



ATKINS

Cambridge Science Park Station Interchange

Form F001: Approval in Principle

New Modular Equipment Buildings & Enclosed Compounds

December 2012

Notice

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Document History

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Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

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Part 1: Details

1.1 Proposed Works

1.1.1 Brief General Description

The scope of this document covers proposals for the construction of a new equipment building in close vicinity to the Chesterton Sidings, as part of the proposed Cambridge Science Park Interchange Station Project. The purpose of the overall scheme is to develop an existing area of Network Rail owned land and create a new interchange station to improve railway links to local residents and businesses.

The proposed new railway station and interchange at Chesterton Sidings incorporates a new railway station on the West Anglia main line in the North East quadrant of Cambridge. This will provide rail access onto the wider public transport network including a guided bus service, as well as station car park and access for pedestrians and cyclists. The site of the proposed new station is approximately three miles north of Cambridge Station on the BGK line.

The existing Cambridge station suffers from platform and passenger congestion problems; a new island platform has provided some redress for railway operations, but the passenger throughput far exceeds that for which the station was designed. In addition to providing crowding relief to Cambridge station, the location of the new station supports current and future development sites associated with sub-regional growth, a significant proportion of which are located to the Northern boundaries of the city and further afield along the A14 and A10 corridors. The choice of location was further enhanced by its proximity to major employment areas, notably Cambridge Science Park.

The new station will comprise;

- three platform station consisting of a single faced platform and an island platform, capable of accomodating 12-car trains
- station building which provides waiting areas, ticket office and toilet facilities
- DDA compliant footbridge providing access from the station building to all platforms via lifts and staircases
- station car park
- guided busway with integrated road/cycle path
- Crowley Road to be extended in order to provide a vehicle access route to station

1.1.2 General Description – New Equipment Building & Enclosed Compound

The new equipment building, which shall replace the existing Signal Supply Point (SSP) building, is proposed to comprise of a Network Rail approved modular construction, fixed directly onto a reinforced concrete ground slab foundation, which shall be supported on vibro stone columns as described in section **A1.1.4.2**. At this stage of the design, it is proposed to construct a ground slab approximately 15.5m long x 3m wide, within a 17.9m long x 5.4m wide fenced compound, in order to provide a foundation for the new modular

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equipment building. It is also proposed to construct a 1.2m wide footpath around the perimeter of the new equipment building to provide safe pedestrian access to all four sides. The new fenced compound and modular equipment room shall be located approximately 5m South of the existing relay room building. The fenced compound shall comprise a new 2.4m high galvanised steel security fence around the perimeter of the new equipment building and footpath with lockable gate access, as shown on the drawings contained in Appendix A2.

The final ground slab, building dimensions and enclosed compound extents shall be confirmed through detailed design.

The structural stability of the new modular building shall comply and satisfy BR1615D "Specification for Relocatable Equipment Buildings for S&T use" as an absolute minimum requirement. Additionally, the positioning of the building shall comply with NR/SP/OHS/069 "Lineside Facilities for Personal Safety" to ensure that an acceptable clearance between the running edge and the nearest part of the structure is achieved. The design of the concrete ground slab should be undertaken to ensure that the track support zone, as highlighted in NR/PRC/MPI/CI0058, is not affected during construction.

Refer to drawings contained in Appendix A2 for the proposed new modular equipment building location. Access to the new equipment building and the existing relay room will be provided via a vehicle access point from the taxi drop-off area, located to the South of the proposed station building.

The principal contractor is required to carry out a detailed services search including identification of statutory and railway services and to ensure that the excavation is planned and managed in accordance with NR/L2/AMG/1030 Issue 1 December 2008 "Working Safely in the Vicinity of Buried Services". If any doubt exists about the presence of underground services, the appropriate utility company shall be contacted directly for further advice. Additionally, the appointed principal contractor shall also ensure that all power and water supplies, if any, within the existing buildings are made redundant prior to commencing the demolition works.

The principal contractor shall be responsible for any temporary works design, where required.

This document covers the proposed construction of a new equipment building and enclosed compound only. All other infrastructure proposals in relation to the new station will be covered within separate submissions.

1.1.3 General Description – New Modular Sub-Station Building & Enclosed Compound

The new modular sub-station building, which shall replace the existing 11kV sub-station building, is proposed to comprise of a Network Rail approved modular construction, fixed directly onto a reinforced concrete ground slab foundation, which shall be supported on vibro stone columns as described in section A1.1.4.2. At this stage of the design, it is proposed to construct a ground slab approximately 5.5m long x 5.5m wide, within a 6.7m long x 6.7m wide fenced compound, in order to provide a foundation for the new modular

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sub-station building. Additionally, a 1.2m wide footpath shall be constructed around the perimeter of the new sub-station building to provide safe pedestrian access to all four sides. The existing 2.2m high steel boundary fence may be retained along the rear of the modular building in order to form the fenced compound at this location. A new 2.4m high galvanised steel security fence should be constructed around the remaining three sides of the 1.2m wide footpath as shown on the drawings contained in Appendix A2.

The final ground slab, building dimensions and enclosed compound extents shall be confirmed through detailed design.

The structural stability of the new modular building shall comply and satisfy BR1615D "Specification for Relocatable Equipment Buildings for S&T use" as an absolute minimum requirement.

Refer to drawings contained in Appendix A2 for the proposed new modular sub-station building location. Access to the new modular building room will be provided via a vehicle access point from the proposed bus-way, located to the West of the proposed station building.

The principal contractor is required to carry out a detailed services search including identification of statutory and railway services and to ensure that the excavation is planned and managed in accordance with NR/L2/AMG/1030 Issue 1 December 2008 "Working Safely in the Vicinity of Buried Services". If any doubt exists about the presence of underground services, the appropriate utility company shall be contacted directly for further advice. Additionally, the appointed principal contractor shall also ensure that all power and water supplies, if any, within the existing buildings are made redundant prior to commencing the demolition works.

The principal contractor shall be responsible for any temporary works design, where required.

This document covers the proposed construction of a new sub-station building and enclosed compound only. All other infrastructure proposals in relation to the new station will be covered within separate submissions.

1.1.4 Proposed Date for Completion of Construction

Fiscal year 2014 - 2015.

1.2 Assets affected (See Appendix A1)

- New equipment building – Network Rail approved single storey modular building.
- New modular sub-station building – Network Rail approved single storey building.

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Part 2: Designer's Submission

I confirm that the criteria specified in NR/L2/CIV/003 have been considered, and the Design is submitted for Approval in Principle on behalf of;

Atkins
200 Broomielaw
Glasgow
G1 4RU

Signed 	Title <i>Craig Macfarlane</i> CRE CIVILS
Name (Print) <i>CRAIG MACFARLANE</i>	Date <i>20/12/2012</i>
To be signed by the Contractor's Responsible Engineer	

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Part 3: Project Engineer's Comments

I have considered this submission for Approval in Principle and I am satisfied that this has adequately addressed the criteria specified in **NR/L2/CIV/003**, and confirm that the Design of the Permanent and Temporary Works is to be checked in accordance with the Categories listed in Appendix A of **NR/L2/CIV/003**.

My comments on the submission are given below. Provided that these comments are addressed, I hereby give Approval in Principle to the proposals.

Notes: Comments may be given on a separate sheet of paper or in a covering letter if more convenient in which case the comments must be identified clearly with the Scheme and Form A to which they relate and signed.

Signed	Title
Name (Print)	Date
To be signed by the Project Engineer (Building and Civil Engineering)	

Signed	Title
Name (Print)	Date
To be signed by other responsible person	

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Part 4: Asset Manager's Approval

I have considered the submission and confirm that this is approved subject to any comments given below being addressed within the detailed Design.

Signed	Title
Name (Print)	Date
To be signed by the Asset Manager (Structures)	

Signed	Title
Name (Print)	Date
To be signed by the Asset Manager (Geotechnical)	

Signed	Title
Name (Print)	Date
To be signed by the Asset Manager (Buildings)	

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Appendix A1

List of Buildings and Civil Engineering Assets affected by the proposal

A1.1 Asset No 1: New Modular Equipment Building and Enclosed Compound

A Network Rail approved single storey modular equipment building system is to be constructed in an area approximately 5m to the South of the existing relay room building. The modular equipment building will be supported on a ground slab foundation which will be supported on vibro stone columns, due to the nature of the existing ground conditions. Additionally, an enclosed compound is to be constructed by installing a 2.4m high perimeter steel palisade security fence and lockable gate access.

A1.2 Asset No 2: New Modular Sub-Station Building and Enclosed Compound

A Network Rail approved single storey modular sub-station building system is to be constructed in an area adjacent to the existing Network Rail boundary to West of the existing SSP building. The modular building will be supported on a ground slab foundation which will be supported on vibro stone columns, due to the nature of the existing ground conditions. Additionally, an enclosed compound is to be constructed by installing a 2.4m high perimeter steel palisade security fence and lockable gate access.

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A1.1 Asset No 1 – New Equipment Building & Enclosed Compound

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A1.1.1 Drawings of Proposals

Drawing Number	Title
5110967-RLS-CAM-CST-00001	Existing Site Layout Plan & Buried Services Information
5110967-RLS-CAM-CST-00002	Proposed Ground Slab Foundations & Enclosed Compounds General Arrangement
5110967-RLS-CAM-CST-00003	Proposed Ground Slab, Footpath & Palisade Fencing Construction Details

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A1.1.2 Design Criteria
A1.1.2.1 Design Life

Modular Building:	60 years
Concrete Foundations:	120 years
Palisade Fencing:	20 years

A1.1.2.2 Design Criteria (Modular Equipment Building & Enclosed Compound)
A1.1.2.2.1 Loading

The new equipment building is proposed to comprise of a Network Rail approved modular construction which satisfies the technical requirements stated within BR1615D “Specification for Relocatable Equipment Buildings for S&T use” as an absolute minimum. Additionally, the following Eurocodes and its associated National Annex should be used to calculate the forces applied from general actions, which the building will have to frequently withstand over its design life;

- BS EN 1991-1-1:2002 Eurocode 1: General Actions – Densities, self-weight, imposed loads for buildings
- BS EN 1991-1-2:2002 Eurocode 1 – General Actions – Actions on structures Exposed to Fire
- BS EN 1991-1-3:2003 Eurocode 1 – General Actions – Snow loads
- BS EN 1991-1-4:2005 Eurocode 1 – General Actions – Wind actions
- BS EN 1991-1-6:2005 Eurocode 1 – General Actions – Actions during execution
- BS EN 1991-1-7:2006 Eurocode 1 – General Actions – Accidental actions

The modular building shall be fixed directly onto a reinforced concrete floor slab foundation as per the manufacturer’s specification. The structural design of the proposed reinforced concrete ground slab foundation shall be carried in accordance with BS EN 1992-1-1:2004 “Eurocode 2: Design of Concrete Structures. General Rules and Rules for Buildings” whilst satisfying the technical requirements stated within BR1615D “Specification for Relocatable Equipment Buildings for S&T use”.

It is proposed to install a 2.4m high galvanised steel security fence compound, complete with a lockable gate as shown on the drawing contained in Appendix A2. The proposed fence shall be designed in accordance with BS 1722-12:2006 “Fences. Specification for Steel Palisade Fences”.

The proposed modular building and security fencing may require traction bonding provisions due to the overhead line apparatus being in close proximity. These provisions, if required, shall comply with NR/SP/ELP/21085 “Specification for the Design of Earthing and Bonding Systems for 25kV A.C. Electrified Lines” and should be confirmed through detailed design.

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A1.1.3 Anticipated Deviations from Standards (with justification)

A1.1.3.1 None.

A1.1.4 Geotechnical Considerations

A new equipment building is proposed to replace the existing SSP building as part of the Cambridge Science Park Interchange Station Project. At the time of preparing this document, it is proposed that the modular building shall be founded upon a 15.5m long x 3m wide ground bearing reinforced slab which varies in depth.

Bearing capacity and settlement of the proposed building foundation have been reviewed. The bearing capacities were analysed using conventional bearing capacity equations and the settlements have been analysed using spreadsheets and hand calculations. On account of anticipated conditions, assessment of vibro stone replacement ground improvement has also been undertaken.

Geotechnical information required for the design of the proposed foundations has been derived from the available ground investigation undertaken by URS Ltd. in 2012. However, it should be noted that at the time writing ground investigation works associated with the proposed development were incomplete and currently on hold pending approval from Network Rail to recommence.

Furthermore, the proposed ground investigation was scoped prior to finalisation of design proposals. As such, ground investigation applicable to the proposed structure location is limited to a single window sample borehole (WS12). To provide an improved understanding of the underlying stratigraphy exploratory holes in the vicinity have also been consulted (BH02, BH03, TP25 and TP27).

Design parameters and criteria for establishing ground resistances have been developed in accordance with BS EN 1997 Parts 1 and 2 through review of available ground investigation and testing. Design soil parameters shall be reviewed on receipt of the outstanding investigation information.

A1.1.4.1 Anticipated Ground Conditions

Published geological information records the site to be underlain by Terrace Deposits overlying Cretaceous strata of Gault and Lower Chalk. Alluvium is shown close to the site to the south and east in the vicinity of the River Cam.

The Terrace Deposits are described as sand and gravel, locally with lenses of silt, clay or peat while the Alluvium is described as a normally consolidated soft to firm, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger desiccated surface zone is noted as potentially being present.

The Gault Clay is described as a pale to dark grey or blue grey clay or mudstone, glauconitic in part, with a sandy base. The Lower Chalk is described a grey marly chalk

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with marl content decreasing upwards. Solid geology is at or near the surface in areas to the east of the site with outcrops of Gault.

Available exploratory holes in the vicinity typically confirm the published information with granular Made Ground overlying granular River Terrace deposits which in turn overlie Gault Clay.

The Made Ground is typically recorded as a sandy gravel or gravelly sand of ash with clinker, refractory material, flint and sandstone recorded. Locally within the upper 0.3m rootlets and organic material are recorded. The Made Ground is recorded between ground level to depths of between 0.6m (TP25) and 3.5m bgl (BH03).

River Terrace deposits are typically recorded as a very clayey gravel encountered at depths of between 0.6m (TP25) and 2.9m bgl (WS12). The River Terrace was encountered in two of the reviewed holes (TP25 and WS12). It should be noted that the thickness of the River Terrace deposits was not proven by the available investigations.

The Gault Clay was encountered at depths of between 2.0m and 3.5m bgl and is typically recorded as a firm becoming very stiff with depth gravelly clay. The Gault Clay was proven to a depth of 15m bgl in two exploratory holes (BH02 and BH03) with the base of the deposit unproven. Although not proven in the remaining holes it is considered that the Gault Clay will be present across the site.

Groundwater was encountered at depths of between 1.7m (BH02) and 1.8m bgl (BH03 and WS12) rising to 1.45m in BH02. Combined gas and groundwater monitoring installations are available in BH2, BH3 and WS12 to monitor long term groundwater levels. However, on account of the temporary suspension ground investigation works no groundwater monitoring information is available.

Taking consideration of the available information the following generalised ground profile is considered applicable for the foundation design.

Stratum	Depths (m bgl)
Granular Made Ground	0.0 – 3.0
Granular River Terrace	3.0 – 4.0
Gault Clay	4.0 – 15+

* Note on account of suspension of the ground investigation works reduced levels are not available.

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A1.1.4.2 Foundations and Substructures

The choice of the foundation type as well as any ground improvement required will be determined by the applied loads, the depth of competent strata and the limits on total and differential settlement. Maximum differential settlement across the building is 5mm and is the critical performance criterion. It is understood that the client prefers a raft solution.

It is understood that indicative imposed loads shall be of the order of 50kN/m².

As stated in Section A1.1.4.1, granular Made Ground is likely to be present at the proposed foundation level. Due to its inherent variability, Made Ground is not normally considered to be a suitable bearing stratum. As such ground improvement or other remedial measures are recommended.

On account of the anticipated depths it is considered that excavation and replacement of the Made Ground represents an uneconomical solution. Ground improvement of the Made Ground using vibro replacement stone columns is considered to represent the optimal solution.

As an indicative arrangement it is proposed that 0.6m diameter vibro stone columns be installed across the full depth of the Made Ground (indicative 3.5m depth) on a 1.25m square grid. The final column size and spacing should be confirmed at detailed design following consultations with a specialist contractor.

To supplement the improvement works and to ensure the slab is constructed on even competent strata it is recommended that the upper 0.5m of materials be excavated and replaced with a suitable granular engineered fill.

Additionally, all fence posts are to be founded within a 350mm square x 800mm deep pad foundation at 2750mm maximum centres.

A1.1.4.3 Suitability of Foundation Proposals

Assuming the proposed remedial measures are adopted the proposed foundation arrangement is considered to be suitable.

It is assumed that structural reinforcement of the proposed foundation will be adequately designed to mitigate any moments or shear forces imposed on the foundation.

The current foundation proposal is subject to review following the receipt of the outstanding ground investigation information.

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A1.1.4.4 Soil properties to be used for analysis

The following characteristic soil parameters are considered appropriate for design purposes. The adopted parameters shall be verified upon receipt of the outstanding investigations.

Soil Type	γ' (kN/m ³)	ϕ' (°)	c' (kPa)	c_u (kPa)	c_v (m ² /year)	m_v (m ² /MN)	E_u (MN/m ²)	E' (MN/m ²)
Engineered Fill (Class 1)	20	35	0	N/A	N/A	N/A	N/A	30
Granular Made Ground	17	26	0	N/A	N/A	N/A	N/A	4
River Terrace Deposits	20	32	0	N/A	N/A	N/A	N/A	6
Gault Clay	19.5	25	0	50 - 150	3.5	0.05	25 - 75	15 - 45

Partial factors for soil parameters (γ_M) for Combination 1 (DA1-1) and Combination 2 (DA1-2) should be applied in accordance with BS EN 1997 UK National Annex.

A1.1.4.5 Particular constraints on lateral movement

At this stage, it is assumed that the structure will be symmetrical with an equal distribution of loads. Should final proposals indicate loadings to be unevenly distributed further review will be required as any offset of imposed loads could induce moments resulting in a significantly reduced bearing resistance.

Lateral movement is not considered to pose a risk to the proposed ground slab foundation.

A1.1.4.6 Other effects allowed for
Made Ground / Ground Improvement

As detailed in Section A1.1.4.3 the Made Ground is not considered to represent a suitable bearing stratum. Ground improvement is proposed through the use of vibro replacement stone columns across the Made Ground.

It is also noted that clinker and refractory material has been identified within the Made Ground. Such deposits may exhibit expansive or swelling properties which could impact on the performance of the foundations as a result of heave. It is assumed at this stage that any expansion of the clinker or refractory material has already occurred.

It is therefore proposed that inspection, identification and chemical testing (if deemed necessary) should form part of the ground investigation testing.

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Groundwater

Groundwater was encountered at depths of between 1.7m and 1.8m bgl with a rise to 1.45m bgl recorded. No groundwater monitoring information is available. It should be noted that groundwater is subject to seasonal variations and as such groundwater at shallower depths may be present.

To account for seasonal variations groundwater control measures comprising pumping and dewatering may be required during construction and long term drainage management may be required. Long term groundwater monitoring should be undertaken to verify the requirements.

Settlements

With the adoption of the proposed ground improvement and anticipated ground conditions it is expected that the specialist ground improvement contractor will be able to guarantee that settlements will not exceed 25mm with differential settlement no exceeding 5mm.

Uplift / Heave

Uplift on the underside of the foundations is not considered to represent a risk assuming any expansion of the clinker or refractory material has already occurred.

It is assumed that the underside of the foundation shall be at least 450mm below finished ground level to mitigate the potential effects of frost heave.

Ground Gases

Ground gas monitoring should be undertaken in accordance with the guidance in CIRIA Report C665 as part of the outstanding ground investigation. Monitoring information should be utilised to determine whether gas protection measures within buildings are required.

A1.1.4.7 Aggressive Chemical Environment for Concrete Class (ACEC)

Chemical testing within the Made Ground indicates sulphate (2:1 water extract) levels to be between 46mg/l and 332mg/l and pH values to between 7.4 and 10.2. Testing within the Gault Clay indicates sulphate (2:1 water extract) levels to be between 218mg/l and 396mg/l and a pH value of 8.2.

Based on the guidance of BRE Special Digest 1:2005, test results typically indicate that concrete for structure should be designed to Design Sulphate Class DS-1 (ACEC Class AC-1). The assessment has been based on a brownfield site with mobile groundwater.

A1.1.4.8 Contaminated Land

Historical information indicates that several potential contaminant sources have been located on-site, and within approximately 250m of the site. These potential sources are

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predominantly associated with the railway located on-site although further land uses located in the surrounding area also have the potential to affect sensitive receptors.

Based on the chemical testing information produced by the recent ground investigation, no human health risk was identified across the majority of the site based on a commercial land use scenario. However, a sample of made ground taken from WS02 at 1.6m was found to contain benzo(a)pyrene at a concentration indicated to pose a risk to human health and also asbestos was identified in a sample taken from TP07 at 1.0m. If the proposed development is likely to include excavations in the vicinity of these exceedances then appropriate health and safety measures will need to be used to mitigate the potential risk.

The available chemical testing results were assessed using the CATwaste tool which classifies the tested materials for waste management purposes. This process indicated that all analysed soil samples would be classed as non-hazardous, however a sample of made ground taken from TP07 at 1.0m was found to contain asbestos and would therefore be classified as hazardous.

The assessment of the potential risk to the Water Environment identified that levels of leachable iron, arsenic and total petroleum hydrocarbons (TPH) have the potential to cause harm. No groundwater monitoring has been undertaken at the site to date and it is recommended that this work is undertaken in order to further assess the risk to the Water Environment.

To date, gas monitoring has not been undertaken at the site and if any enclosed areas are to be included in the proposed development then it is recommended that ground gas levels are assessed at the boreholes and the location of these features.

A human health risk classification of moderate was found across the majority of the site although a localised high human health risk was identified at the locations of WS02 and TP07 due to benzo(a)pyrene and asbestos levels at these two locations. A further moderate risk level was identified for the Water Environment as a result of leachable contaminants within the soil. These risk classifications only refer to areas of the site that have been investigated to date and in addition to the recommended water monitoring at the site, further ground investigation is proposed and these works will help to further characterise the potential risks at the site.

A1.1.5 Accompanying Documents

Document Number
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Title
Design Risk Assessment

Location
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APPENDIX A1

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

A1.1.6 Other Relevant Information**A1.1.6.1 Details of existing parts of assets to be retained and incorporated into the Design**

None. This is a new asset.

A1.1.6.2 Unusual features

None.

A1.1.6.3 Novel or unusual use of materials and/or structural components

None.

A1.1.7 Special access arrangements/requirements for examination, inspection, repair renewal or removal**A1.1.7.1 Access arrangements**

Examination of the proposed works by visual inspection is sufficient for managing and maintaining the new equipment building and the associated equipment.

A1.1.8 Checking Category

The Design of the Permanent works is to be checked in accordance with:

Category Ib of NR/L2/CIV/003.

NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE
APPENDIX A2

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

A1.2 Asset No 2 – New Modular Sub-Station Building & Enclosed Compound

Description: Cambridge Science Park Station Interchange			
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

A1.2.1 Drawings of Proposals

Drawing Number	Title
5110967-RLS-CAM-CST-00001	Existing Site Layout Plan & Buried Services Information
5110967-RLS-CAM-CST-00002	Proposed Ground Slab Foundations & Enclosed Compounds General Arrangement
5110967-RLS-CAM-CST-00003	Proposed Ground Slab, Footpath & Palisade Fencing Construction Details

A1.2.2 Design Criteria

A1.2.2.1 Design Life

Modular Building:	60 years
Concrete Foundations:	120 years
Palisade Fencing:	20 years

A1.2.2.2 Design Criteria (Modular Sub-Station Building & Enclosed Compound)

A1.2.2.2.1 Loading

Refer to Section A1.1.2.2.1 for further details.

A1.2.3 Anticipated Deviations from Standards (with justification)

None.

A1.2.4 Geotechnical Considerations

Refer to Section A1.1.4 for further details.

NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE
APPENDIX A2

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

A1.2.4.1 Anticipated Ground Conditions

Refer to Section **A1.1.4.1** for further details.

A1.2.4.2 Foundations and Substructures

Refer to Section **A1.1.4.2** for further details.

A1.2.4.3 Suitability of Foundation Proposals

Refer to Section **A1.1.4.3** for further details.

A1.2.4.4 Soil properties to be used for analysis

Refer to Section **A1.1.4.4** for further details.

A1.2.4.5 Particular constraints on lateral movement

Refer to Section **A1.1.4.5** for further details.

A1.2.4.6 Other effects allowed for

Refer to Section **A1.1.4.6** for further details.

A1.2.4.7 Aggressive Chemical Environment for Concrete Class (ACEC)

Refer to Section **A1.1.4.7** for further details.

A1.2.4.8 Contaminated Land

Refer to Section **A1.1.4.8** for further details.

A1.2.5 Accompanying Documents

Document Number	Title	Location
5110967-ATK-REP-CV-000104	Design Risk Assessment	Appendix A3

A1.1.6 Other Relevant Information
A1.2.6.1 Details of existing parts of assets to be retained and incorporated into the Design

None. This is a new asset.

A1.2.6.2 Unusual features

None.

NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A2

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

A1.2.6.3 Novel or unusual use of materials and/or structural components

None.

A1.2.7 Special access arrangements/requirements for examination, inspection, repair renewal or removal**A1.2.7.1 Access arrangements**

Examination of the proposed works by visual inspection is sufficient for managing and maintaining the new equipment building and the associated equipment.

A1.2.8 Checking Category

The Design of the Permanent works is to be checked in accordance with:

Category Ib of NR/L2/CIV/003.

NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A2

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

Appendix A2

Accompanying Drawings

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NOTES:

1. THIS DRAWING IS BASED ON ORDNANCE SURVEY DATA. A TOPOGRAPHICAL SURVEY IS ONGOING AT THIS STAGE TO VERIFY THE EXISTING SITE LAYOUT.
 2. THE EXISTING TRACK LAYOUT SHOWN ON THIS DRAWING IS BASED ON TOPOGRAPHICAL SURVEY INFORMATION PROVIDED BY L&M SURVEY SERVICES, DATED 14/12/12. THE OVERALL TRACK LAYOUT AT THIS SITE WILL BE CONFIRMED ON COMPLETION OF THE TOPOGRAPHICAL SURVEY.
 3. ALL EXISTING BUILDING LOCATIONS ARE SHOWN INDICATIVELY AND BASED ON THE ORDNANCE SURVEY DATA. THE ACTUAL LOCATION OF ALL EXISTING BUILDINGS SHALL BE CONFIRMED ON COMPLETION OF THE SITE CLEARANCE WORKS AND SUBSEQUENT TOPOGRAPHICAL SURVEY.
 4. ALL KNOWN EXISTING SERVICES SHOWN ON THIS DRAWING ARE BASED ON BURIED SERVICES INFORMATION PROVIDED BY THE RELEVANT UTILITY COMPANIES AND NETWORK RAIL. ALL SERVICES ARE SHOWN INDICATIVELY FOR GUIDANCE PURPOSES ONLY.
 5. THE PRINCIPAL CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH ALL HAZARDS CONTAINED WITHIN THE NETWORK RAIL HAZARD DIRECTORY.
 6. ALL EXPLORATORY HOLE LOCATIONS ON THIS DRAWING ARE INDICATIVE.

UTILITY LEGEND:

- — — — — NETWORK RAIL LAND BOUNDARY
- M-520-COMBINED
- M-520-ELECTRICAL SS
- M-520-FOUL
- M-520-GAS
- M-520-MAINS WATER
- M-520-NR
- M-520-REDSTONE
- M-520-SURFACE
- M-520-TELECOMMS-BT
- M-520-TELECOMMS-CW
- M-520-TELECOMMS-GC
- M-520-TELECOMMS-ORANGE
- M-520-TELECOMMS-VERIZON
- M-520-TELECOMMS-VIRGIN

Drawing Status	Description of Change
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ATKINS
200 Broomielaw
Glasgow
G1 4RU

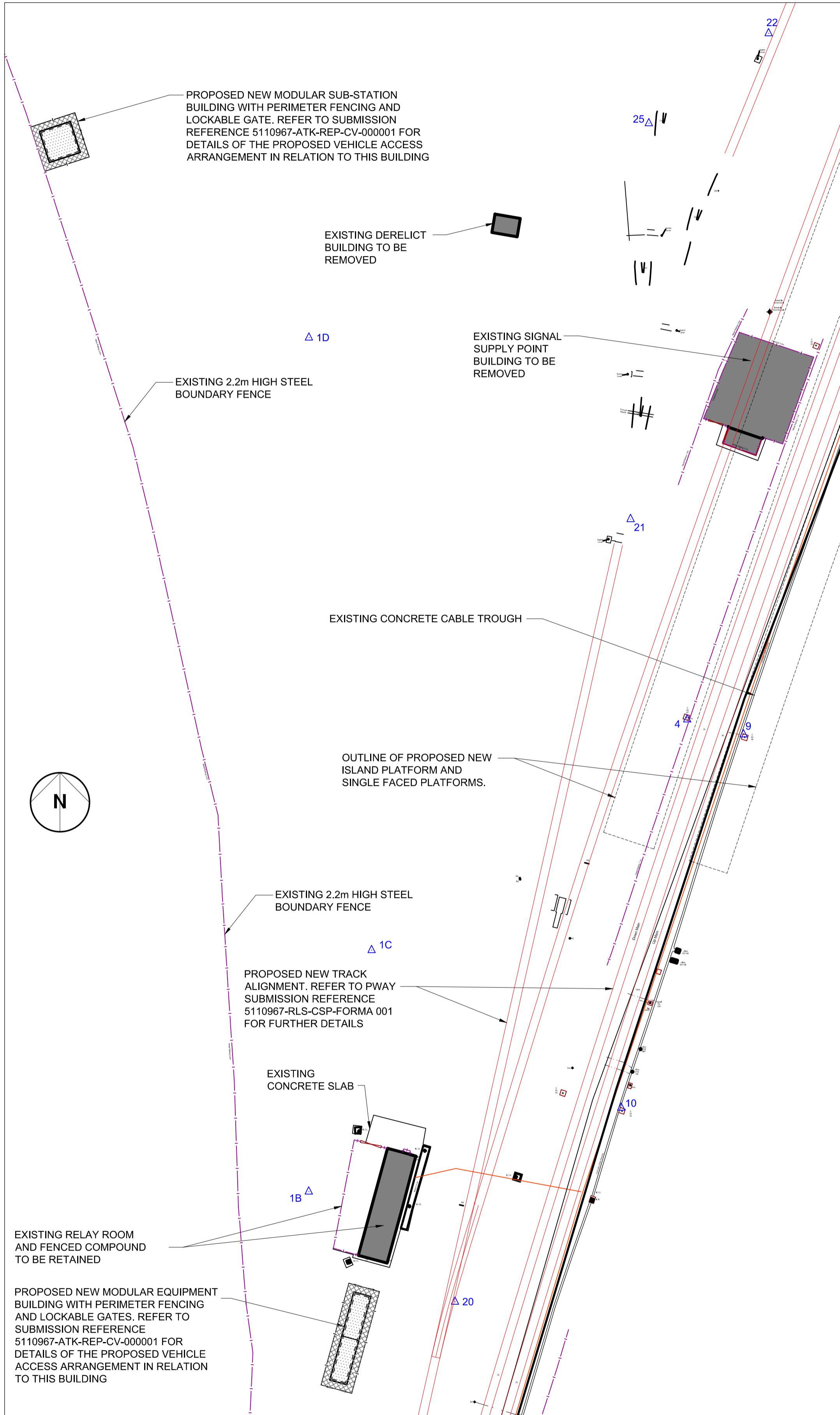
Project Title

CAMBRIDGE SCIENCE PARK STATION INTERCHANGE

Drawing Title

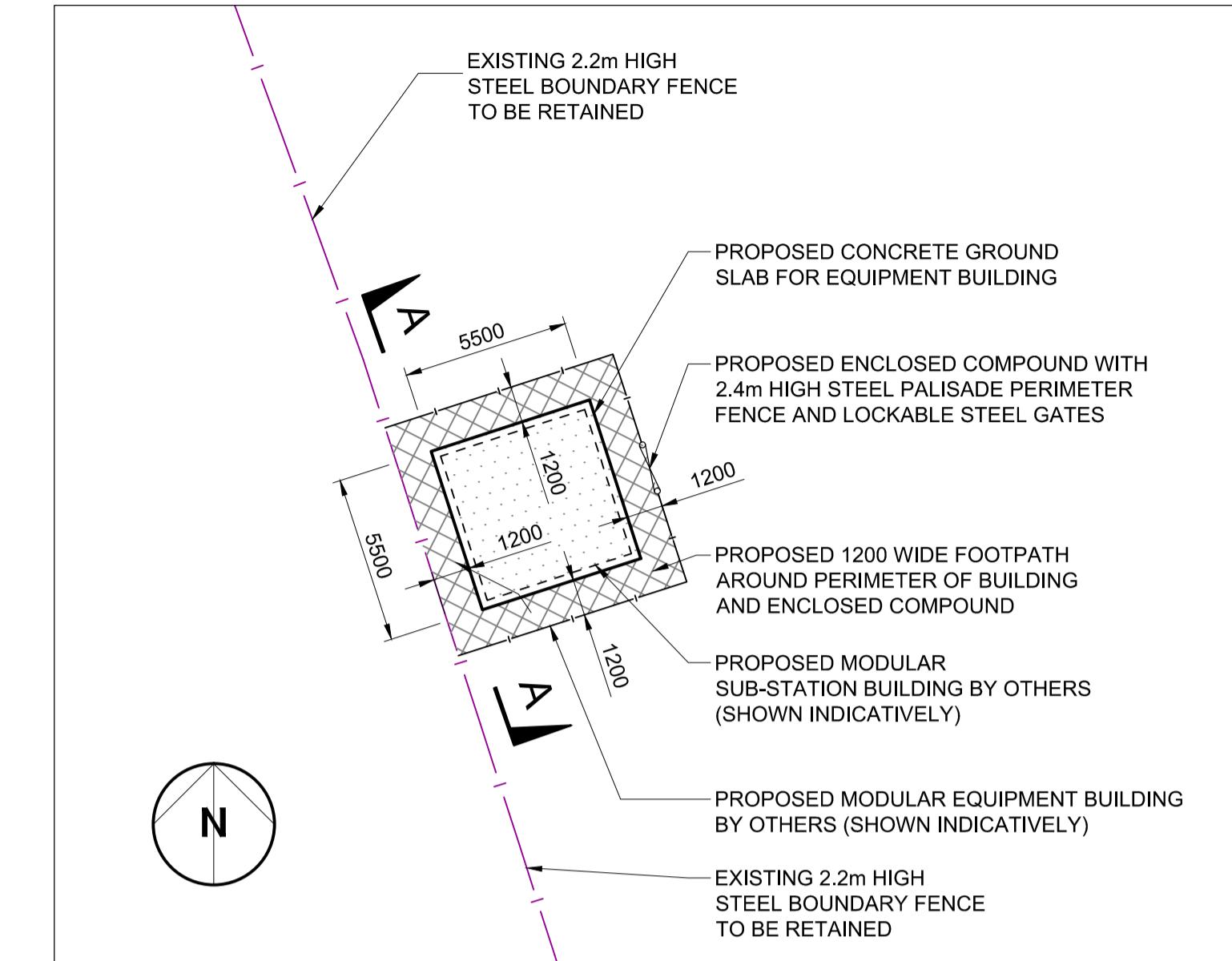
EXISTING SITE LAYOUT PLAN AND BURIED SERVICE INFORMATION

Drawn R. Howie		Date 20.11.12	Designed R. Rankin	Date 23.11.12
Checked C. MacFarlane		Date 23.11.12	Approved R. Tosh	Date 23.11.12
Scale A1		Location ELR: BGK, CH 57m 1188y		
Drawing Number 5110967-RLS-CAM-CST-00001		Revision A01		



PROPOSED SITE LAYOUT PLAN SHOWING
NEW MODULAR BUILDING LOCATIONS

SCALE 1:500



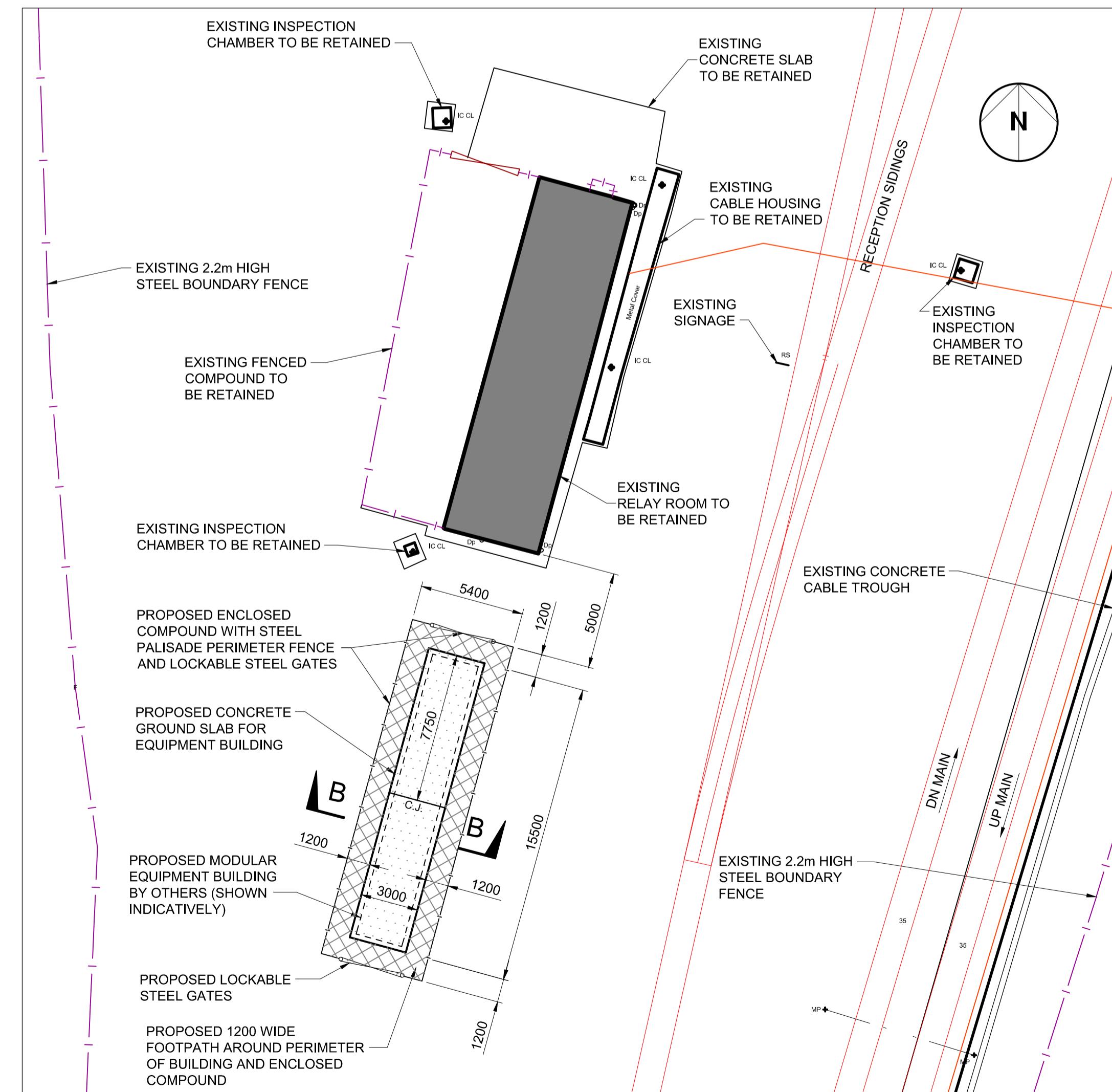
PROPOSED MODULAR SUB-STATION BUILDING LAYOUT PLAN

SCALE 1:200

ABBREVIATIONS:
 C.J. CONSTRUCTION JOINT

LEGEND:
 △ EXISTING SURVEY CONTROL STATION LOCATION
 — M-520-NR (EXISTING BURIED SERVICE ROUTE)
 - - - EXISTING FENCE LINE

EXISTING CONTROL STATION COORDINATES			
STN	EASTING	NORTHING	LEVEL (m)
1B	547446.007	260483.518	6.559
1C	547456.681	260524.473	6.416
1D	547446.050	260628.379	6.192
4	547510.245	260563.620	6.307
9	547519.811	260561.068	6.211
10	547499.044	260497.742	6.315
20	547470.842	260464.838	6.508
21	547500.640	260597.593	6.163
22	547524.066	260680.010	6.155
25	547503.741	260664.746	6.050



PROPOSED MODULAR EQUIPMENT BUILDING LAYOUT PLAN

SCALE 1:200

ATKINS

NOTES:

1. THIS DRAWING IS BASED ON A TOPOGRAPHICAL SURVEY CARRIED OUT BY L&M SURVEY SERVICES, DATED 14/12/12.
2. ALL LEVELS ARE RELATIVE TO THE O.S. ACTIVE GPS NETWORK.
3. ALL COORDINATES ARE RELATIVE TO A LOCAL. THE SURVEY IS APPROXIMATELY TO GRID NORTH.
4. THE NEW MODULAR EQUIPMENT BUILDING MODULAR SUB-STATION BUILDING SHALL CONSIST OF A NETWORK RAIL APPROVED SINGLE STOREY MODULAR BUILDING SYSTEM BY UNIPART RAIL OR SIMILAR. THE INTERNAL LAYOUT SHALL BE CONFIRMED DURING DETAILED DESIGN, ONCE ALL EQUIPMENT REQUIREMENTS HAVE BEEN CONFIRMED.
5. REFER TO DRG No. 5110967-RLS-CAM-CST-00001 FOR INDICATIVE LOCATIONS OF ALL KNOWN EXISTING SERVICES (SEE NOTES 3 AND 4 ON DRG No. -CAM-CST-00001).
6. REFER TO DRG No. 5110967-RLS-CAM-CST-00003 FOR CONSTRUCTION DETAILS OF THE PROPOSED REINFORCED CONCRETE GROUND SLAB FOUNDATIONS (INCLUDING SECTION A-A AND SECTION B-B) AND PROPOSED PALISADE PERIMETER FENCE AROUND EACH COMPOUND.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
8. THE PRINCIPAL CONTRACTOR IS REQUIRED TO CARRY OUT A DETAILED SERVICES SEARCH INCLUDING IDENTIFICATION OF STATUTORY AND RAILWAY SERVICES AND TO ENSURE THAT THE EXCAVATION IS PLANNED AND MANAGED IN ACCORDANCE WITH NRU2/AMG/1030 "WORKING SAFELY IN THE VICINITY OF BURIED SERVICES. IF ANY DOUBT EXISTS ABOUT THE PRESENCE UNDERGROUND SERVICES, THE APPROPRIATE UTILITY COMPANY SHALL BE CONTACTED DIRECTLY FOR FURTHER ADVICE.
9. REFER TO DRG No. 5110967-RLS-CAM-CST-00001 FOR INDICATIVE EXPLORATORY HOLE LOCATIONS RELATED TO THE COMPLETED GROUND INVESTIGATION WORKS AT THIS STAGE.
10. REFER TO RELEVANT FORM A (ELECTRICAL POWER) SUBMISSION FOR PROPOSED DUCTING REQUIREMENTS AND DUCTING ROUTES IN RELATION TO THE NEW EQUIPMENT BUILDING.
11. THE ABSENCE OF SIGNIFICANT CONTAMINATION IDENTIFIED AT THIS STAGE IN THE GROUND INVESTIGATION CANNOT BE USED TO PRECLUDE THE POSSIBILITY OF CONTAMINATION BEING PRESENT AT THE SITE. ANY CONTRACTORS WORKING ON THE SITE MUST BE COGNISANT OF THE POTENTIAL FOR THIS TO OCCUR. HEAVY EQUIPMENT OPERATORS SHOULD ADOPT APPROPRIATE WORKING PROCEDURES TO PROTECT SITE WORKERS FROM POTENTIAL SOIL OR GROUNDWATER CONTAMINATION. REFER TO DESIGNER'S RISK ASSESSMENT ITEM B.2 IN APPENDIX A3 OF FORM 1 SUBMISSION REFERENCE: 5110967-ATK-REP-CV-000104, FOR FURTHER DETAILS.

A01	07.12.12	FOR APPROVAL	RH	CMCF	RST
Rev	Date	Issue History	Drawn	Chkd	Appd
Description of Change					
Drawing Status					

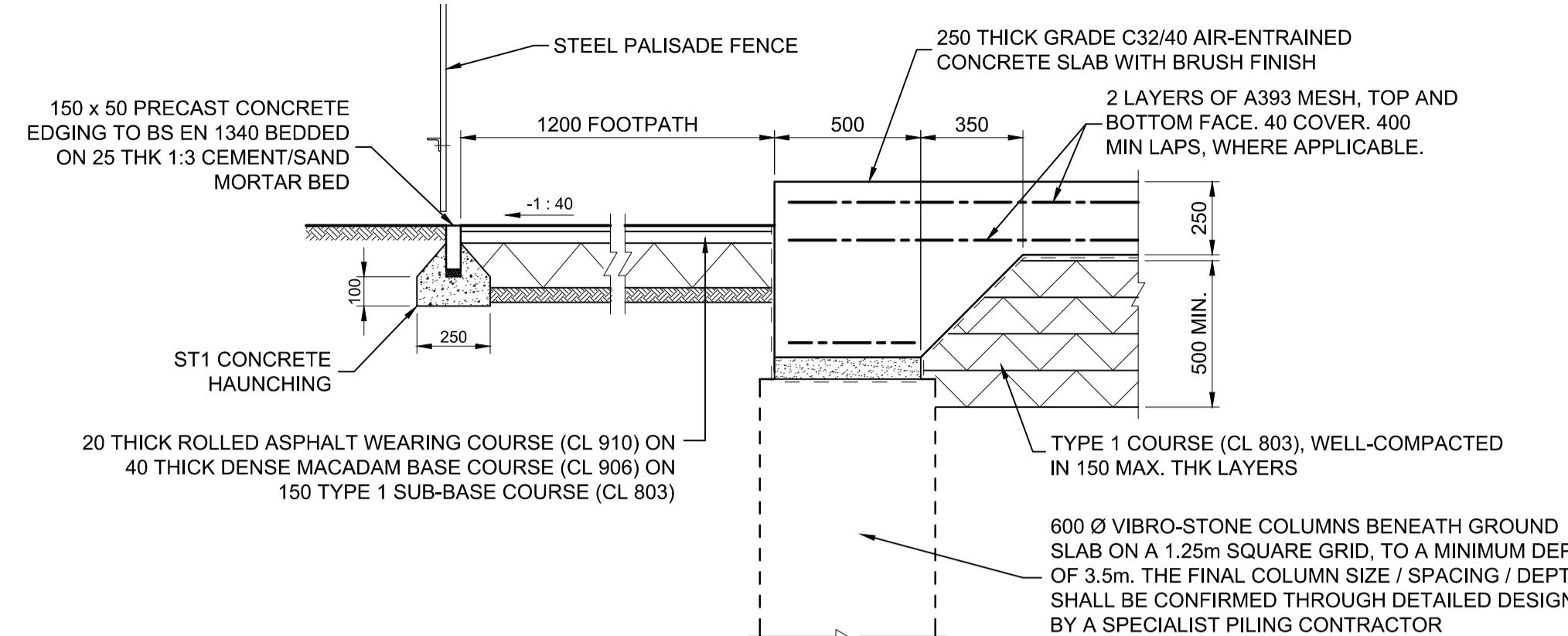
FOR APPROVAL



CAMBRIDGE SCIENCE PARK
STATION INTERCHANGE

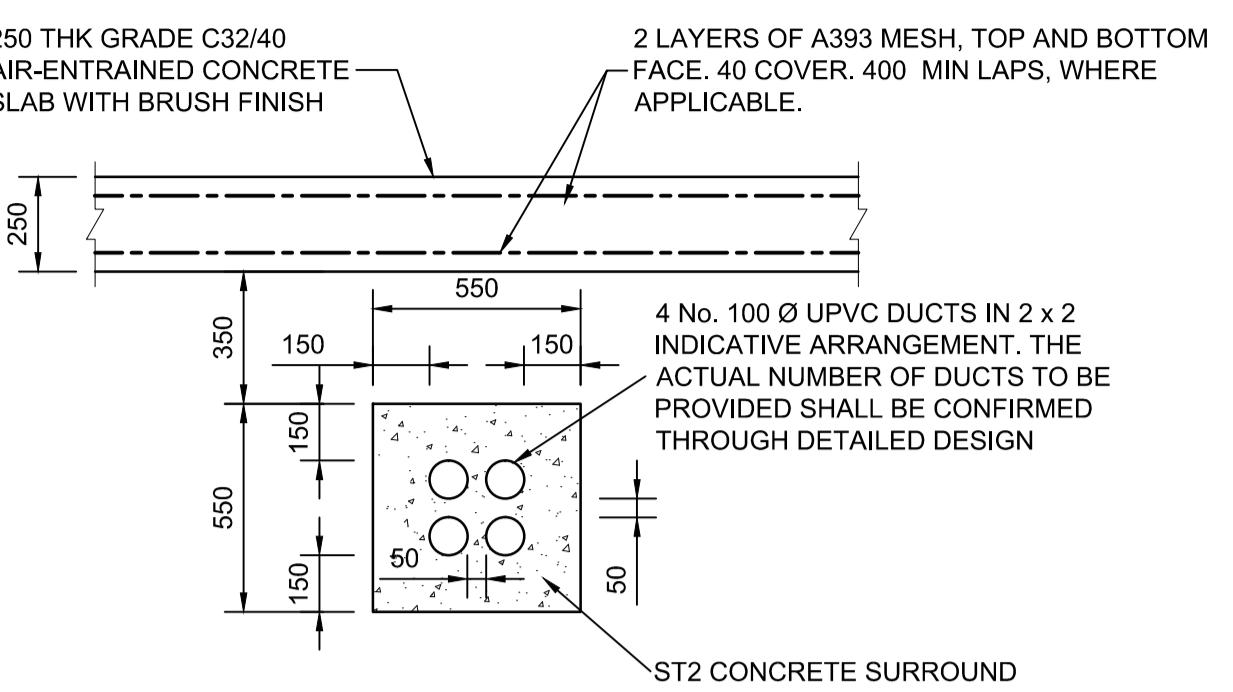
PROPOSED GROUND SLAB FOUNDATIONS AND
ENCLOSED COMPOUNDS GENERAL ARRANGEMENT

Drawn R. Rankin	Date 17.12.12	Designed R. Rankin	Date 14.12.12
Checked C. MacFarlane	Date 19.12.12	Approved R. Tosh	Date 19.12.12
A1	Scale AS SHOWN	Location ELR: BGK, CH 57m 1188y	Revision A01
Drawing Number 5110967-RLS-CAM-CST-00002			



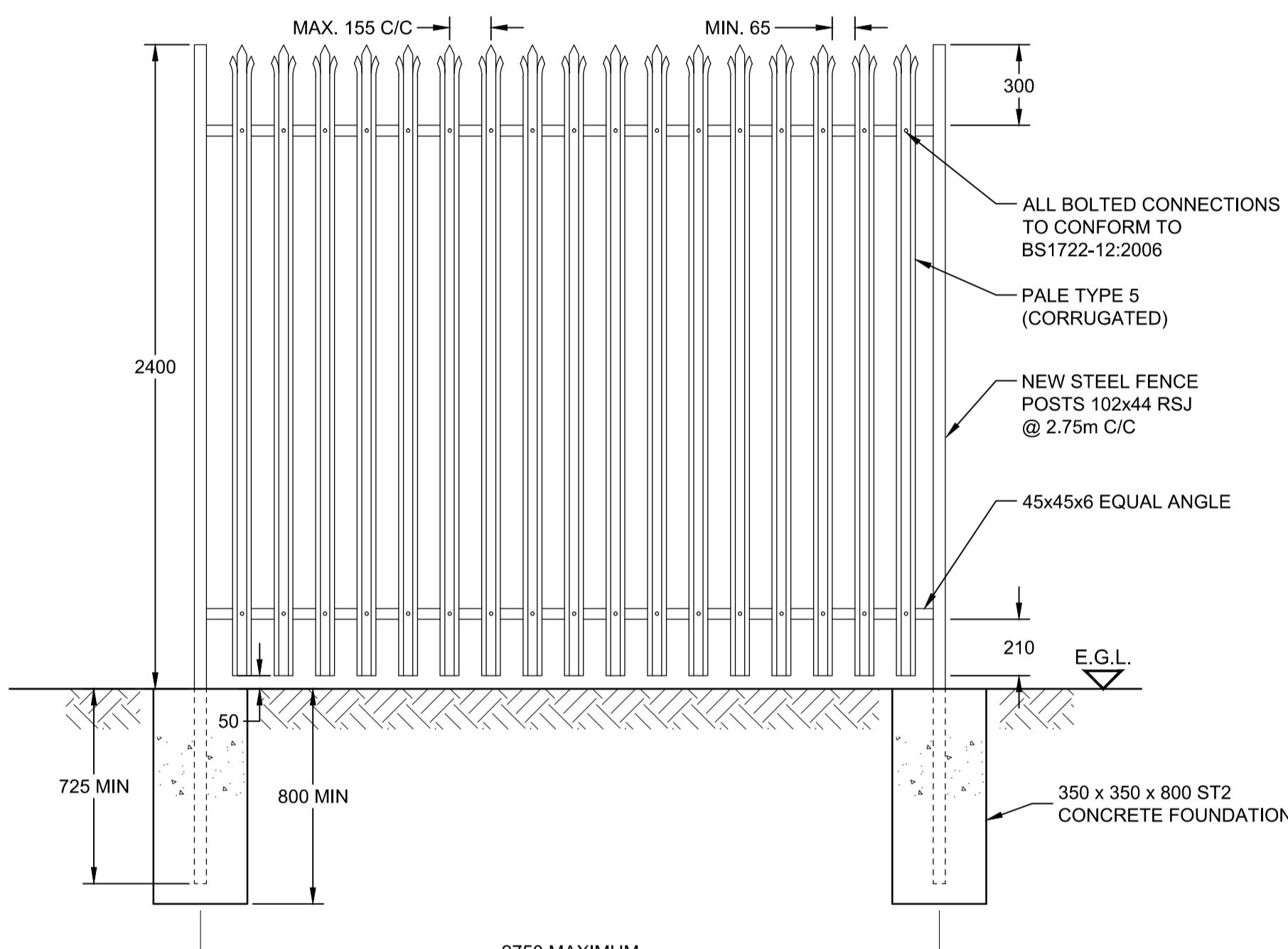
SECTION THROUGH CONCRETE SLAB EDGE
AND FOOTPATH DETAIL

1:20



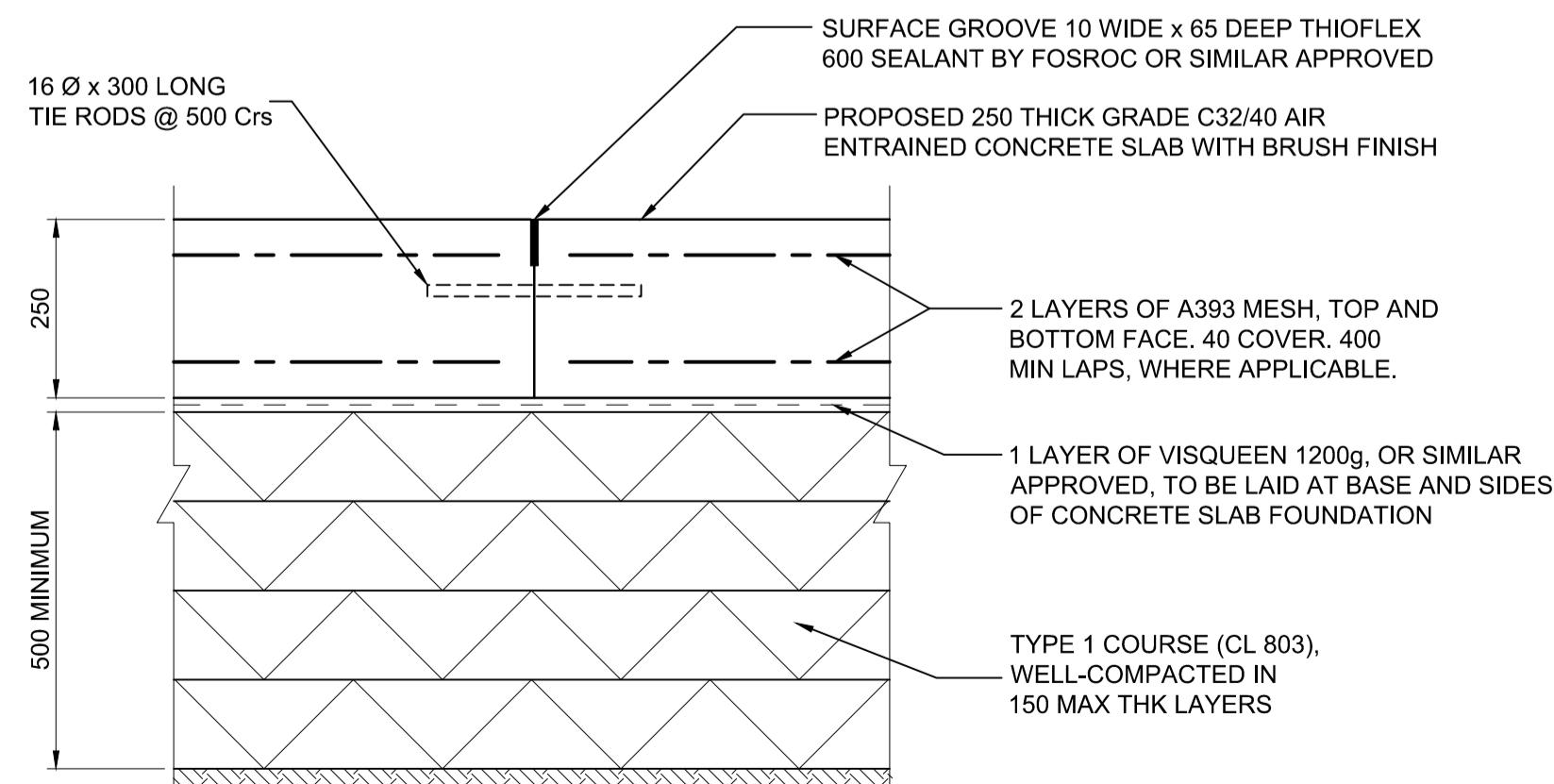
SECTION THROUGH DUCTING ROUTE
BENEATH GROUND SLAB

1:20



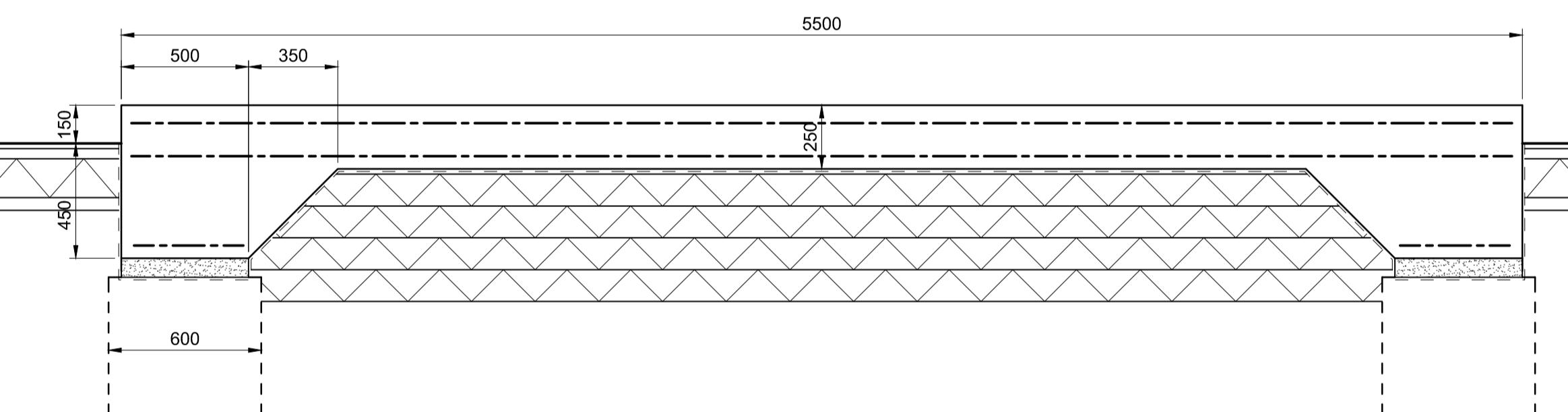
ELEVATION ON PALISADE FENCE PANEL

1:20



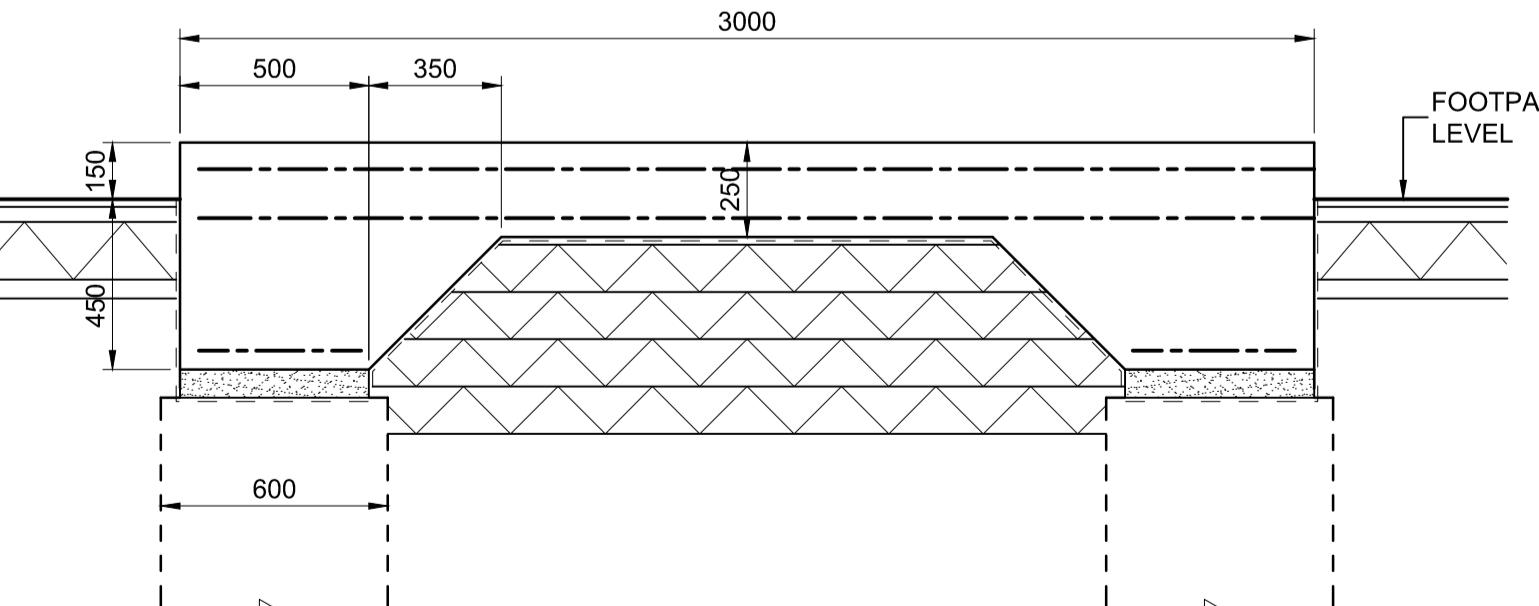
SECTION THROUGH SLAB CONSTRUCTION JOINT

1:10



A - A

1:20



B - B

1:20

NOTES CONTINUED:

13. THE NEW MODULAR BUILDINGS SHALL CONSIST OF A NETWORK RAIL APPROVED SINGLE STOREY MODULAR BUILDING SYSTEM BY UNIPART RAIL OR SIMILAR. THE INTERNAL LAYOUT SHALL BE CONFIRMED AT DETAILED DESIGN ONCE ALL EQUIPMENT REQUIREMENTS HAVE BEEN CONFIRMED.
14. THE GROUND IMPROVEMENT REQUIREMENTS AND PILES INDICATED ON THIS DRAWING ARE BASED ON PRELIMINARY DESIGN AND ARE INDICATIVE FOR TENDER PURPOSES ONLY. DETAILED DESIGN SHALL BE CARRIED OUT BY THE SPECIALIST PILING CONTRACTOR.
15. UNLESS PROVEN OTHERWISE ALL SOIL ENCOUNTERED SHOULD BE CONSIDERED TO BE CONTAMINATED WITH CONTAMINANTS TYPICALLY ENCOUNTERED WITHIN THE RAILWAY ENVIRONMENT. HOWEVER, WHEREVER PRACTICAL AND SOIL IS REUSED, SOIL SHOULD NOT BE USED IN EXCAVATIONS OR AS GENERAL FILL ACCORDING TO THE REQUIREMENTS OF AN APPROVED SOIL MANAGEMENT PLAN. ALL SOIL THAT CANNOT BE REUSED SHOULD BE SAFELY STOCKPILED AND THEN TESTED FOR THE PURPOSES OF ITS TREATMENT OFF SITE OR DISPOSAL AT A LICENSED FACILITY.
16. THE ABSENCE OF SIGNIFICANT CONTAMINATION IDENTIFIED AT THIS STAGE IN THE GROUND INVESTIGATION CANNOT BE USED TO PRECLUDE THE POSSIBILITY OF CONTAMINATION BEING PRESENT AT THE SITE; ANY CONTRACTORS WORKING ON THE SITE MUST BE COGNISANT OF THE POTENTIAL FOR THE PRESENCE OF HISTORIC CONTAMINATION AND ADOPT APPROPRIATE WORKING PROCEDURES TO PROTECT SITE WORKERS FROM ENCONTRING SOIL OR GROUND CONTAMINATED. REFER TO DESIGNERS RISK ASSESSMENT ITEM B.2 IN APPENDIX A3 OF FORM 1 SUBMISSION REFERENCE: 5110967-ATK-REP-CV-000104, FOR FURTHER DETAILS.
17. WHERE NECESSARY, THE CONTRACTOR TO DETERMINE A TRACK MONITORING PLAN IN CONNECTION TO THESE WORKS; ENSURING COMPLIANCE WITH THE REQUIREMENTS OF NETWORK RAIL LETTER OF INSTRUCTION NRBS/LI/045 "MONITORING TRACK OVER OR ADJACENT TO CIVIL ENGINEERING WORKS: PROCEDURE AND INTERVENTION LEVELS" (APPENDED TO COMPANY STANDARD NR/CS/CIV/044 "MANAGING STRUCTURE WORKS").
18. THE PROPOSED MODULAR EQUIPMENT BUILDING AND SECURITY FENCING MAY REQUIRE TRACTION BONDING PROVISIONS, DUE TO BEING IN CLOSE PROXIMITY TO OVERHEAD LINE APPARATUS. THESE PROVISIONS, IF REQUIRED, SHALL COMPLY WITH 'NR/SP/ELP/21085' SPECIFICATION FOR THE DESIGN OF EARTHING AND BONDING SYSTEMS FOR 25kV A.C. ELECTRIFIED LINES' AND SHALL BE CONFIRMED THROUGH DETAILED DESIGN.
19. ALL WORKS SHALL COMPLY WITH NETWORK RAIL COMPANY STANDARD NR/L/3/CIV/140.
20. FOR LOCATION OF SECTION A-A AND SECTION B-B, REFER TO DRG No. 5110967-RLS-CAM-CST-00002.

ATKINS

NOTES:

1. REFER TO DRG No. 5110967-RLS-CAM-CST-00002 FOR PROPOSED GROUND SLAB LAYOUT AND LOCATION.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
3. PRECAST CONCRETE HALF BATTERED KERBING STONES TO BS 7263:2001 BEDDED ON 25mm 1:3 CEMENT/SAND MORTAR.
4. ALL ST CONCRETE TO S.H.W. VOLUME 1, 1700 & 2600 SERIES; BLINDING LAYER/HAUNCHING ST1 (MCHW)
CONCRETE SURROUND ST2 (MCHW)
FENCEPOST FOUNDATION ST2 (MCHW)

5. STRUCTURAL CONCRETE REQUIREMENTS FOR NEW GROUND SLAB FOUNDATION ARE IN ACCORDANCE WITH BS 8500, AS FOLLOWS;

STRENGTH GRADE	C32/40
MAX. AGGREGATE SIZE	20mm
MIN. CEMENT CONTENT	360kg/m³
MAX. FREE WATER/CEMENT RATIO	0.45
LIMITING EXPOSURE CLASS	XC2
CEMENT/COMBINATION TYPE	SRPC

6. ALL MATERIALS TO BE STORED, HANDLED AND INSTALLED AS PER MANUFACTURERS SPECIFICATION.

7. REFER TO DRG No. 5110967-RLS-CAM-CST-00001 FOR INDICATIVE LOCATIONS OF ALL KNOWN EXISTING SERVICES.

8. THE PRINCIPAL CONTRACTOR IS REQUIRED TO CARRY OUT A DETAILED SERVICES SEARCH INCLUDING IDENTIFICATION OF STATUTORY AND RAILWAY SERVICES AND TO ENSURE THAT THE EXCAVATION IS PLANNED AND MANAGED IN ACCORDANCE WITH NR/L2/AMG/1030 "WORKING SAFELY IN THE VICINITY OF BURIED SERVICES. IF ANY DOUBT EXISTS ABOUT THE PRESENCE UNDERGROUND SERVICES, THE APPROPRIATE UTILITY COMPANY SHALL BE CONTACTED DIRECTLY FOR FURTHER ADVICE.

9. NOMINAL 40mm COVER TO ALL REINFORCEMENT. ALL REINFORCEMENT TO CONFORM TO BS 4449:2005.

10. ALL FENCING COMPONENTS SHALL BE HOT DIPPED GALVANISED TO BS EN ISO 1461. ALL BURRS TO BE REMOVED PRIOR TO GALVANISING.

11. THE PROPOSED FENCE AND LOCKABLE GATE SHALL BE CONSTRUCTED IN ACCORDANCE WITH BS 1722-12: 2006. STEEL GRADES SHALL BE AS SPECIFIED IN TABLE 7 OF BS 1722-12:2006.

12. THE PROPOSED MODULAR BUILDINGS SHALL BE DESIGNED BY OTHERS AND ALL PROPOSED FIXINGS BETWEEN THE MODULAR BUILDING AND THE CONCRETE GROUND SLAB FOUNDATION SHALL BE SPECIFIED BY THE MODULAR BUILDING MANUFACTURER.

A01	07.12.12	FOR APPROVAL	RH	CMcF	RST
Rev	Date	Issue History	Drawn	Chkd	Appld

Description of Change

Drawing Status

FOR APPROVAL

ATKINS
200 Broomielaw
Glasgow
G1 4RU
Tel: +44 (0)141 220 2000
Fax: +44 (0)141 220 2001

Network Rail  **Cambridgeshire County Council**

Project Title

CAMBRIDGE SCIENCE PARK

STATION INTERCHANGE

Drawing Title

PROPOSED GROUND SLAB
FOOTPATH AND
PALISADE FENCING
CONSTRUCTION DETAILS

Drawn	Date	Designed	Date
R. Howie	20.11.12	R. Rankin	23.11.12
Checked	Date	Approved	Date

C. MacFarlane	23.11.12	R. Tosh	23.11.12
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A1 Scale As Shown Location ELR: BGK, CH 57m 1188y

Drawing Number Revision

5110967-RLS-CAM-CST-00003 A01

NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A3

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

Appendix A3

Design Risk Assessment – Approval in Principle Stage

NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A3

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

1. Introduction

This Design Risk Assessment has been compiled at the Approval in Principle design phase for the Cambridge Science Park Station Interchange to identify and mitigate risks associated with the design, installation, use / maintenance of the new modular buildings proposed at the existing Chesterton Sidings. This document covers the works as shown on the drawings and documents listed in the F001 reference 5110967-ATK-REP-CV-000004.

For the construction phase, generic hazards likely to be encountered on a construction site have been considered but excluded from the risk assessment where considered to be of minor or generic significance such that a reasonably competent contractor would be expected to have controls in place as a matter of course. These include:

- Design process and approvals
- Hazards relating to competence of contractor or designer
- Slips/trips/falls
- Noise/dust/vibration
- Waste disposal
- Working at night
- Leptospirosis/water borne disease
- Vegetation removal
- Hazards relating to use of 'normal' construction materials (COSHH), e.g. cement

Notwithstanding this, these hazards will be considered in more depth where the Designer is able to reduce significantly the risks arising by amending the design.

2. Scope of Works

The scope of works comprises the construction of two new modular buildings and enclosed compounds. Further details are given in this Form F001.

NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A3

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

3. Risk Assessment

Actions to be taken to advise residual risks and to implement controls are listed in Table 1.

Table 1 - Action Key for Residual Risks

Code	Description
NFA	No further action
D	Details to be included on drawings
M	Hazard to be addressed in site method statement
S	Hazard to be addressed in specification
R	Hazard to be highlighted in a report / temporary works design
H	Hazard to be included in H&S plan or file



NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A3

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

STAGE: A – DESIGN						
A1.	Excavations during ground investigations	Services strikes	Site Operatives	Services searches to be undertaken and known services marked on site sketches	-	M
A2.	Working in close vicinity to live overhead lines	Electrification	Site Operatives	Overhead lines to be assumed live at all times. Insulated equipment to be used, where possible. All works in close proximity to the overhead lines to be carried out in accordance with a Network Rail approved Work Package Plan (WPP)	-	H

STAGE: B – CONSTRUCTION						
B1.	Excavations for foundations	Service strikes	Site Operatives	Services searches to be undertaken and known services marked on design drawings	-	M
B2.	Excavations for foundations	Discovery of contaminated land Discovery of unsuitable ground	Site operatives	Appropriate GI to be carried out prior to detailed design to determine ground conditions / level of contamination present.	As benzo(a)pyrene and asbestos have been identified during the ongoing ground investigation works, the principal contractor must ensure that all operatives carrying out	M, S, H



NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A3

Project Title: Cambridge Science Park Station Interchange				
Project Number: 5110967		PRS Reference Number: TBC		
Location: Chesterton Sidings, Chesterton, Cambridgeshire				
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A	

STAGE: B – CONSTRUCTION						
		conditions Discovery of groundwater			excavation works are competently trained to work in close vicinity to these hazardous materials and also that appropriate Network Rail approved PPE is worn at all times. All excavated contaminated material shall be safely stockpiled prior to be disposed to a licensed facility. All excavation works shall be carried out in accordance with a Network Rail approved WPP.	
B3.	Installation of pre-fabricated modular buildings and associated equipment	Manual handling of elements leading to injury. Failure of craneage system	Site Operatives	Lifting weights to be specified on detailed design drawings.	-	M
B4.	Working at height	Injury to site personnel	Site Operatives	-	Contractor to use prefabricated elements where possible minimising time spent working at height. Temporary edge protection to be provided where required.	M, R, H



NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A3

Project Title: Cambridge Science Park Station Interchange				
Project Number: 5110967		PRS Reference Number: TBC		
Location: Chesterton Sidings, Chesterton, Cambridgeshire				
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A	

STAGE: B – CONSTRUCTION						
B5.	Nearby travellers site	Trespass	Public	-	Adequate site fencing and security measures to be provided.	M, H
B6.	Working in close vicinity to live overhead lines	Electrification	Site Operatives	Overhead lines to be assumed live at all times. Insulated equipment to be used, where possible. All works in close proximity to the overhead lines to be carried out in accordance with a Network Rail approved WPP.	-	H

STAGE: C – USE/MAINTENANCE						
C1.	Inspection and maintenance of buildings	Working in a railway environment	Site Operatives	Inspection/maintenance to be carried out by competent personnel within a high street environment.	-	M, H
C2.	Working in close vicinity to live overhead lines	Electrification	Site Operatives	Overhead lines to be assumed live at all times. Insulated equipment to be used, where possible. All works in close proximity to the overhead lines to be carried out in accordance with a Network Rail approved WPP.	-	H



NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A3

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

STAGE: D – DEMOLITION						
D1.	Hazardous materials and substances	Serious health implications.	Site Operatives	All operatives must be competent and adequately trained to work with hazardous materials and substances. All works which involve working with known hazardous materials and substances must be carried out in accordance with a Network Rail approved WPP.	Contractor should review Network Rail asbestos records and any subsequent surveys carried out to familiarise themselves with any known hazardous materials and substances. Additionally it is recommended that the contractor undertakes an investigation to identify the presence of any hazardous materials and substances prior to commencing demolition works.	M, H
D2.	Working in close vicinity to live overhead lines	Electrification	Site Operatives	Overhead lines to be assumed live at all times. Insulated equipment to be used, where possible. All works in close proximity to the overhead lines to be carried out in accordance with a Network Rail approved WPP.	-	H



NR/L2/CIV/003/F001: APPROVAL IN PRINCIPLE

APPENDIX A4

Project Title: Cambridge Science Park Station Interchange			
Project Number: 5110967		PRS Reference Number: TBC	
Location: Chesterton Sidings, Chesterton, Cambridgeshire			
ELR: BGK	Mileage: 57m 1188yds to 58m 0880yds	OS grid ref: TL 474 605	Structure No.: N/A

Appendix A4

IDC Certificate

Project Title: Cambridge Science Park	
Atkins Project Number	5110967
Location of Meeting	Glasgow
Date	19.12.12
Chairperson	Rob McGowan

Present

OLE: Kenneth Stewart (KS)

Civils: Craig Macfarlane (CM) Ross Rankin (RR)

Signalling: P Bell (PB) by email/phone

PWay: John Bell (JB)

Highways: Paul Budd (PB) by phone

Architecture: Quintin Doyle (QD) Logan Doak (LD)

Structural Engineering: Ian Miller (IM) Gordon Lickrish (GL)

Mechanical Services: Vince Henderson (VH)

Project Manager: Victor Francisco-Suarez (VF-S)

CEM: Rob McGowan (RMcG)

E&P Engineering: Angus Malloch (AM), Stewart Douglas (SD)

Station Design Lead: Jim Davidson (JD)

Telcomms: Kashmir Lota (KL)

Interdisciplinary Design Checking Meeting

Design Reviewed by this IDC	Version
5110967-RCS-CAM-CST-00001	A01
5110967-RCS-CAM-CST-00002	A01
5110967-RCS-CAM-CST-00003	A01
5110967/51.5/REP/EP/002	A01
5110967/51.5/REP/EP/003	A01

5110967/A/L/00/001 Location Plan	A
5110967/A/L/00/002 Existing Site Plan	A
5110967/A/L/00/003 Proposed Site Plan	A
5110967/A/L/00/004 Proposed Site Plan	A
5110967/A/L/00/010 Proposed Concourse Plan	A
5110967/A/L/00/011 Proposed Mezzanine Level Plan	A
5110967/A/L/00/012 Proposed Bridge Level Plan	A
5110967/A/L/00/013 Proposed Roof Plan	A
5110967/A/S/00/010 Proposed Sections Sheet 1	A
5110967/A/S/00/011 Proposed Sections Sheet 2	A
5110967/A/E/00/002 Proposed Elevations – South and West	A
5110967/A/E/00/003 Proposed Elevations – North and East	A
5110967-S-16-0001 Foundation Layout	A
5110967-S-16-0002 Ground Floor Layout Insitu Slab	A
5110967-S-16-1001 Foundation Layout	A
5110967-S-28-0001 Column Layout	A
5110967-S-28-0002 Plantroom and Entrance Area Soffit Layout	A
5110967-S-28-0003 Lower Roof Steelwork Layout	A
5110967-S-28-0004 Bridge Level Steelwork Layout	A
5110967-S-28-0005 Upper Roof Level Steelwork Layout	A
5110967-S-28-0006 Elevations Sheet 1	A
5110967-S-28-0007 Elevations Sheet 2	A
5110967-S-28-0008 Elevations Sheet 3	A
5110967-S-28-0010 3D View	A
5110967-S-28-1001 Column Layout	A
5110967-S-28-1002 Bridge Deck Layout	A
5110967-S-28-1003 Bridge Roof Layout	A
5110967-S-28-1006 Grid Elevations	A
5110967-S-28-1007 Bridge Girder Elevations	A

Date of follow up IDC / IDR: Not required

Items Requiring Rectification:

5110967-RCS-CAM-CST-00001 – Civils REB

Adjust tracks to those located during TOPO survey.

Correct name of existing 11kV sub-station.

5110967-RCS-CAM-CST-00002 – Civils REB

Show new P.Way design.

Allow fire access to new building if required.
Remove any non-existing tracks.
Update once OLE design has been completed.

5110967-RCS-CAM-CST-00003 – Civils REB

No comments.

Form A (Electrical Power) Platform & Car Park Lighting

Change title to remove Form EA reference

Section 3.1 change "form" to "from"

Cycleway and approach road lighting will not be adopted so an estimate of power required to be included in all station overall power supply designs. (Noted Guided Busway will be it form a CCC supply)

Lighting times to be stated as "to be agreed with TOC"

Car park lighting to be low level style

Section 5.3 to have reference to NR Company Standards and Railway Group Standards corrected

New list of modules to be checked in NR Company Standard – NR/L3/ELP/27406 "Engineering Deliverable Requirements for Electrical Power Asset Design".

Form A (Electrical Power) Station Building Services

Update abbreviations with electrical terms.

4.2 change "signal room" to signal relay room.

Add footbridge CMS note.

6.3 correct reference to Railway Group and NR Company Standards.

Change drawing title block to include NR.

Architecture Station Building

Use same title block as rest of project drawings.

Remove incorrect rails, use TOPO.

Architecture Footbridge

No comments.

Structural Drawings

No comments.

I certify that reasonable professional skill and care has been used in the Interdisciplinary Check described above.

Contractor's Engineering Manager

Name: Robert D McGowan

Title: Team Leader, Electrification

Signature: 

Date : 19.12.12

CERTIFICATE OF IDC COMPLIANCE

All outline design is complete and suitable for submission for Acceptance

Atkins OLE Design CRE

Name: Kenneth C Stewart

Title: Principal Engineer

Signature: *KC Stewart*

Date : *19/12/12*

Atkins Civils Engineer

Name: Craig MacFarlane

Title: Civils Design Engineer

Signature: *Craig MacLane*

Date : *19/12/12*

Atkins Permanent Way Engineer

Name: John Bell

Title: Permanent Way Design Manager

Signature: *John Bell*

Date : *19/12/12*

Atkins E&P Engineer

Name: Angus Malloch

Title: Senior Design Engineer

Signature: *A. Malloch*

Date : *19/12/12*

Atkins Telecommunications Engineer

Name: Kashmir Lota

Title: Principal Telecommunications Engineer

Signature: *Kashmir Lota*

Date : *19/12/12*