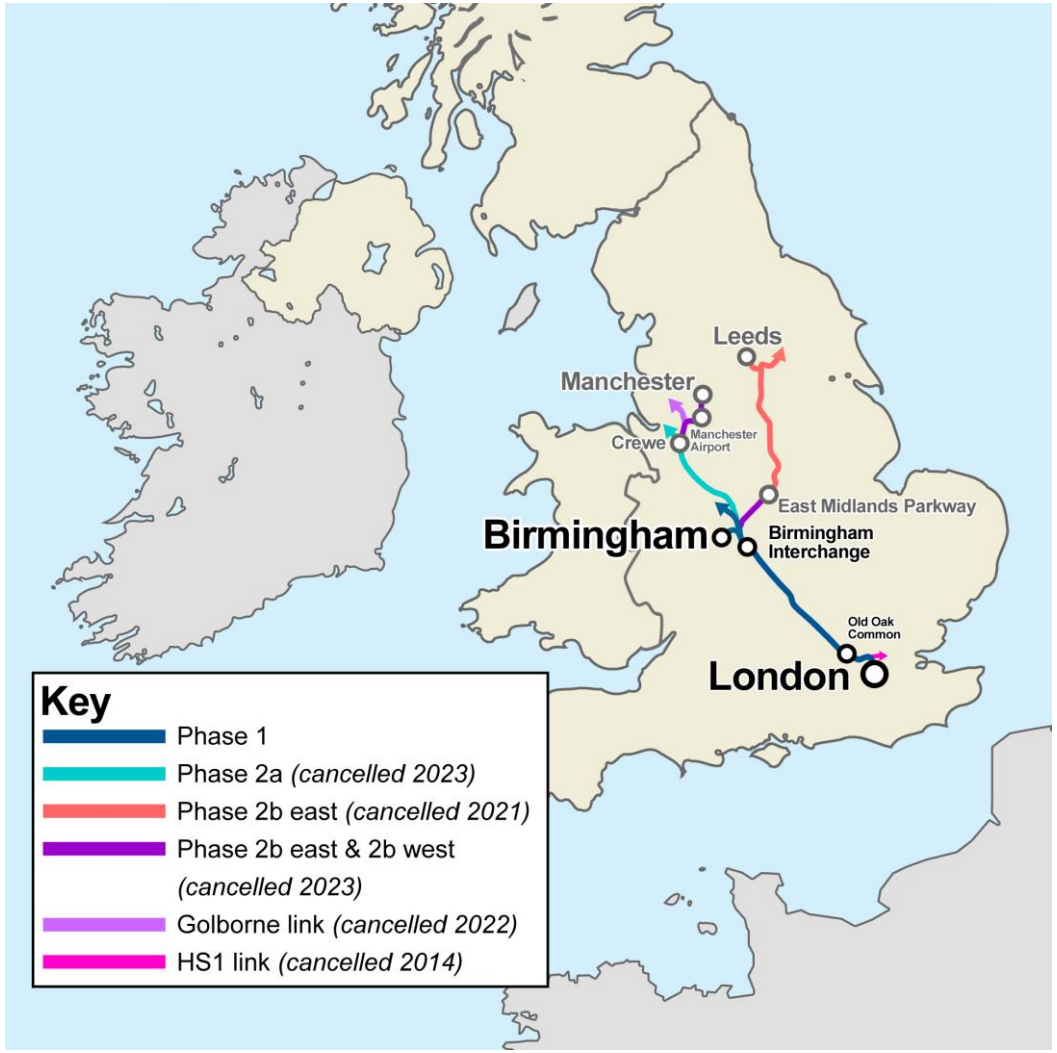

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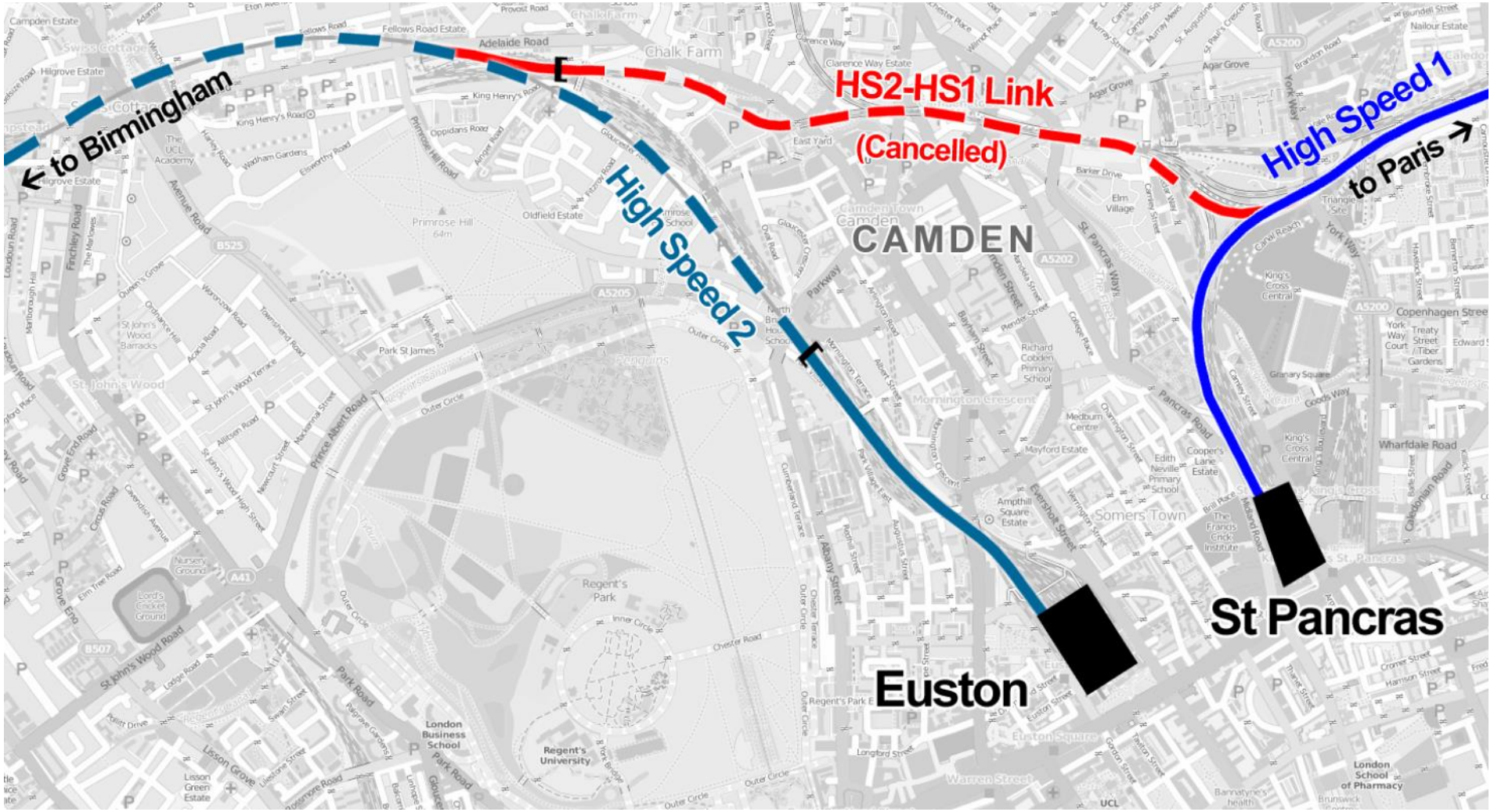

zdroje: www.hs2.org.uk, wikipedia.org

ÚVOD – ZÁKLADNÍ INFORMACE K PROJEKTU

Původní délka 540km

Budget srovnáno ±na současné ceny:

2010 - cca 3 mld Kč/km
2013 – cca 4 mld Kč/km
2019 - cca 6 mld Kč/km
2020 - cca 7 mld Kč/km

Po úpravách finální délka 230km

Zatím prostavěno (04/2025):
5 mld Kč/km
Alokováno na roky 2026-2030 další
3 mld Kč/km

Celkem zatím cca 8 mld Kč/km

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2

To meet the ambitious programme, a wide range of modern construction methods have been adopted, with precast concrete at the heart of the delivery model.

•Precast enables:

- Off-site quality control and rapid installation
- Reduced disruption to communities and transport networks
- Enhanced safety and environmental performance

•On HS2, you'll find examples of:

- Cut-and-cover tunnels, green bridges, viaducts, and complex portal structures
- Segmental tunnel linings installed by tunnel boring machines (TBM)
- Ultra-high-performance concrete (UHPC) for critical components

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – VIADUKT PŘES DÁLNICI M6

- Supplied 246 precision-engineered precast deck slabs for the SL5 bridge spanning the M6 Motorway
- Decks divided into East and West sections, with slabs incrementally launched to minimise motorway disruption
- Close collaboration with BBV (Balfou-Beatty-Vinci) and design partners ensured seamless integration and technical excellence
- Stringent tolerances achieved for accurate fit and long-term performance
- Project demonstrates the benefits of modern precast methods in delivering complex, large-scale infrastructure efficiently
- Decks approx. 11 x 2,5 x 0.5m

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – VIADUKT PŘES DÁLNICI M6

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – VIADUKT PŘES DÁLNICI M6

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – CROMWELL LANE UNDERPASS

- Manufactured 24 bespoke precast U and N units forming a 12-ring pedestrian culvert beneath Cromwell Road
- Designed to provide safe pedestrian access while maintaining the structural integrity of the new road alignment
- After successful culvert installation, produced H4a parapet units in a unique “Autumn Malt” pigment
- Colour was specially developed to harmonize with the heritage tones of Kenilworth Castle
- Project highlights ABM’s expertise in architectural finishes, bespoke design, and heritage-sensitive delivery

zdroje: www.hs2.org.uk, wikipedia.org

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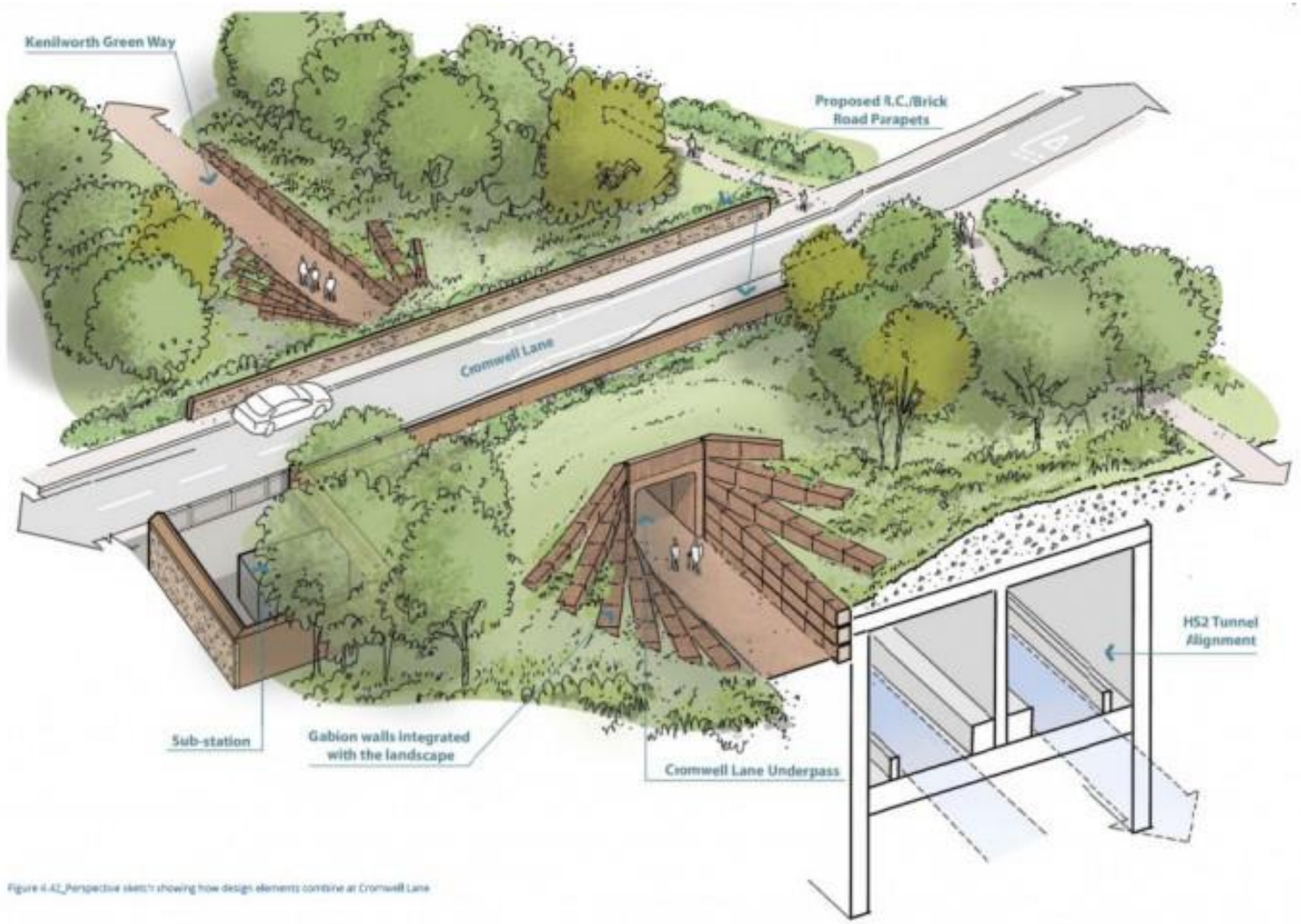


zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – BURTON GREEN TUNNEL SOUTH PORTAL

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – BURTON GREEN TUNNEL SOUTH PORTAL

- Supplied 178 precast roof slabs for the Burton Green Tunnel South Portal, a key part of the HS2 tunnel infrastructure
- Manufactured using a specially developed fire-resistant concrete mix with polypropylene fibers for enhanced durability and safety
- Mix design refined through extensive testing in collaboration with UK-accredited partners
- Portal structure features integrated ventilation to manage pressure fluctuations as high-speed trains pass through
- Demonstrates ABM’s technical innovation, high-quality production standards, and ability to deliver on complex, safety-critical infrastructure projects

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – BURTON GREEN TUNNEL SOUTH PORTAL

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – BURTON GREEN TUNNEL SOUTH PORTAL

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – CHILTERN TUNNEL

- Chiltern Tunnel is the longest on HS2, stretching over 16km with a twin-bore design
- Constructed using a tunnel boring machine (TBM) that installs precast segmental linings as it advances
- This approach ensures high precision, rapid progress, and strong safety standards, with thousands of segments forming the tunnel walls
- Chiltern Tunnel sets a benchmark for mechanized, factory-controlled precast in complex tunnelling
- For a deeper dive into this project, the upcoming presentation by Mr. Richard Valenta and Tony Paraskeva will explore the Chiltern Tunnel in detail

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – TURWESTON GREEN OVERBRIDGE

- Supplied over 1,900 Permadec panels and more than 120 Permadec cantilever panels for the Turweston Green Overbridge, the largest green overbridge on the HS2 route
- Structure width 99 meters and features 36 steel beams, crossing the railway near Turweston village
- Delivered over 3,300m² of Permadec Standard Panels and 500m² of Permadec Cantilever Panels
- Worked closely with EKFB to ensure precise design, manufacture, and delivery
- Project demonstrates EMJ's expertise in large-scale, innovative bridge construction and collaboration
- EKFB = Eiffage, Kier, Ferrovial Construction and BAM Nuttall

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – TURWESTON GREEN OVERBRIDGE

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – PERRY HILL OVERBRIDGE

- Designed, manufactured, and delivered over 500 Permadec panels to the Perry Hill Overbridge, part of the HS2 railway between Calvert and Steeple Claydon
- Panels covered an area of 1,000m² and were specially engineered to match the end skew of the bridge girders
- Collaborated with EKFB and Buckingham Group to ensure timely, high-quality delivery
- Supported ongoing realignment works, including Gawcott Road over the bridge
- Highlights EMJ's ability to deliver tailored solutions for complex infrastructure requirements

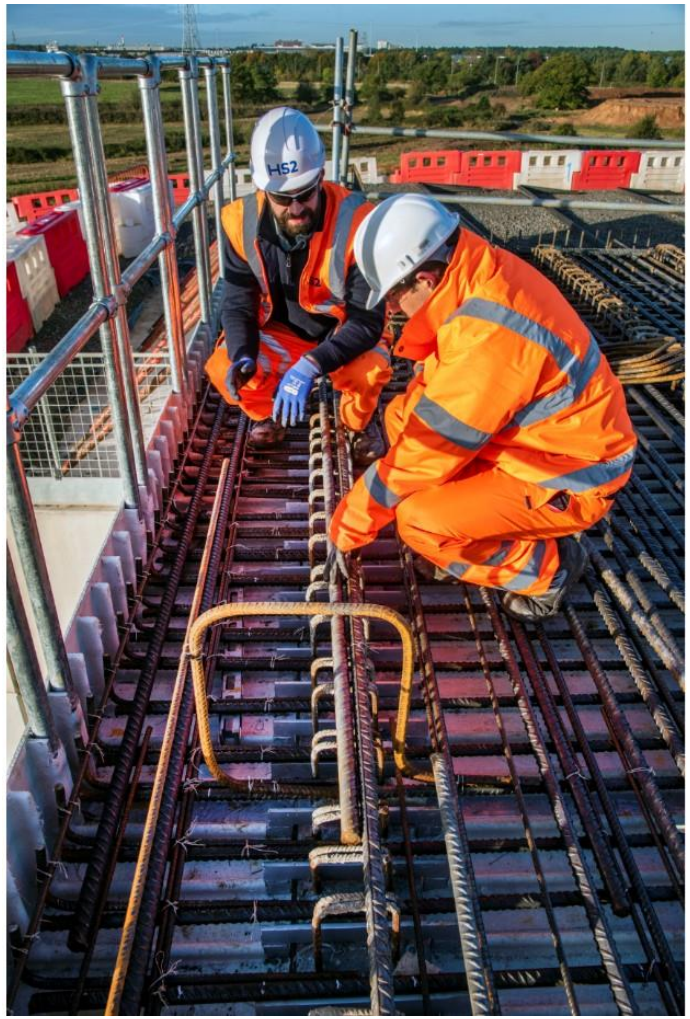
zdroje: www.hs2.org.uk, wikipedia.org

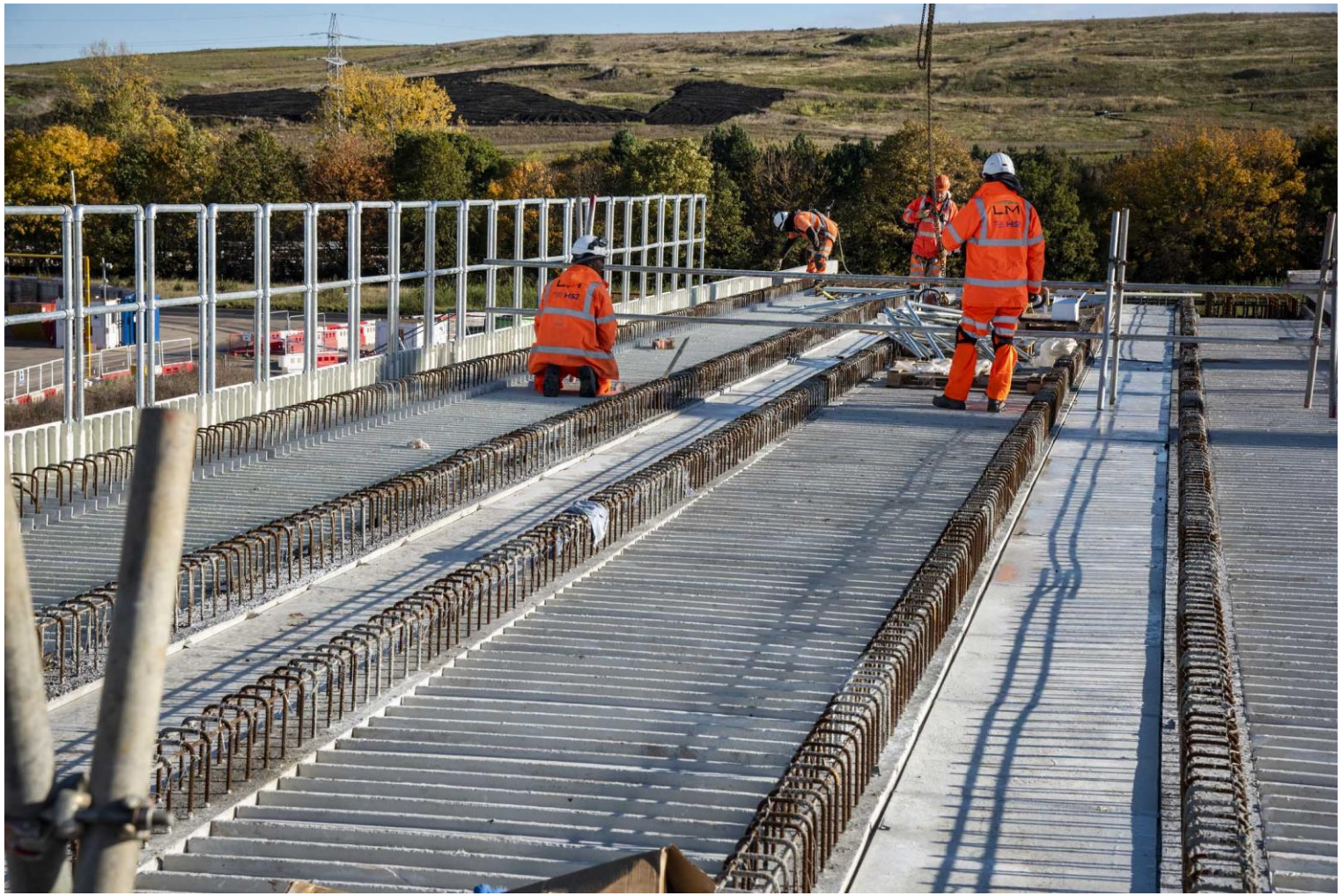
PŘÍKLADY REALIZACÍ NA HS2 – WP61 INTERCHANGE STATION WORKS

- Supplied over 1,400m² of Permadec panels for the WP61 enabling works scheme, supporting a major interchange station near Birmingham
- Panels included GRP Permadec Type 3A.2, 20mm Composite Panels, and special GRP Cantilever Panels
- Cantilever panels enabled rapid installation and provided a safe working platform with integrated edge protection
- Worked closely with BBV and Laing O'Rourke to meet demanding project timelines
- Project showcases EMJ's commitment to innovation, safety, and efficient construction delivery

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – WP61 INTERCHANGE STATION WORKS





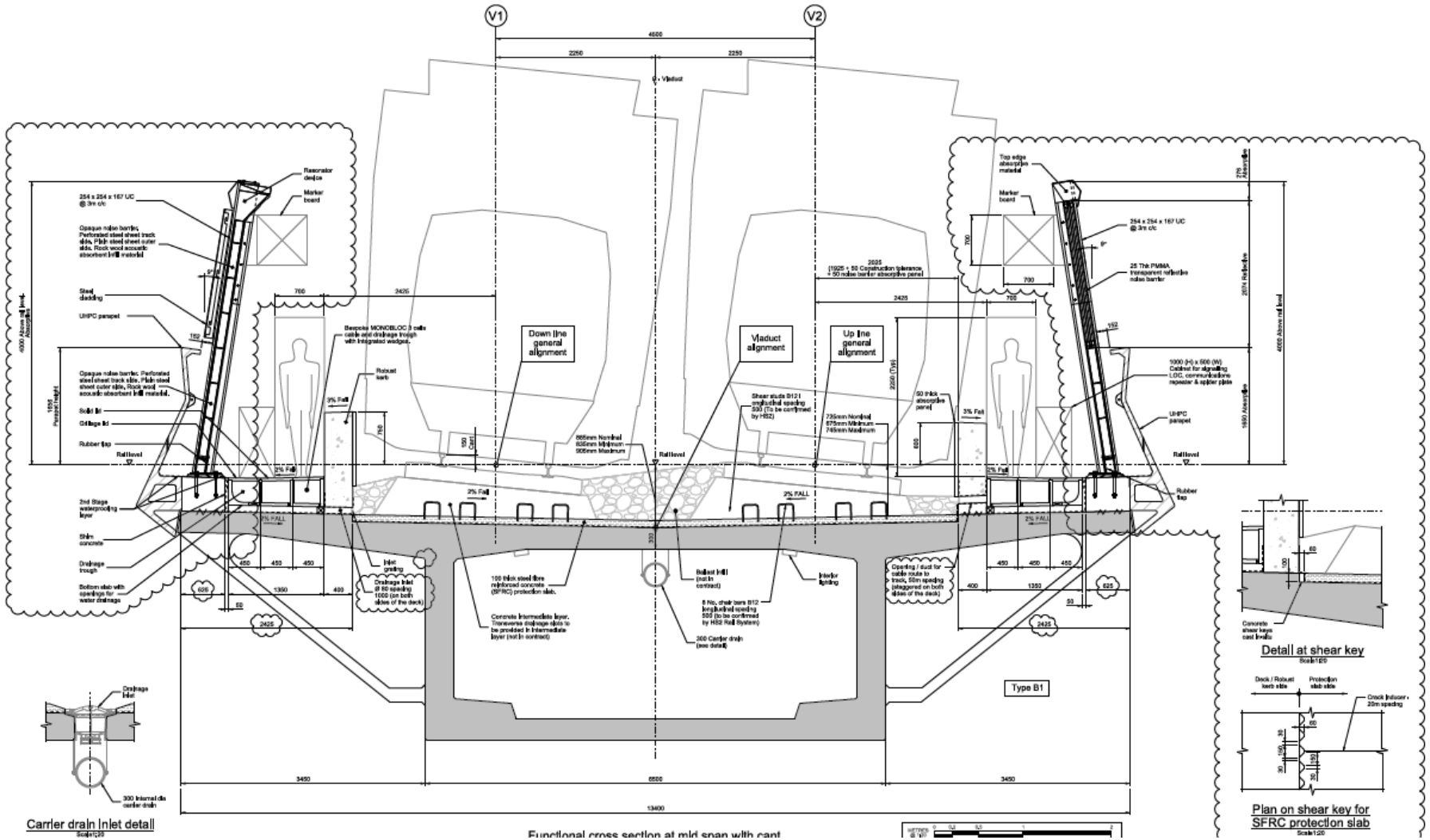
zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – COLNE VALLEY VIADUCT

- Colne Valley Viaduct is a landmark HS2 structure, crossing lakes and waterways with a series of elegant spans
- Utilizes ultra high performance concrete (UHPC) for parapets, offering exceptional strength and durability
- UHPC allows for slender, resilient elements that improve aesthetics and long-term performance
- This project reflects the growing adoption of advanced precast materials to meet demanding engineering and design standards
- George Kapos Brno 2025

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – COLNE VALLEY VIADUCT



zdroje: www.hs2.org.uk, wikipedia.org

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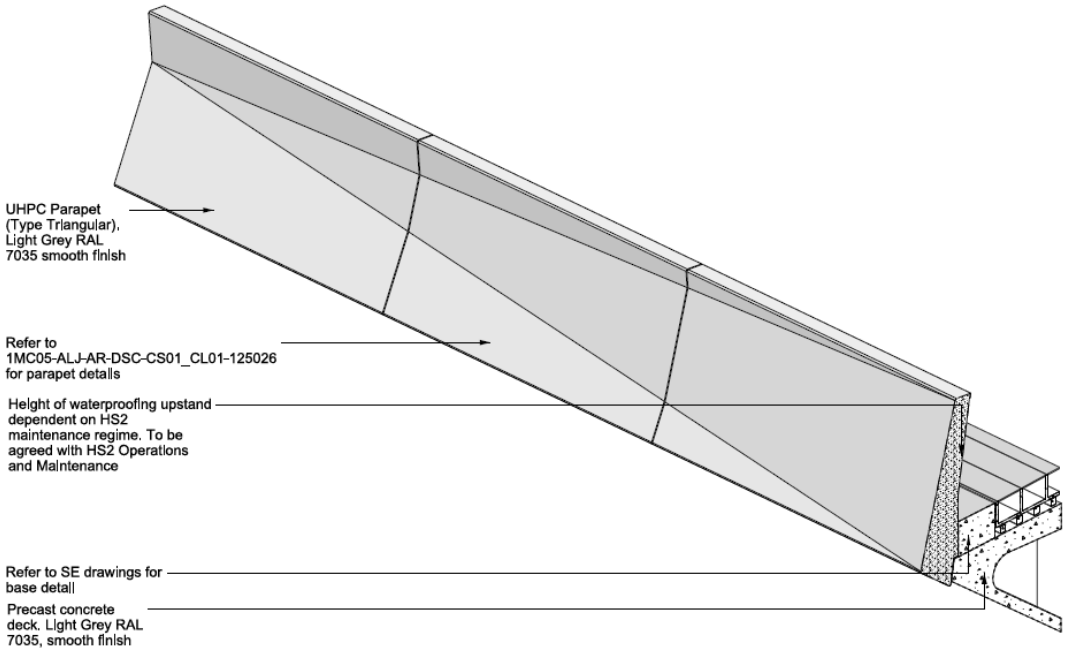
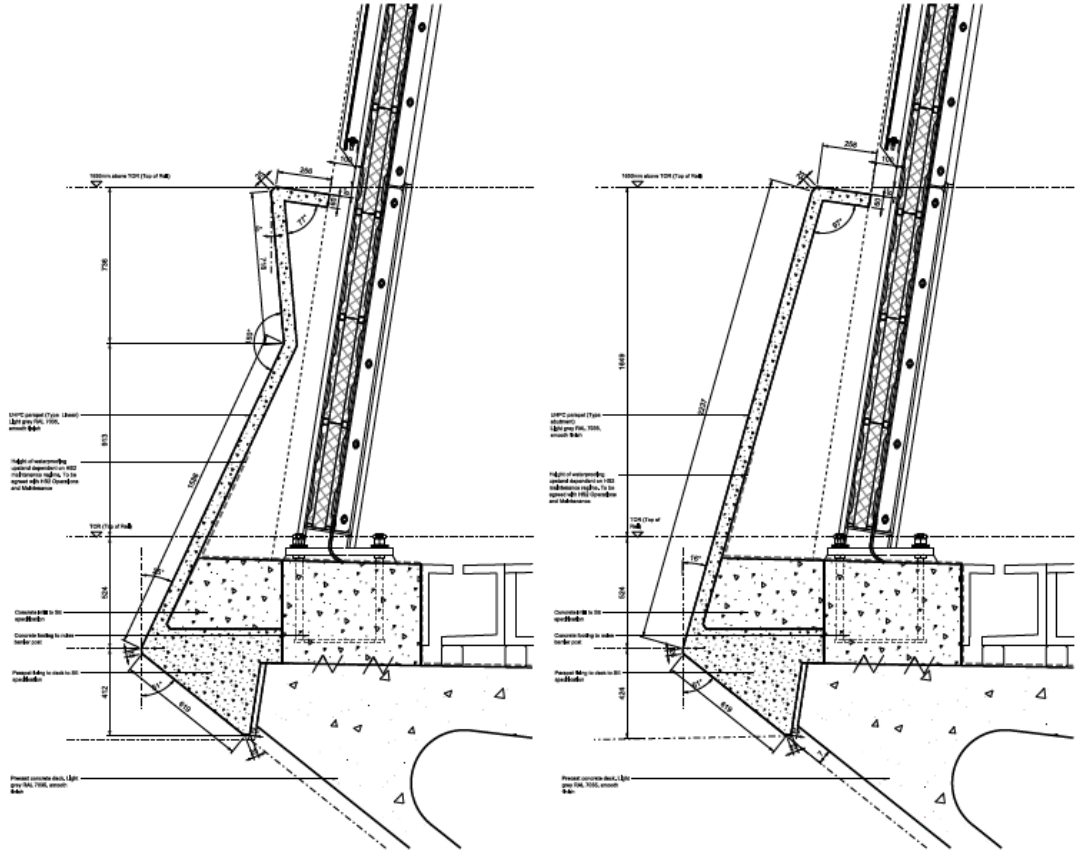


06 / 125057 Isometric - Triangular Parapet
Scale N/A



01 / 129326 Section - Linear Parapet
Scale 1:10 @ A1

02 / 129326 Section - Abutment Parapet
Scale 1:10 @ A1

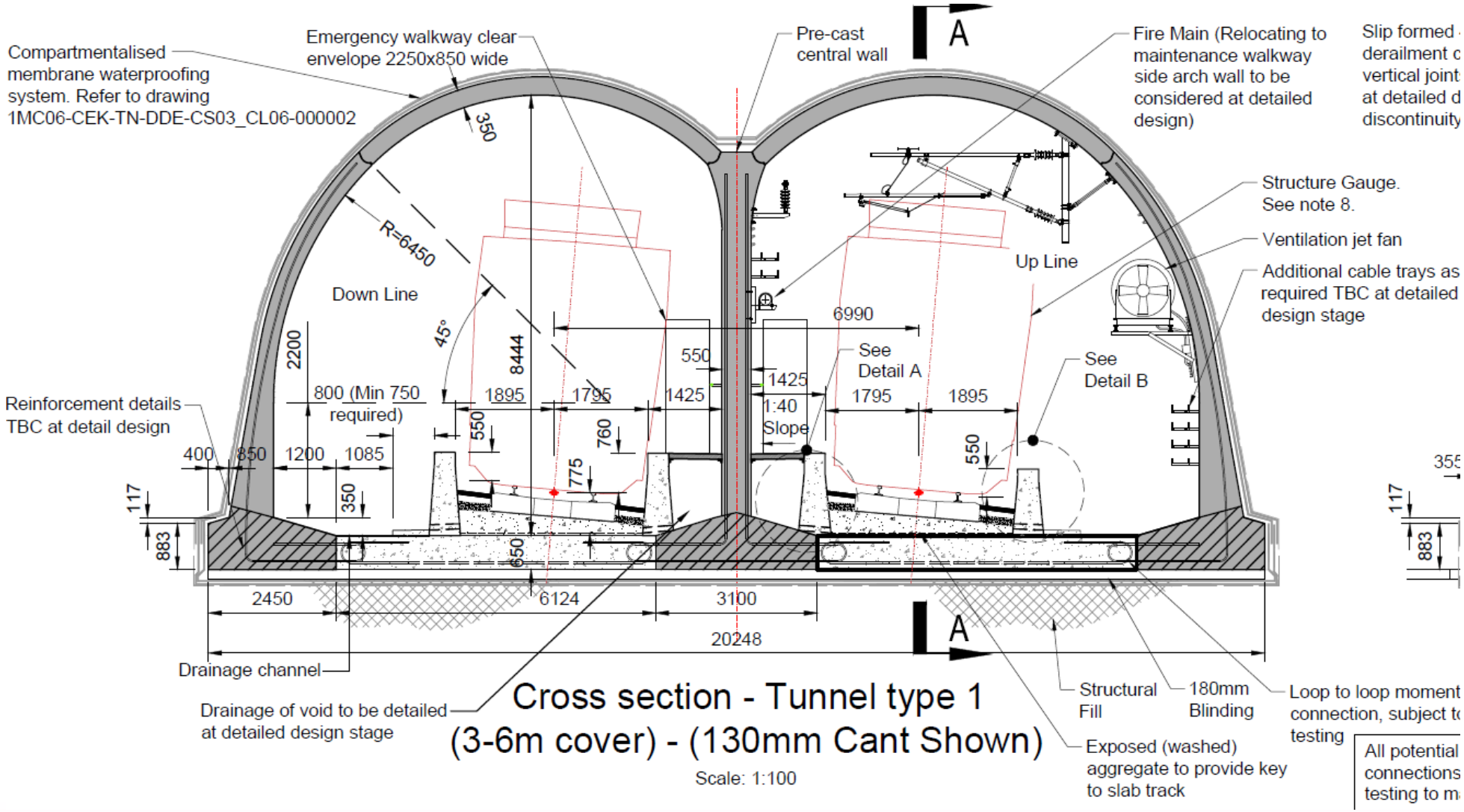
zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – GREATWORTH & CHIPPING WARDEN TUNNELS

- Two major green tunnels on HS2: 2.7km at Greatworth and 2.5km at Chipping Warden, both in south Northamptonshire
- Constructed using modular precast segments for cut-and-cover installation, minimizing site disruption
- Rapid off-site manufacturing and assembly reduced impact on local communities and the environment
- These projects set a benchmark for sustainable tunnel delivery and showcase the benefits of modern precast methods in large-scale infrastructure

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – GREATWORTH & CHIPPING WARDEN TUNNELS



zdroje: www.hs2.org.uk, wikipedia.org

2.2 Fire testing requirements

2.2.1 Representative testing

It is acknowledged that there is a lack of relevant test standards for this application but DJV would emphasize the need to implement the requirement in HS2-HS2-CV-SPE-000-014055 which specif 1.18.12 that "*The test sample to replicate the method of construction….*".
This is not possible to be satisfied in a conventional fire laboratory. The 'global stability' of the PC assessed from the structural numerical models after imposing the prescribed fire effects.

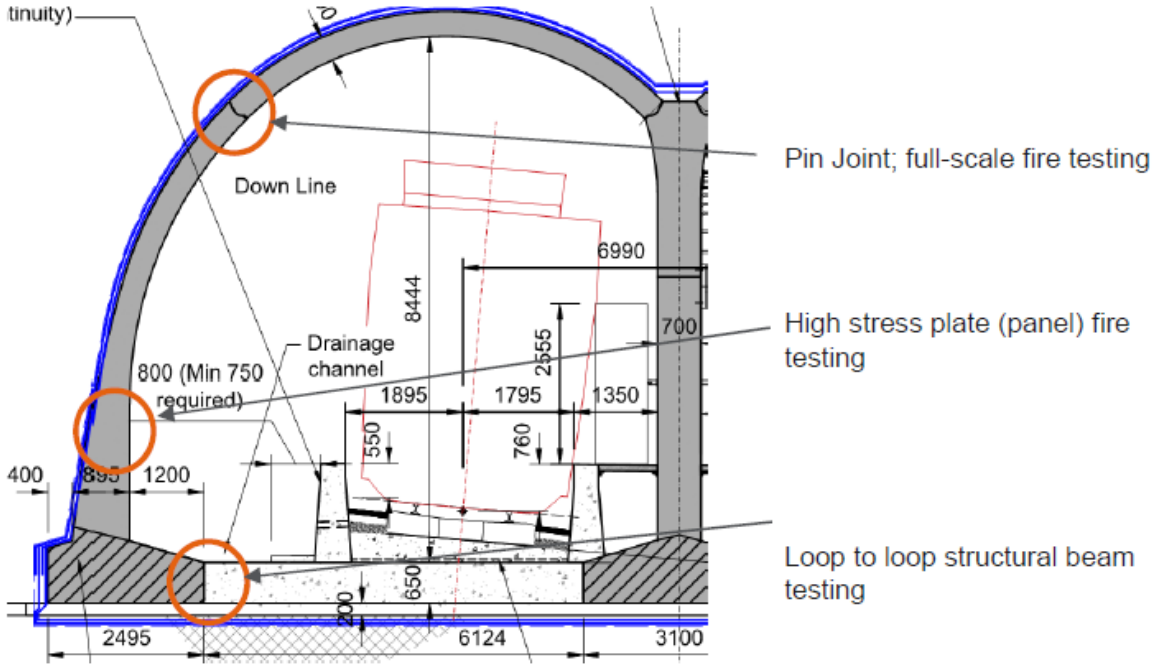
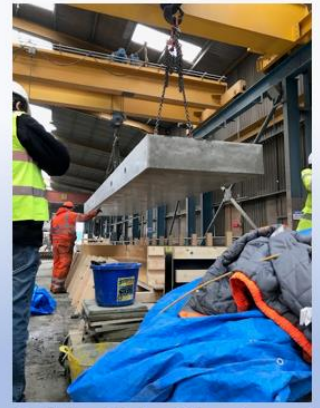


Figure 1. Half Arch structure geometry indicating the areas of interest (COWI).

2. FLAT SLAB SIDE WALL SECTION TEST – Manufacture of Units at ABM facility.

Flat Slab Cage – Install of Prefab. Reinforcement Cage.

Flat Slab Cast – Completion of cast for first 8m (L) unit.

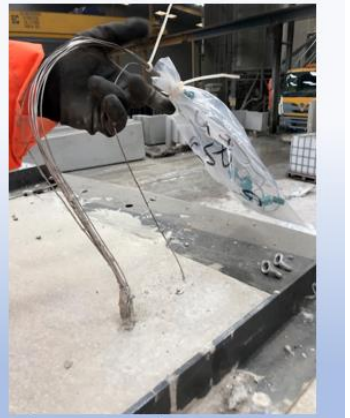


Striking Slab – 1st unit struck on 14th Feb. 2020.

3. CURVED ARCH PIN JOINT– 1st Set of Units Casted on 13th Feb. 2020 at ABM facility

Steel Arch Mould – Set up with first cast completed.

Steel Arch Mould – View at the top of completed unit.



Thermocouples – Cast into completed arch Unit.

zdroje: www.hs2.org.uk, wikipedia.org

PŘÍKLADY REALIZACÍ NA HS2 – GREATWORTH & CHIPPING WARDEN TUNNELS

zdroje: www.hs2.org.uk, wikipedia.org

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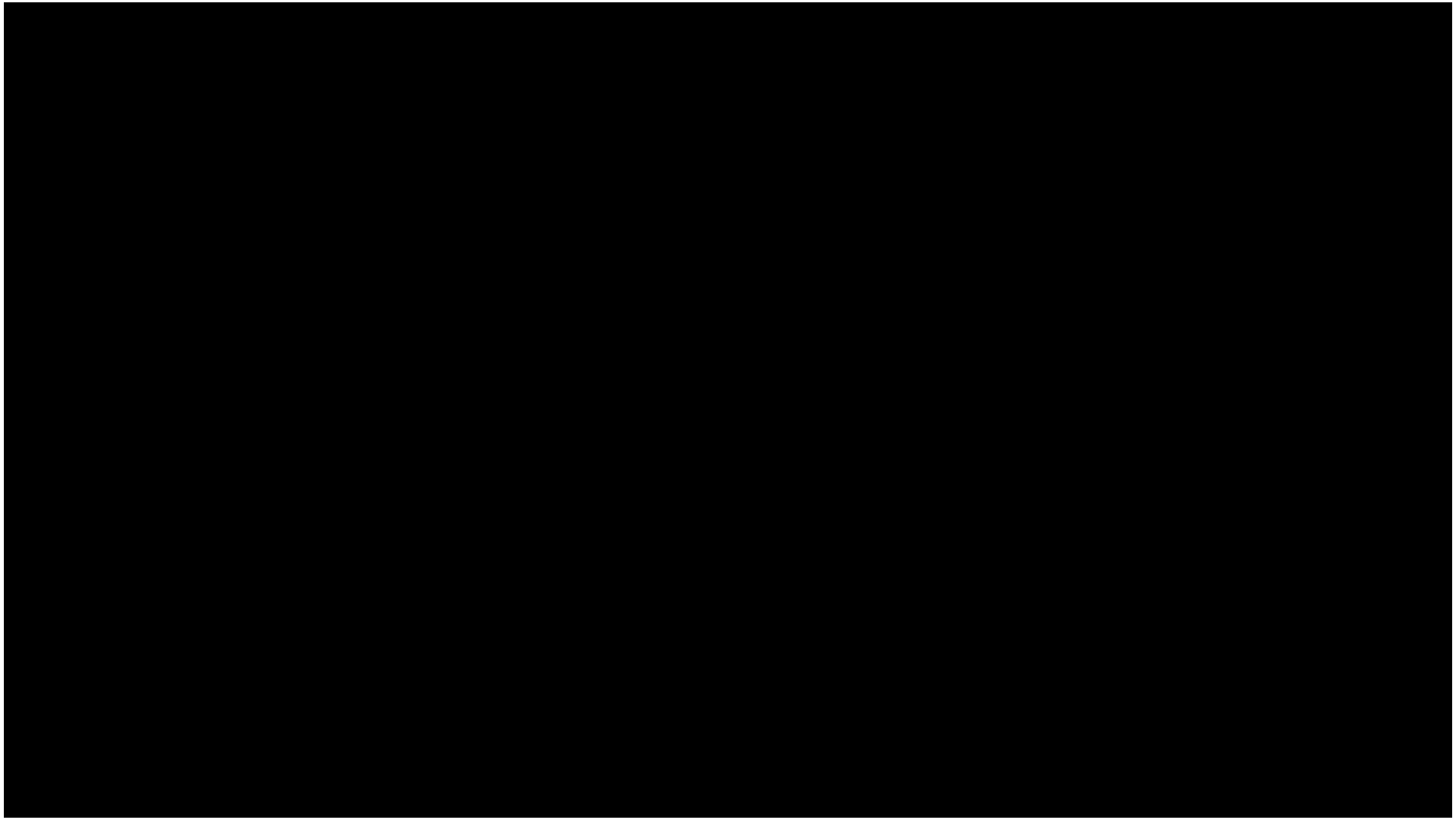

zdroje: www.hs2.org.uk, wikipedia.org

Modernizace trati Veselí n. L. – Tábor – II. část, úsek Veselí n. L. – Doubí u Tábora, 2. Etapa Soběslav - Doubí

Projektant Metroprojekt/MCO, zhotovitel Strabag Rail, NK prefa klenba světlosti 18m, montáž květen 2021

DĚKUJI ZA POZORNOST!