TENDER DOCUMENTATION

for the

SUPPLY AND INSTALLATION OF A STORAGE BUILDING

at

STANLEY PARK, CHIPPENHAM

for

CHIPPENHAM TOWN COUNCIL

MICHAEL EDWARDS CONSULTANTS LIMITED
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Instructions to Tenderers

Chippenham Town Council is seeking fixed price tenders for the supply and installation of a storage building. The groundworks will be provided by others.

The tender process is being managed via the portal.

The tender documents comprise a schedule of works and other documents listed in Appendix One to that schedule.

Tenders are to be submitted by within 4 weeks of the tender issue date and in accordance with the instructions on the portal. Tenders are to remain open for acceptance for a period of 12 weeks.

The council does not undertake to accept any tender nor to reimburse any costs associated with preparation of the tender.

FORM OF TENDER

Chippenham Town Council
Town Hall
High Street
Chippenham
SN15 3ER

Dear Sirs

Supply and Installation of a Storage Building at Stanley Park

Having inspected the site of the proposed works and examined the Schedule of Works, Drawings, Specifications and Conditions of Contract, we hereby undertake to carry out the proposed works in accordance with the Conditions of Contract as follows:

To undertake to complete the works as set out in the Schedules of Work within ..... calendar weeks (Contractor to insert period) from the Date of Possession.

A post-instruction lead-in period of ……. calendar weeks will be required (Contractor to insert period).

For the sum of: .....

..... .£_____

on the basis of a Fixed Price Contract.

We agree that should obvious errors in pricing or errors in arithmetic in the submitted tender documents be discovered before acceptance of this offer then these errors will be dealt with in accordance with JCT Practice Note 6 (Main Contract Tendering) Alternative 1.

We agreed that this offer shall remain open for acceptance for a period of 12 weeks.

We confirm that we hold all necessary Tax Certificates as referred to in the Contract.

Name ……

Signed.....

In the capacity of ……..

duly authorised to sign tenders on behalf of …….

Address .....

……..

Date 2023

TENDERS to arrive **not later than 4 weeks after issuing and as per the date on the portal.**

THE EMPLOYER DOES NOT UNDERTAKE TO ACCEPT THE LOWEST OR ANY TENDER OR TO REIMBURSE THE COST OF TENDERING

Introduction

INTRODUCTION

1. This document sets out the scope of work associated with this project and should be read in conjunction with the drawings, specifications and other documents provided.

   This project is the second phase of providing a plant/machinery storage building at Stanley Park Sports Ground. The first phase is the groundworks for the building and will be separately procured.

2. The anticipated programme is as follows:

   Building erection

Commences	TBA
Completes	TBA

3. The scope of work comprise of the following:

   - Supply and installation of building to prepared base
   - Miscellaneous associated work

4. Tenderer's attention is drawn to the restricted access to the site and use by the public. Proposed work area, access routes and storage area requirements are to be submitted with tenders.

5. The anticipated programme is as follows:

• Tender documents issued	As date on portal
• Tender return date	4 weeks after issue
• Letter of intent issued	TBA
• Start on site	TBA
• Completion	TBA

   The Form of Tender allows the lead in period and contract period to be stated.

6. The structural engineer has designed the ground slab as shown on the enclosed drawings. The design has made assumptions for loadings and dimensions. If the building proposed requires revisions to the loadings and/or dimensions then this must be highlighted when submitting the tender.

7. The building needs to benefit from a product guarantee details of which need to be stated with the tender submission.

Preliminaries

JCT 2016 Minor Works Building Contract

A10 PROJECT PARTICULARS

110 THE PROJECT

- Name: Storage building (supply and installation of system building)
- Location: Stanley Park Sports Ground, Stanley Lane, Chippenham
- Timescale for construction work: TBA weeks

120 EMPLOYER (CLIENT)

- Name: Chippenham Town Council
- Address: Town Hall, High Street, Chippenham
- Contact: Matt Kirby, Director of Community Services

130 PRINCIPAL CONTRACTOR (CDM)

- Name: TBA

140 ARCHITECT/ CONTRACT ADMINISTRATOR

- Name: Michael Edwards Consultants Limited – T/A MEA
- Address: 26 Queen Square, Bath BA1 2HX
- Contact: Mark Saint
- Telephone: 01225 337793
- E-mail: mark@meaconsult.co.uk

150 PRINCIPAL DESIGNER

- Name: TBA

160 QUANTITY SURVEYOR

- Name: Michael Edwards Consultants Limited – T/A MEA
- Address: 26 Queen Square, Bath BA1 2HX
- Contact: Mark Saint
- Telephone: 01225 337793
- E-mail: mark@meaconsult.co.uk

200 CONSULTANTS

- **Description: Structural Engineer (Groundworks)**
- Name: Giraffe Engineering

A11 TENDER AND CONTRACT DOCUMENTS

110 TENDER DRAWINGS

- The tender drawings are: as listed in Appendix One

120 CONTRACT DRAWINGS

- The Contract Drawings: The same as the tender drawings.

160 PRECONSTRUCTION INFORMATION

- Format: The Preconstruction information is described in these preliminaries in Section A34. It refers to information given elsewhere in the preliminaries and other tender documents.

180 OTHER DOCUMENTS

- Inspection: Drawings and other documents relating to the Contract but not included in the tender documents may be seen by appointment during normal office hours at the office of The Client

A12 THE SITE/ EXISTING BUILDINGS

110 THE SITE

- Description: Discrete area adjacent existing car park and storage building at sports ground. The ground slab and drainage will have been installed prior to installation of the building.

120 EXISTING BUILDINGS ON/ ADJACENT TO THE SITE

- Description: Municipal Sports Ground and facilities

180 HEALTH AND SAFETY FILE

- Availability for inspection: The Health and Safety File for the site/ building may be seen by appointment during normal office hours at: The Client

200 ACCESS TO THE SITE

- Description: Access road to car park via Stanley Lane
- Access for inspections: Provide access at reasonable times for both on-site and off-site work.

210 PARKING

- Restrictions on parking of the Contractor's and employees' vehicles: Parking by agreement

220 USE OF THE SITE

- General: Do not use the site for any purpose other than carrying out the Works.

230 SURROUNDING LAND/ BUILDING USES

- General: Adjacent or nearby uses or activities are as follows:
  Public Sports Ground

240 HEALTH AND SAFETY HAZARDS

- General: The nature and condition of the site/ building cannot be fully and certainly ascertained before it is opened up.
- Information: The accuracy and sufficiency of this information is not guaranteed. Ascertain if any additional information is required to ensure the safety of all persons and the Works.
- Site staff: Draw to the attention of all personnel working on the site the nature of any possible contamination and the need to take appropriate precautionary measures.

250 SITE VISIT

- Assessment: Ascertain the nature of the site, access thereto and all local conditions and restrictions likely to affect the execution of the Works.
- Arrangements for visit: Via Client

A13 DESCRIPTION OF THE WORK

110 PREPARATORY WORK BY OTHERS

- Details: Groundworks comprising ground slab, external works and drainage associated with installation of system building

120 THE WORKS

- Description: Supply and installation of steel system building and associated works

130 WORK BY OTHERS CONCURRENT WITH THE CONTRACT

- Description: N/A

140 COMPLETION WORK BY OTHERS

- Description: Fitting out of system building

A20 JCT MINOR WORK BUILDING CONTRACT (MW)

JCT MINOR WORKS BUILDING CONTRACT

- The Contract: JCT Minor Works Building Contract 2016 Edition.
- Requirement: Allow for the obligations, liabilities and services described.

THE RECITALS

First - THE WORKS AND THE CONTRACT ADMINISTRATOR

- The work comprises: Supply and installation of system building for storage of equipment, plant and machinery.
- Architect/ Contract Administrator: See clause A10/140.

Second - CONTRACT DOCUMENTS

- Contract drawings: As listed in clause A11/120.
  Contract documents: The following have been prepared which show and describe the work to be done: Refer Appendix One

Third - PRICED DOCUMENTS

- Documents to be priced or provided by the Contractor: Priced Work Schedules

ARTICLES

3 - ARCHITECT/ CONTRACT ADMINISTRATOR

- Architect/ Contract Administrator: See clause A10/140.

4 and 5 - PRINCIPAL DESIGNER/ PRINCIPAL CONTRACTOR

- Principal Designer: See clause A10/150.
- Principal Contractor: See clause A10/130.

Fourth Recital and Schedule 2 - BASE DATE

- Base date: 1st April 2023

Fourth Recital and clause 4.2 - CONSTRUCTION INDUSTRY SCHEME (CIS)

- Employer at the Base Date is not a 'contractor' for the purposes of the CIS.

Fifth Recital - CDM REGULATIONS

- The project is not notifiable.

Sixth Recital - FRAMEWORK AGREEMENT

- Framework agreement: Does not apply

Seventh Recital and Schedule 3 - SUPPLEMENTAL PROVISIONS

- Collaborative working: Supplemental Provision 1 applies
- Health and safety: Supplemental Provision 2 applies
- Cost savings and value improvements: Supplemental Provision 3 applies
- Sustainable development and environmental considerations: Supplemental Provision 4 applies

- Performance indicators and monitoring: Supplemental Provision 5 applies
- Notification and negotiation of disputes: Supplemental Provision 6 applies. Where Supplemental Provision 6 applies, the respective nominees of the parties are:
  - Employer's nominee: TBA
  - Contractor's nominee: TBA

    Or such replacement as each party may notify to the other from time to time.

Article 7 - ARBITRATION

- Article 7 and Schedule 1 do not apply

Clause 2.2 - COMMENCEMENT AND COMPLETION (ANTICIPATED)

- Works commencement date: TBA
- Date for Completion: TBA

Clause 2.8 - LIQUIDATED DAMAGES

- At the rate of £750 per week

Clause 2.10 - RECTIFICATION PERIOD

- Period: 12 months from the date of practical completion.

Clause 4.3 - INTERIM PAYMENTS

- Interim Valuation Dates:
  - The first Interim Valuation Date is: TBA
  - Thereafter at intervals of: one month
- Payments due prior to practical completion:
  - Percentage of total value of the work etc.: 95%
- Payments becoming due on or after practical completion:
  - Percentage of the total amount to be paid: 97.5%

Clause 4.3 and 4.8 - FLUCTUATIONS PROVISION

- The following fluctuations provision applies: no fluctuations provisions apply

Clause 4.8.1 - SUPPLY OF DOCUMENTATION FOR COMPUTATION OF AMOUNT TO BE FINALLY CERTIFIED

- Period: 3 months from the date of practical completion.

Clause 5.3 - CONTRACTOR'S PUBLIC LIABILITY INSURANCE - INJURY TO PERSONS OR PROPERTY

- The required level of cover for any one occurrence or series of occurrences arising out of one event:
  - Not less than: £10m

Clauses 5.4A, 5.4B and 5.4C - INSURANCE OF THE WORKS, ETC. - ALTERNATIVE PROVISIONS

- Clause 5.4A applies.
- Where clause 5.4A or 5.4B applies, percentage to cover professional fees: 10%

Clause 7.2 - ADJUDICATION

- The Adjudicator is: TBA
- Nominating body: Royal Institution of Chartered Surveyors

THE CONDITIONS

SECTION 1: DEFINITIONS AND INTERPRETATION

1.4 - RECKONING PERIODS OF DAYS

- Amendments: None

1.8 - APPLICABLE LAW

- Amendments: None

SECTION 2: CARRYING OUT THE WORKS

SECTION 3: CONTROL OF THE WORKS

SECTION 4: PAYMENT

SECTION 5: INJURY, DAMAGE AND INSURANCE

SECTION 6: TERMINATION

SECTION 7: SETTLEMENT OF DISPUTES

EXECUTION

- The Contract: Will be executed under hand

CONTRACT GUARANTEE BOND

- Contract Guarantee Bond: not required

JCT PUBLIC SECTOR SUPPLEMENT

- Document: The JCT Public Sector Supplement 2011 - Fair Payment, Transparency and Building Information Modelling.
- Fair Payment provisions applies
- Transparency provisions: applies
- Building information modelling provisions: does not apply

A30 TENDERING/ SUBLETTING/ SUPPLY

MAIN CONTRACT TENDERING

110 SCOPE

- General: These conditions are supplementary to those stated in the Invitation to Tender and on the form of tender.

145 TENDERING PROCEDURE

- General: In accordance with NBS Guide to Tendering for Construction Projects.

160 EXCLUSIONS

- Inability to tender: Immediately inform if any parts of the work as defined in the tender documents cannot be tendered.
- Relevant parts of the work: Define those parts, stating reasons for the inability to tender.

170 ACCEPTANCE OF TENDER

- Acceptance: No guarantee is offered that any tender will be recommended for acceptance or be accepted, or that reasons for non acceptance will be given.
- Costs: No liability is accepted for any cost incurred in the preparation of any tender.

190 PERIOD OF VALIDITY

- Period: After submission or lodgement, keep tender open for consideration (unless previously withdrawn) for not less than 12 weeks
- Date for possession/ commencement: See section A20.

PRICING/ SUBMISSION OF DOCUMENTS

210 PRELIMINARIES IN THE SPECIFICATION

- The Preliminaries/ General conditions sections (A10-A56 inclusive) must not be relied on as complying with SMM7/ NRM2.

250 PRICED DOCUMENTS

- Alterations: Do not alter or qualify the priced documents without written consent. Tenders containing unauthorised alterations or qualifications may be rejected.
- Measurements: Where not stated, ascertain from the drawings.
- Deemed included: Costs relating to items, which are not priced, will be deemed to have been included elsewhere in the tender.
- Submit: with tender

310 TENDER

- General: Tenders must include for all work shown or described in the tender documents as a whole or clearly apparent as being necessary for the complete and proper execution of the Works.

500 TENDER STAGE METHOD STATEMENTS

- Method statements: Prepare, describing how and when the following is to be carried out:
  Access, site set-up, deliveries and parking
- Statements: Submit with tender

510 ALTERNATIVE METHOD TENDERS

- General: In addition to and at the same time as tendering for the Works as defined in the tender documents, alternative methods of construction/ installation may be submitted for consideration. Alternatives, which would involve significant changes to other work, may not be considered.
- Alternative tenders: Such alternatives will be deemed to be alternative tenders and each must include a complete and precise statement of the effects on cost and programme.
- Safety method statement: Carry out a health and safety risk assessment for each alternative and where appropriate provide a safety method statement suitable for incorporation in the Health and Safety Plan.
- Full technical data: Submit for each alternative together with details of any consequential amendments to the design and/ or construction of other parts of the Works.

515 ALTERNATIVE TIME TENDERS

- General: In addition to and at the same time as tendering based upon the date or period specified in section A20, an alternative tender based upon a different date for completion or period may be submitted.
- Date for completion: If any such tender is accepted the date for completion inserted in the Contract will be the date stated in the alternative tender or determined from the period stated in the alternative tender.

530 SUBSTITUTE PRODUCTS

- Details: If products of different manufacture to those specified are proposed, submit details with the tender giving reasons for each proposed substitution. Substitutions, which have not been notified at tender stage, may not be considered.
- Compliance: Substitutions accepted will be subject to the verification requirements of clause A31/200.

550 HEALTH AND SAFETY INFORMATION

- Content: Describe the organization and resources to safeguard the health and safety of operatives, including those of subcontractors, and of any person whom the Works may affect.
- Include:
  - A copy of the health and safety policy document, including risk assessment procedures.
  - Accident and sickness records for the past five years.
  - Records of previous Health and Safety Executive enforcement action.
  - Records of training and training policy.
  - The number and type of staff responsible for health and safety on this project with details of their qualifications and duties.
- Submit: upon request

570 OUTLINE CONSTRUCTION PHASE HEALTH AND SAFETY PLAN

- Content: Submit the following information within one week of request:
  - Method statements on how risks from hazards identified in the pre-construction information and other hazards identified by the contractor will be addressed.
  - Details of the management structure and responsibilities.
  - Arrangements for issuing health and safety directions.

- Procedures for informing other contractors and employees of health and safety hazards.
- Selection procedures for ensuring competency of other contractors, the self-employed and designers.
- Procedures for communications between the project team, other contractors and site operatives.
- Arrangements for cooperation and coordination between contractors.
- Procedures for carrying out risk assessment and for managing and controlling the risk.
- Emergency procedures including those for fire prevention and escape.
- Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded.
- Arrangements for welfare facilities.
- Procedures for ensuring that all persons on site have received relevant health and safety information and training.
- Arrangements for consulting with and taking the views of people on site.
- Arrangements for preparing site rules and drawing them to the attention of those affected and ensuring their compliance.
- Monitoring procedures to ensure compliance with site rules, selection and management procedures, health and safety standards and statutory requirements.
- Review procedures to obtain feedback.

599 FREEDOM OF INFORMATION

- Records: Retain, make available for inspection and supply on request information reasonably required to allow response to requests made under the provisions of the Freedom of Information Act.
- Determination: Submit requests received. Do not supply information to anyone other than the project participants without express written permission.
- Confidentiality: Maintain at all times.

A31 PROVISION, CONTENT AND USE OF DOCUMENTS

DEFINITIONS AND INTERPRETATIONS

110 DEFINITIONS

- Meaning: Terms, derived terms and synonyms used in the preliminaries/ general conditions and specification are as stated here or in the appropriate referenced document.

120 COMMUNICATION

- Definition: Includes advise, inform, submit, give notice, instruct, agree, confirm, seek or obtain information, consent or instructions, or make arrangements.
- Format: In writing to the person named in clause A10/140 unless specified otherwise.
- Response: Do not proceed until response has been received.

130 PRODUCTS

- Definition: Materials, both manufactured and naturally occurring, and goods, including components, equipment and accessories, intended for the permanent incorporation in the Works.
- Includes: Goods, plant, materials, site materials and things for incorporation into the Works.

135 SITE EQUIPMENT

- Definition: Apparatus, appliances, machinery, vehicles or things of whatsoever nature required in or about the construction for the execution and completion of the Works but not materials or other things intended to form or forming part of the Permanent Works.
- Includes: Construction appliances, vehicles, consumables, tools, temporary works, scaffolding, cabins and other site facilities.
- Excludes: Products and equipment or anything intended to form or forming part of the permanent works.

140 DRAWINGS

- Definitions: To BSRIA BG 6, 'A design framework for building services: Design activities and drawing definitions'.
- CAD data: In accordance with ISO 19650.

145 CONTRACTOR'S CHOICE

- Meaning: Selection delegated to the Contractor, but liability to remain with the specifier.

155 SUBMIT PROPOSALS

- Meaning: Submit information in response to specified requirements.

160 TERMS USED IN SPECIFICATION

- Remove: Disconnect, dismantle as necessary and take out the designated products or work and associated accessories, fixings, supports, linings and bedding materials. Dispose of unwanted materials. Excludes removal and disposal of associated pipework, wiring, ductwork or other services.
- Remediate: Action or measures taken to lessen, clean up, remove or mitigate the existence of hazardous materials; in accordance with standards, or requirements as may be set out by statutes, rules, regulations or specification.
- Fix: Receive, unload, handle, store, protect, place and fasten in position; dispose of waste and surplus packaging; to include all labour, materials and site equipment for that purpose.

- Supply and fix: As above, but including supply of products, components or systems to be fixed, together with everything necessary for their fixing. All products, components or systems are to be supplied and fixed unless stated otherwise.
- Keep for reuse: Do not damage designated products or work. Clean off bedding and jointing materials. Stack neatly, adequately protect and store until required by the employer/ purchaser, or until required for use in the Works as instructed.
- Keep for recycling: As 'keep for reuse', but relates to a naturally occurring material rather than a manufactured product.
- Make good: Execute local remedial work to designated work. Make secure, sound and neat. Excludes redecoration and/ or replacement.
- Replace: Supply and fix new products matching those removed. Execute work to match original new state of that removed.
- Repair: Execute remedial work to designated products. Make secure, sound and neat. Excludes redecoration and/ or replacement.
- Refix: Fix removed products.
- Ease: Adjust moving parts of designated products, or work to achieve free movement and good fit in open and closed positions.
- Match existing: Provide products and work of the same appearance and features as the original, excluding ageing and weathering. Make joints between existing and new work as inconspicuous as possible.
- System: Equipment, accessories, controls, supports and ancillary items (including installation) necessary for that section of the work to function.

170 MANUFACTURER AND PRODUCT REFERENCE

- Definition: When used in this combination:
  - Manufacturer: the person or legal entity under whose name or trademark the particular product, component or system is marketed
  - Product reference: the proprietary brand name and/ or identifier by which the particular product, component or system is described.
- Currency: References are to the particular product as specified in the manufacturer's technical literature current on the date of the invitation to tender.

200 SUBSTITUTION OF PRODUCTS

- Products: If an alternative product to that specified is proposed, obtain approval before ordering the product.
- Reasons: Submit reasons for the proposed substitution.
- Documentation: Submit relevant information, including:
  - manufacturer and product reference;
  - cost;
  - availability;
  - relevant standards;
  - performance;
  - function;
  - compatibility of accessories;
  - proposed revisions to drawings and specification;
  - compatibility with adjacent work;

  - appearance;
  - copy of warranty/ guarantee.
- Alterations to adjacent work: If needed, advise scope, nature and cost.
- Manufacturers' guarantees: If substitution is accepted, submit before ordering products.

210 CROSS REFERENCES

- Accuracy: Check remainder of the annotation or item description against the terminology used in the section or clause referred to.
- Related terminology: Where a numerical cross-reference is not given the relevant sections and clauses of the specification will apply.
- Relevant clauses: Clauses in the referred to specification section dealing with general matters, ancillary products and execution also apply.
- Discrepancy or ambiguity: Before proceeding, obtain clarification or instructions.

220 REFERENCED DOCUMENTS

- Conflicts: Specification prevails over referenced documents.

230 EQUIVALENT PRODUCTS

- Inadvertent omission: Wherever products are specified by proprietary name the phrase 'or equivalent' is to be deemed included.

240 SUBSTITUTION OF STANDARDS

- Specification to British Standard or European Standard: Substitution may be proposed complying with a grade or category within a national standard of another Member State of the European Community or an international standard recognised in the UK.
- Before ordering: Submit notification of all such substitutions.
- Documentary evidence: Submit for verification when requested as detailed in clause A31/200. Any submitted foreign language documents must be accompanied by certified translations into English.

250 CURRENCY OF DOCUMENTS AND INFORMATION

- Currency: References to published documents are to the editions, including amendments and revisions, current on the date of the Invitation to Tender.

260 SIZES

- General dimensions: Products are specified by their co-ordinating sizes.
- Timber: Cross section dimensions shown on drawings are:
  - Target sizes as defined in BS EN 336 for structural softwood and hardwood sections.
  - Finished sizes for non-structural softwood or hardwood sawn and further processed sections.

DOCUMENTS PROVIDED ON BEHALF OF THE EMPLOYER

410 ADDITIONAL COPIES OF DRAWINGS/ DOCUMENTS

- Additional copies: Issued free of charge.

410 ADDITIONAL COPIES OF DRAWINGS/ DOCUMENTS

- Additional copies: Issued on request and charged to the Contractor.

440 DIMENSIONS

- Scaled dimensions: Do not rely on.

450 MEASURED QUANTITIES

- Ordering products and constructing the Works: The accuracy and sufficiency of the measured quantities is not guaranteed.
- Precedence: The specification and drawings shall override the measured quantities.

460 THE SPECIFICATION

- Coordination: All sections must be read in conjunction with Main Contract Preliminaries/ General conditions.

DOCUMENTS PROVIDED BY CONTRACTOR/ SUBCONTRACTORS/ SUPPLIERS

630 TECHNICAL LITERATURE

- Information: Keep on site for reference by all supervisory personnel:
  - Manufacturers' current literature relating to all products to be used in the Works.
  - Relevant British, EN or ISO Standards.

640 MAINTENANCE INSTRUCTIONS AND GUARANTEES

- Components and equipment: Obtain or retain copies, register with manufacturer and hand over on or before completion of the Works.
- Information location: In Building Manual.

A32 MANAGEMENT OF THE WORKS

GENERALLY

110 SUPERVISION

- General: Accept responsibility for coordination, supervision and administration of the Works, including subcontracts.
- Coordination: Arrange and monitor a programme with each subcontractor, supplier, local authority and statutory undertaker, and obtain and supply information as necessary for coordination of the work.

118 VEHICLE SAFETY REQUIREMENTS

- Vehicle equipment: Ensure that all vehicles have the following:
  - Audible alert to other road users to the planned movement of the vehicle when the vehicle's indicators are in operation.
  - Prominent signage at the rear of the vehicle to warn cyclists of the dangers of passing the vehicle on the inside.
  - Properly adjusted class VI mirror/s or Fresnel lens to eliminate the near side blind spot.
  - Side under run guards.
- Driver training:
  - Drivers must be trained on vulnerable road user safety through an approved course and hold a current valid Certificate of Competence.
  - Drivers must have a valid driving licence and be legally able to drive the vehicle.

120 INSURANCE

- Documentary evidence: Before starting work on site submit details, and/ or policies and receipts for the insurances required by the Conditions of Contract.

130 INSURANCE CLAIMS

- Notice: If any event occurs which may give rise to any claim or proceeding in respect of loss or damage to the Works or injury or damage to persons or property arising out of the Works, immediately give notice to the employer/ client, the person administering the Contract on their behalf and the Insurers.
- Failure to notify: Indemnify the employer/ client against any loss, which may be caused by failure to give such notice.

140 CLIMATIC CONDITIONS

- Information: Record accurately and retain:
  - Daily maximum and minimum air temperatures (including overnight).
  - Delays due to adverse weather, including description of the weather, types of work affected and number of hours lost.

150 OWNERSHIP

- Alteration/ clearance work: Materials arising become the property of the Contractor except where otherwise stated. Remove from site as work proceeds.

PROGRAMME/ PROGRESS

210 PROGRAMME

- Master programme: Immediately when requested and before starting work on site submit in an approved form a master programme for the Works, which must include details of:
  - Planning and mobilisation by the Contractor
  - Subcontractor's work.
  - Running in, adjustment, commissioning and testing of all engineering services and installations.
  - Work resulting from instructions issued in regard to the expenditure of provisional sums.
  - Work by others concurrent with the Contract.
- Submit with tender

245 START OF WORK ON SITE

- Notice: Before the proposed date for start of work on site give minimum notice of one week

250 MONITORING

- Progress: Record on a copy of the programme kept on site.
- Avoiding delays: If any circumstances arise which may affect the progress of the Works submit proposals or take other action as appropriate to minimize any delay and to recover any lost time.

260 SITE MEETINGS

- General: Site meetings will be held to review progress and other matters arising from administration of the Contract.
- Frequency: TBA
- Location: Stanley Park Sports Pavilion, adjacent the site
- Accommodation: Ensure availability at the time of such meetings.
- Attendees: Attend meetings and inform subcontractors and suppliers when their presence is required.
- Chairperson (who will also take and distribute minutes): TBA

290 NOTICE OF COMPLETION

- Requirement: Give notice of the anticipated dates of completion of the whole or parts of the Works.
- Associated works: Ensure necessary access, services and facilities are complete.
- Period of notice (minimum): one week

310 EXTENSIONS OF TIME

- Notice: When a notice of the cause of any delay or likely delay in the progress of the works is given under the contract, written notice must also be given of all other causes which apply concurrently.
- Details: As soon as possible submit:
  - Relevant particulars of the expected effects, if appropriate, related to the concurrent causes.
  - An estimate of the extent, if any, of the expected delay in the completion of the Works beyond the date for completion.
  - All other relevant information required.

CONTROL OF COST

420 REMOVAL/ REPLACEMENT OF EXISTING WORK

- Extent and location: Agree before commencement.
- Execution: Carry out in ways that minimize the extent of work.

430 PROPOSED INSTRUCTIONS

- Estimates: If a proposed instruction requests an estimate of cost, submit without delay and in any case within seven days.

440 MEASUREMENT

- Covered work: Give notice before covering work required to be measured.

450 DAYWORK VOUCHERS

- Before commencing work: Give reasonable notice to person countersigning daywork vouchers.
- Content: Before delivery each voucher must be:
  - Referenced to the instruction under which the work is authorised.
  - Signed by the Contractor's person in charge as evidence that the operatives' names, the time daily spent by each and the equipment and products employed are correct.
- Submit: By the end of the week in which the work has been executed.

470 PRODUCTS NOT INCORPORATED INTO THE WORKS

- Ownership: At the time of each valuation, supply details of those products not incorporated into the Works which are subject to any reservation of title inconsistent with passing of property as required by the Conditions of Contract, together with their respective values.
- Evidence: When requested, provide evidence of freedom of reservation of title.

A33 QUALITY STANDARDS/ CONTROL

STANDARDS OF PRODUCTS AND EXECUTIONS

110 INCOMPLETE DOCUMENTATION

- General: Where and to the extent that products or work are not fully documented, they are to be:
  - Of a kind and standard appropriate to the nature and character of that part of the Works where they will be used.
  - Suitable for the purposes stated or reasonably to be inferred from the project documents. Contract documents: Omissions or errors in description and/ or quantity shall not vitiate the Contract nor release the Contractor from any obligations or liabilities under the Contract.

120 WORKMANSHIP SKILLS

- Operatives: Appropriately skilled and experienced for the type and quality of work.
- Registration: With Construction Skills Certification Scheme.
- Evidence: Operatives must produce evidence of skills/ qualifications when requested.

130 QUALITY OF PRODUCTS

- Generally: New. (Proposals for recycled products may be considered).
- Supply of each product: From the same source or manufacturer.
- Whole quantity of each product required to complete the Works: Consistent kind, size, quality and overall appearance.
- Tolerances: Where critical, measure a sufficient quantity to determine compliance.
- Deterioration: Prevent. Order in suitable quantities to a programme and use in appropriate sequence.

135 QUALITY OF EXECUTION

- Generally: Fix, apply, install or lay products securely, accurately, plumb, neatly and in alignment.
- Colour batching: Do not use different colour batches where they can be seen together.
- Dimensions: Check on-site dimensions.
- Finished work: Without defects, e.g. not damaged, disfigured, dirty, faulty, or out of tolerance.
- Location and fixing of products: Adjust joints open to view so they are even and regular.

140 EVIDENCE OF COMPLIANCE

- Proprietary products: Retain on site evidence that the proprietary product specified has been supplied.
- Performance specification: Submit evidence of compliance, including test reports indicating:
  - Properties tested.
  - Pass/ fail criteria.
  - Test methods and procedures.
  - Test results.
  - Identity of testing agency.
  - Test dates and times.
  - Identities of witnesses.
  - Analysis of results.

150 INSPECTIONS

- Products and executions: Inspection or any other action must not be taken as approval unless confirmed in writing referring to:
  - Date of inspection.
  - Part of the work inspected.
  - Respects or characteristics which are approved.
  - Extent and purpose of the approval.
  - Any associated conditions.

160 RELATED WORK

- Details: Provide all trades with necessary details of related types of work. Before starting each new type or section of work ensure previous related work is:
  - Appropriately complete.
  - In accordance with the project documents.
  - To a suitable standard.
  - In a suitable condition to receive the new work.
- Preparatory work: Ensure all necessary preparatory work has been carried out.

170 MANUFACTURER'S RECOMMENDATIONS/ INSTRUCTIONS

- General: Comply with manufacturer's printed recommendations and instructions current on the date of the Invitation to tender.
- Exceptions: Submit details of changes to recommendations or instructions.
- Execution: Use ancillary products and accessories supplied or recommended by main product manufacturer.
- Products: Comply with limitations, recommendations and requirements of relevant valid certificates.

180 WATER FOR THE WORKS

- Mains supply: Clean and uncontaminated.
- Other: Do not use until:
  - Evidence of suitability is provided.
  - Tested to BS EN 1008 if instructed.

SAMPLES/ APPROVALS

210 SAMPLES

- Products or executions: Comply with all other specification requirements and in respect of the stated or implied characteristics either:
  - To an express approval.
  - To match a sample expressly approved as a standard for the purpose.

220 APPROVAL OF PRODUCTS

- Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme.
- Approval: Relates to a sample of the product and not to the product as used in the Works. Do not confirm orders or use the product until approval of the sample has been obtained.
- Complying sample: Retain in good, clean condition on site. Remove when no longer required.

230 APPROVAL OF EXECUTION

- Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme.
- Approval: Relates to the stated characteristics of the sample. (If approval of the finished work as a whole is required this is specified separately). Do not conceal, or proceed with affected work until compliance with requirements is confirmed.
- Complying sample: Retain in good, clean condition on site. Remove when no longer required.

ACCURACY/ SETTING OUT GENERALLY

320 SETTING OUT

- General: Submit details of methods and equipment to be used in setting out the Works.
- Levels and dimensions: Check and record the results on a copy of drawings. Notify discrepancies and obtain instructions before proceeding.
- Inform: When complete and before commencing construction.

330 APPEARANCE AND FIT

- Tolerances and dimensions: If likely to be critical to execution or difficult to achieve, as early as possible either:
  - Submit proposals; or
  - Arrange for inspection of appearance of relevant aspects of partially finished work.
- General tolerances (maximum): To BS 5606, tables 1 and 2.

340 CRITICAL DIMENSIONS

- Critical dimensions: Set out and construct the Works to ensure compliance with the tolerances stated.

350 LEVELS OF STRUCTURAL FLOORS

- Maximum tolerances for designed levels to be:
  - Floors to be self-finished, and floors to receive sheet or tile finishes directly bedded in adhesive: +/- 10 mm.
  - Floors to receive dry board/ panel construction with little or no tolerance on thickness: +/- 10 mm.
  - Floors to receive mastic asphalt flooring/ underlays directly: +/- 10 mm.
  - Floors to receive mastic asphalt flooring/ underlays laid on mastic asphalt levelling coat(s): +/- 15 mm.
  - Floors to receive fully bonded screeds/ toppings/ beds: +/- 15 mm.
  - Floors to receive unbonded or floating screeds/ beds: +/- 20 mm.

360 RECORD DRAWINGS

- Site setting out drawing: Record details of all grid lines, setting-out stations, benchmarks and profiles. Retain on site throughout the Contract and hand over on completion.

SUPERVISION/ INSPECTION/ DEFECTIVE WORK

525 ACCESS

- Extent: Provide at all reasonable times access to the Works and to other places of the Contractor or subcontractors where work is being prepared for the Contract.

530 OVERTIME WORKING

- Notice: Prior to overtime being worked, submit details of times, types and locations of work to be done.
  - Minimum period of notice: two days
- Concealed work: If executed during overtime for which notice has not been given, it may be required to be opened up for inspection and reinstated at the Contractor's expense.

540 DEFECTS IN EXISTING WORK

- Undocumented defects: When discovered, immediately give notice. Do not proceed with affected related work until response has been received.
- Documented remedial work: Do not execute work which may:
  - Hinder access to defective products or work; or
  - Be rendered abortive by remedial work.

560 TESTS AND INSPECTIONS

- Timing: Agree and record dates and times of tests and inspections to enable all affected parties to be represented.
- Confirmation: One working day prior to each such test or inspection. If sample or test is not ready, agree a new date and time.
- Records: Submit a copy of test certificates and retain copies on site.

610 DEFECTIVE PRODUCTS/ EXECUTIONS

- Proposals: Immediately any work or product is known, or appears, to be not in accordance with the Contract, submit proposals for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution.
- Acceptability: Such proposals may be unacceptable and contrary instructions may be issued.

WORK AT OR AFTER COMPLETION

710 WORK BEFORE COMPLETION

- General: Make good all damage consequent upon the Works.
  Temporary markings, coverings and protective wrappings: Remove unless otherwise instructed.
- Cleaning: Clean the Works thoroughly inside and out, including all accessible ducts and voids. Remove all splashes, deposits, efflorescence, rubbish and surplus materials.
- Cleaning materials and methods: As recommended by manufacturers of products being cleaned, and must not damage or disfigure other materials or construction.
- COSHH dated data sheets: Obtain for all materials used for cleaning and ensure they are used only as recommended by their manufacturers.
- Minor faults: Touch up in newly painted work, carefully matching colour and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions.

- Moving parts of new work: Adjust, ease and lubricate as necessary to ensure easy and efficient operation, including doors, windows, drawers, ironmongery, appliances, valves and controls.

720 SECURITY AT COMPLETION

- General: Leave the Works secure with, where appropriate, all accesses closed and locked.
- Keys: Account for and adequately label all keys, and hand over together with an itemized schedule, retaining duplicate schedule signed as a receipt.

730 MAKING GOOD DEFECTS

- Remedial work: Arrange access with Client
- Rectification: Give reasonable notice for access to the various parts of the Works.
- Completion: Notify when remedial works have been completed.

A34 SECURITY/ SAFETY/ PROTECTION

SECURITY, HEALTH AND SAFETY

120 EXECUTION HAZARDS

- Common hazards: Not listed. Control by good management and site practice.

130 PRODUCT HAZARDS

- Hazardous substances: Site personnel levels must not exceed occupational exposure standards and maximum exposure limits stated in the current version of HSE document EH40: Workplace Exposure Limits.
- Common hazards: Not listed. Control by good management and site practice.

140 CONSTRUCTION PHASE HEALTH AND SAFETY PLAN

- Submission: Present to the Employer/ Client no later than _____.
- Confirmation: Do not start construction work until the Employer has confirmed in writing that the Construction Phase Health and Safety Plan includes the procedures and arrangements required by the CDM Regulations.
- Content: Develop the plan from and draw on the Outline Construction Phase Health and Safety Plan, clause A30/570, and the Pre-tender Health and Safety Plan/ Preconstruction information.

150 SECURITY

- Protection: Safeguard the site, the Works, products, materials, and any existing buildings affected by the Works from damage and theft.
- Access: Take all reasonable precautions to prevent unauthorized access to the site, the Works and adjoining property.

160 STABILITY

- Responsibility: Maintain the stability and structural integrity of the Works and adjacent structures during the Contract.
- Design loads: Obtain details, support as necessary and prevent overloading.

170 OCCUPIED PREMISES

- Extent: Existing buildings will be occupied and/ or used during the Contract as follows: Sports Pavilion and Storage Building
- Works: Carry out without undue inconvenience and nuisance and without danger to occupants and users.
- Overtime: If compliance with this clause requires certain operations to be carried out during overtime, and such overtime is not required for any other reason, the extra cost will be allowed, provided that such overtime is authorized in advance.

210 SAFETY PROVISIONS FOR SITE VISITS

- Safety: Submit details in advance of safety provisions and procedures (including those relating to materials, which may be deleterious), which will require their compliance when visiting the site.
- Protective clothing and/ or equipment: Provide and maintain on site for visitors to the site.

PROTECT AGAINST THE FOLLOWING

330 NOISE AND VIBRATION

- Standard: Comply with the recommendations of BS 5228-1, in particular clause 7.3, to minimize noise levels during the execution of the Works.
- Equipment: Fit compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.
- Restrictions: Do not use:
  - Radios or other audio equipment or permit employees to use in ways or at times that may cause nuisance.

340 POLLUTION

- Prevention: Protect the site, the Works and the general environment including the atmosphere, land, streams and waterways against pollution.
- Contamination: If pollution occurs inform immediately, including to the appropriate Authorities and provide relevant information.

350 PESTICIDES

- Use: Not permitted.

350 PESTICIDES

- Use: Only where specified or approved, and then only suitable products listed on www.pesticides.gov.uk.
- Restrictions: Work near water, drainage ditches or land drains must comply with the 'Guidelines for the use of herbicides on weeds in or near watercourses and lakes'.
- Containers: Comply with manufacturer's disposal recommendations. Remove from site immediately empty or no longer required.
- Competence: Operatives must hold a BASIS Certificate of Competence, or work under supervision of a Certificate holder.

360 NUISANCE

- Duty: Prevent nuisance from smoke, dust, rubbish, vermin and other causes.
- Surface water: Prevent hazardous build-up on site, in excavations and to surrounding areas and roads.

370 ASBESTOS CONTAINING MATERIALS

- Duty: Report immediately any suspected materials discovered during execution of the Works.
  - Do not disturb.
  - Agree methods for safe removal or encapsulation.

371 DANGEROUS OR HAZARDOUS SUBSTANCES

- Duty: Report immediately suspected materials discovered during execution of the Works.
  - Do not disturb.
  - Agree methods for safe removal or remediation.

375 ANTIQUITIES

- Duty: Report immediately any fossils, antiquities and other objects of interest or value discovered during execution of the Works.
- Preservation: Keep objects in the exact position and condition in which they were found.

380 FIRE PREVENTION

- Duty: Prevent personal injury or death, and damage to the Works or other property from fire.
- Standard: Comply with Joint Code of Practice 'Fire Prevention on Construction Sites', published by Construction Industry Publications and The Fire Protection Association (The 'Joint Fire Code').

390 SMOKING ON SITE

- Smoking on site: Not permitted.

400 BURNING ON SITE

- Burning on site: Not permitted.

410 MOISTURE

- Wetness or dampness: Prevent, where this may cause damage to the Works.
- Drying out: Control humidity and the application of heat to prevent:
  - Blistering and failure of adhesion.
  - Damage due to trapped moisture.
  - Excessive movement.

420 INFECTED TIMBER/ CONTAMINATED MATERIALS

- Removal: Where instructed to remove material affected by fungal/ insect attack from the building, minimize the risk of infecting other parts of the building.
- Testing: carry out and keep records of appropriate tests to demonstrate that hazards presented by concentrations of airborne particles, toxins and other micro organisms are within acceptable levels.

430 WASTE

- Includes: Rubbish, debris, spoil, surplus material, containers and packaging.
- General: Minimize production. Prevent accumulations. Keep the site and Works clean and tidy.
- Handling: Collect and store in suitable containers. Remove frequently and dispose of off-site in a safe and competent manner:
  - Non-hazardous material: In a manner approved by the Waste Regulation Authority.
  - Hazardous material: As directed by the Waste Regulation Authority and in accordance with relevant regulations.
- Recyclable material: Sort and dispose at a Materials Recycling Facility approved by the Waste Regulation Authority.
- Voids and cavities in the construction: Remove rubbish, dirt and residues before closing in.
- Waste transfer documentation: Retain on site.

440 ELECTROMAGNETIC INTERFERENCE

- Duty: Prevent excessive electromagnetic disturbance to apparatus outside the site.

470 INVASIVE SPECIES

- General: Prevent the spread of species (e.g. plants or animals) that may adversely affect the site or Works economically, environmentally or ecologically.
- Duty: Report immediately any suspected invasive species discovered during execution of the Works.
  - Do not disturb.
  - Agree methods for safe eradication or removal.

PROTECT THE FOLLOWING

510 EXISTING SERVICES

- Confirmation: Notify all service authorities, statutory undertakers and/ or adjacent owners of proposed works not less than one week before commencing site operations.
- Identification: Before starting work, check and mark positions of utilities/ services. Where positions are not shown on drawings obtain relevant details from service authorities, statutory undertakers or other owners.
- Work adjacent to services:
  - Comply with service authority's/ statutory undertaker's recommendations.
  - Adequately protect, and prevent damage to services: Do not interfere with their operation without consent of service authorities/ statutory undertakers or other owners.
- Identifying services:
  - Below ground: Use signboards, giving type and depth;
  - Overhead: Use headroom markers.
- Damage to services: If any results from execution of the Works:
  - Immediately give notice and notify appropriate service authority/ statutory undertaker.
  - Make arrangements for the work to be made good without delay to the satisfaction of service authority/ statutory undertaker or other owner as appropriate.
  - Any measures taken to deal with an emergency will not affect the extent of the Contractor's liability.
- Marker tapes or protective covers: Replace, if disturbed during site operations, to service authority's/ statutory undertakers recommendations.

520 ROADS AND FOOTPATHS

- Duty: Maintain roads and footpaths within and adjacent to the site and keep clear of mud and debris.
- Damage caused by site traffic or otherwise consequent upon the Works: Make good to the satisfaction of the Employer, Local Authority or other owner.

530 EXISTING TOPSOIL/ SUBSOIL

- Duty: Prevent over compaction of existing topsoil and subsoil in those areas which may be damaged by construction traffic, parking of vehicles, temporary site accommodation or storage of materials and which will require reinstatement prior to completion of the Works.
- Protection: Before starting work submit proposals for protective measures.

540 RETAINED TREES/ SHRUBS/ GRASSED AREAS

- Protection: Preserve and prevent damage, except those not required.
- Replacement: Mature trees and shrubs if uprooted, destroyed, or damaged beyond reasonable chance of survival in their original shape, as a consequence of the Contractor's negligence, must be replaced with those of a similar type and age at the Contractor's expense.

550 RETAINED TREES

- Protected area: Unless agreed otherwise do not:
  - Dump spoil or rubbish, excavate or disturb topsoil, park vehicles or plant, store materials or place temporary accommodation within an area which is the larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk.
  - Sever roots exceeding 25 mm in diameter. If unintentionally severed give notice and seek advice.
  - Change level of ground within an area 3 m beyond branch spread.

555 WILDLIFE SPECIES AND HABITATS

- Protected habitats and species: Upon discovery immediately advise. Do not proceed until instruction is received.
- Education: Ensure employees and visitors to the site receive suitable instruction and awareness training.

560 EXISTING FEATURES

- Protection: Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features, which are to remain in position during execution of the Works.

570 EXISTING WORK

- Protection: Prevent damage to existing work, structures or other property during the course of the work.
- Removal: Minimum amount necessary.
- Replacement work: To match existing.

630 EXISTING STRUCTURES

- Duty: Check proposed methods of work for effects on adjacent structures inside and outside the site boundary.
- Supports: During execution of the Works:
  - Provide and maintain all incidental shoring, strutting, needling and other supports as may be necessary to preserve stability of existing structures on the site or adjoining that may be endangered or affected by the Works.
  - Do not remove until new work is strong enough to support existing structure.
  - Prevent overstressing of completed work when removing supports.
- Adjacent structures: Monitor and immediately report excessive movement.
- Standard: Comply with BS 5975 and BS EN 12812.

640 MATERIALS FOR RECYCLING/ REUSE

- Duty: Sort and prevent damage to stated products or materials, clean off bedding and jointing materials and other contaminants.
- Storage: Stack neatly and protect until required by the Employer or for use in the Works as instructed.

A36 FACILITIES/ TEMPORARY WORK/ SERVICES

GENERALLY

110 SPOIL HEAPS, TEMPORARY WORKS AND SERVICES

- Location: Give notice and details of intended siting.
- Maintenance: Alter, adapt and move as necessary. Remove when no longer required and make good.

ACCOMMODATION

230 TEMPORARY ACCOMMODATION

- Accommodation made available by the Employer: The following may be used for the duration of the Contract without charge provided that:
  - It is used solely for the purposes of carrying out the Works.
  - The use to which it is put does not involve undue risk of damage.
  - Any temporary adaptations are approved by or on behalf of the Employer before being carried out.
  - It is vacated on completion of the Works or determination of the Contract.
  - When vacated, its condition is at least equivalent to its condition at the start of the Contract.
- Available services and facilities: None

230 TEMPORARY ACCOMMODATION

- Proposals for temporary accommodation and storage for the Works: Submit two weeks prior to starting on site.
- Details to be included: Type of accommodation and storage, its siting and the programme for site installation and removal.

TEMPORARY WORKS

310 ROADS

- Permanent roads, hard standings and footpaths on the site: The following may be used, subject to clause A34/520:
  - Details: _____.
  - Restrictions on use: _____.
  - Protective or remedial measures: _____.

340 NAME BOARDS/ ADVERTISEMENTS

- Name boards/ advertisements: Not permitted.

SERVICES AND FACILITIES

440 TELEPHONES

- Direct communication: As soon as practicable after the Date of Possession provide the Contractor's person in charge with a mobile telephone.

550 THERMOMETERS

- General: Provide on site and maintain in accurate condition a maximum and minimum thermometer for measuring atmospheric shade temperature, in an approved location.

570 PERSONAL PROTECTIVE EQUIPMENT

- General: Provide for the sole use of other members of the project team, in sizes to be specified:
  - Safety helmets to BS EN 397, neither damaged nor time expired. Number required: 5
  - High visibility waistcoats to BS EN ISO 20471 - Number required: 5
  - Safety boots with steel insole and toecap to BS EN ISO 20345. Pairs required: TBA
  - Disposable respirators to BS EN 149.FFP1S.
  - Eye protection to BS EN 166.
  - Ear protection - muffs to BS EN 352-1, plugs to BS EN 352-2
  - Hand protection - to BS EN 388, 407, 420 or 511, as appropriate.

A37 OPERATION/ MAINTENANCE OF THE FINISHED WORKS

GENERALLY

110 THE BUILDING MANUAL

- Responsibility: Contractor
- Content: Obtain and provide comprehensive information for owners and users of the completed Works. Include an overview of the main design principles and describe key components and systems within the finished Works, so affording a complete understanding of the Works, including all buildings and their systems to enable efficient and safe operation and maintenance.
- Format: Paper and electronic
- Number of copies: one plus one
- Delivery to: Client by (date) one week after PC

115 THE HEALTH AND SAFETY FILE

- Responsibility: Contractor
- Format: Paper and electronic
- Delivery to: Client By (date): one week after PC

155 CONTENT OF THE BUILDING MANUAL

- General: Details of the property, the parties, fire safety strategy, operational requirements and constraints of a general nature.
- Building fabric: Design criteria, maintenance details, product details, and environmental and trafficking conditions.
- Building services: Description and operation of systems, diagrammatic drawings, record drawings, identification of services, product details, equipment settings, maintenance schedules, consumable items, spares and emergency procedures.
- Documentation: Guarantees, warranties, maintenance agreements, test certificates and reports.

160 PRESENTATION OF BUILDING MANUAL

- Format: A4 size, plastics covered, loose leaf, four ring binders with hard covers, each indexed, divided and appropriately cover titled.
- Selected drawings needed to illustrate or locate items mentioned in the Manual: Where larger than A4, to be folded and accommodated in the binders so that they may be unfolded without being detached from the rings.
- As-built drawings: The main sets may form annexes to the Manual.

A40 CONTRACTOR'S GENERAL COST ITEMS: MANAGEMENT AND STAFF

110 MANAGEMENT AND STAFF

- Cost significant items: _____.

A41 CONTRACTOR'S GENERAL COST ITEMS: SITE ACCOMMODATION

110 SITE ACCOMMODATION

- Details: Site accommodation required or made/ not made available by the Employer: See section A36.
- Cost significant items: _____.

A42 CONTRACTOR'S GENERAL COST ITEMS: SERVICES AND FACILITIES

110 SERVICES AND FACILITIES

- Details: Services or facilities required or made/ not made available by the Employer: See section A36.
- Cost significant items: _____.

A43 CONTRACTOR'S GENERAL COST ITEMS: MECHANICAL PLANT

110 MECHANICAL PLANT

- Cost significant items: _____.

A44 CONTRACTOR'S GENERAL COST ITEMS: TEMPORARY WORKS

110 TEMPORARY WORKS

- Details: Temporary works required or made/ not made available by the Employer: See section A36.
- Cost significant items: _____.

Scope of Works and Summary

Project: STANLEY PARK STORAGE BUILDING
Issue: Section 3 - Schedule of Works
Date: March 2023

ELEMENTAL BREAKDOWN

Ref	Item Description	Quantity	Unit	Rate £	Total £	Total Section £
	Refer to drawings and specifications for all works					
	Review structural engineer's plans of the ground slab and confirm suitability for loadings and dimensions. Advise any discrepancies	Item				
	Provide production drawings for review and comment; make revisions as necessary	Item				
	Supply and deliver storage building 'kit' comprising non-insulated walls and non-insulated roof as shown on attached drawings and to match existing building on site Approx Span (width) 11.7M Approx Length 11.7M Approx Eaves height 4M Approx Roof Pitch 10Deg Approx Ridge height 5M Wall material 0.5mm thick AS24/1000 Plastisol coated steel panel. Roof material 0.7mm thick AS30/1000 box roof, Plastisol coated steel panel with anticondensation barrier One personnel door, outward opening (contrasting colour finish) Roller doors. 1no. Industrial quality, non-insulated, chain driven roller door 4.3M wide x 3.3m high Three translucent rooflights to each slope for full length of slope Industrial class building with all steelwork to UKCA certificate 1224-CPR-0615d	Item				
	Prior to delivery of the kit to site, visit site to check access and erection methodology as well as the suitability of the installed ground slab	Item				

Project: STANLEY PARK STORAGE BUILDING
Issue: Section 3 - Schedule of Works
Date: March 2023

ELEMENTAL BREAKDOWN

Ref	Item Description	Quantity	Unit	Rate £	Total £	Total Section £
	Refer to drawings and specifications for all works					
	Install building 'kit' onto new ground slab (laid by others). Note that no bolt boxes or similar will have been cast into the slab. Installation to include roller door and personnel door	Item				
	Provide product guarantee for building; details to be provided	Item				
	Supply and install rainwater goods; downpipes to suit rain water gullies laid by others.	Item				
					Carried to summary	

Project:	**STANLEY PARK STORAGE BUILDING**
Issue:	**Section 3 - General Summary**
Date:	**March 2023**

Construction Cost Summary

1	**Construction Costs**			£
	From breakdwon on previous pages			
	Provisional Sum:			
	Supply and install rainwater goods to existing/adjacent maintenance building			2,000.00
	Sub Total			
2	**Preliminaries**			
	Preliminaries (build-up to be provided)			
	Sub Total			
3	Contractors OH & P (state percentage)		%	
	Total Tender Cost (Excl. VAT)			£

Tender Drawings and Documents

GROUNDWORKS ASSOCIATED WITH THE INSTALLATION OF A STORAGE BUILDING AT STANLEY PARK, CHIPPENHAM

APPENDIX ONE – DRAWING LIST

GIRAFFE ENGINEERING – STRUCTURAL DRAWINGS

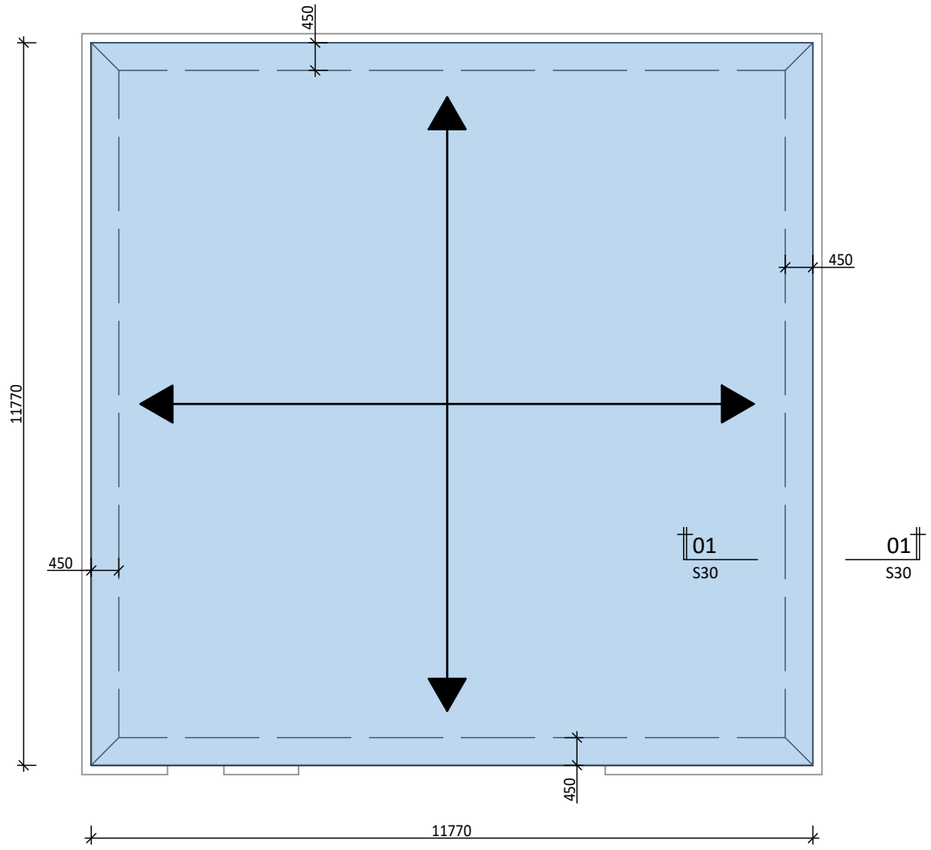
- 1196GE Structural Drawings-S01
- 1196GE Structural Drawings-S30
- 1196GE-02 Stanley Park, Chippenham - Giraffe Design Statement
- 1196GE-03 Stanley Park, Chippenham - Giraffe Structural Calculations

RAPPOR – DRAINAGE DRAWINGS

- 22-0447-C100 Engineering Layout
- 22-0447-C110 Details Sheet 1
- 22-0447-C111 Details Sheet 2

PLANNING DRAWINGS

- 996-04 PROPOSED-SITE PLAN 22-12-21
- 996-05 PROPOSED-PLAN 21-12-21
- 996-06 PROPOSED-ELEVATIONS 21-12-21
- 996-07 LOCATION+BLOCK PLAN 22-12-21



RAFT SLAB NOTES:

1. ANY COLUMN BASE PLATES TO BE PLACED WITHIN RAFT EDGE THICKENING ENVELOPE.
2. RAFT SLAB TO HAVE TROWELLED FINISH:
   2.1. SURFACE ON COMPLETION: UNIFORM AND SMOOTH, FREE FROM TROWEL MARKS AND BLEMISHES.
3. ALL TOP SOIL TO BE REMOVED AND REPLACED WITH WELL COMPACTED HARDCORE.
4. LARGE SOFT POCKETS TO BE REPORTED TO ENGINEER.
5. SUPERSTRUCTURE DESIGNED BY OTHERS.
6. GRADE RC28/35 CONCRETE.
7. A393 MESH TO TOP (40mm COVER)
8. REINFORCED EDGE BEAM: SEE DRAWING S30

DESIGN UNFACTORED LOADING:

ALLOWABLE DESIGN LOAD FROM SUPERSTRUCTURE:

POINT LOAD IN CORNER OF SLAB:
DEAD LOAD = 9 kN
IMPOSED LOAD = 11 kN

POINT LOAD ALONG SLAB EDGE:
DEAD LOAD = 18 kN
IMPOSED LOAD = 22 kN

LINE LOAD ALONG SLAB EDGE:
DEAD LOAD = 3.0 kN/m
IMPOSED LOAD = 2.5 kN/m

ALLOWABLE DESIGN IMPOSED LOAD ON SLAB:
MAX VEHICLE GROSS WEIGHT = 7.5 TONNES
MAX UDL ON SLAB = 5.0 kN/m²
MAX POINT LOAD ON SLAB = 20 kN

IF LOADINGS DIFFER SIGNIFICANTLY, REPORT TO ENGINEER

GENERAL NOTES

1. DIMENSIONS ON THIS DRAWING SHALL NOT BE SCALED.
2. ALL DIMENSIONS TO BE CHECKED ON SITE.
3. ALL DIFFERENCES BETWEEN THIS DOCUMENTATION AND CONDITIONS ON SITE MUST BE IMMEDIATELY REPORTED TO ENGINEER.
4. ALL TEMPORARY WORKS ARE TO BE DESIGNED AND CARRIED OUT BY APPOINTED CONTRACTOR.

SPECIFICATION

DRAWINGS TO BE READ IN CONJUNCTION WITH DESIGN STATEMENT

LEGEND

200mm THK RC28/35 GROUND BEARING RAFT SLAB WITH 600mm DP x 450mm WD EDGE THICKENING. CAST ON 50mm SAND BLINDING AND 450mm WELL COMPACTED HARDCORE. ALL TOP SOIL REMOVED AND REPLACED WITH WELL COMPACTED HARDCORE. COVER AND REINFORCEMENT REFER TO SPECIFICATION

Rev.	Description	Date	Author
/	FIRST ISSUE	10.11.22	KP

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PROJECT NAME	PROJECT No.
STANLEY PARK	1196GE

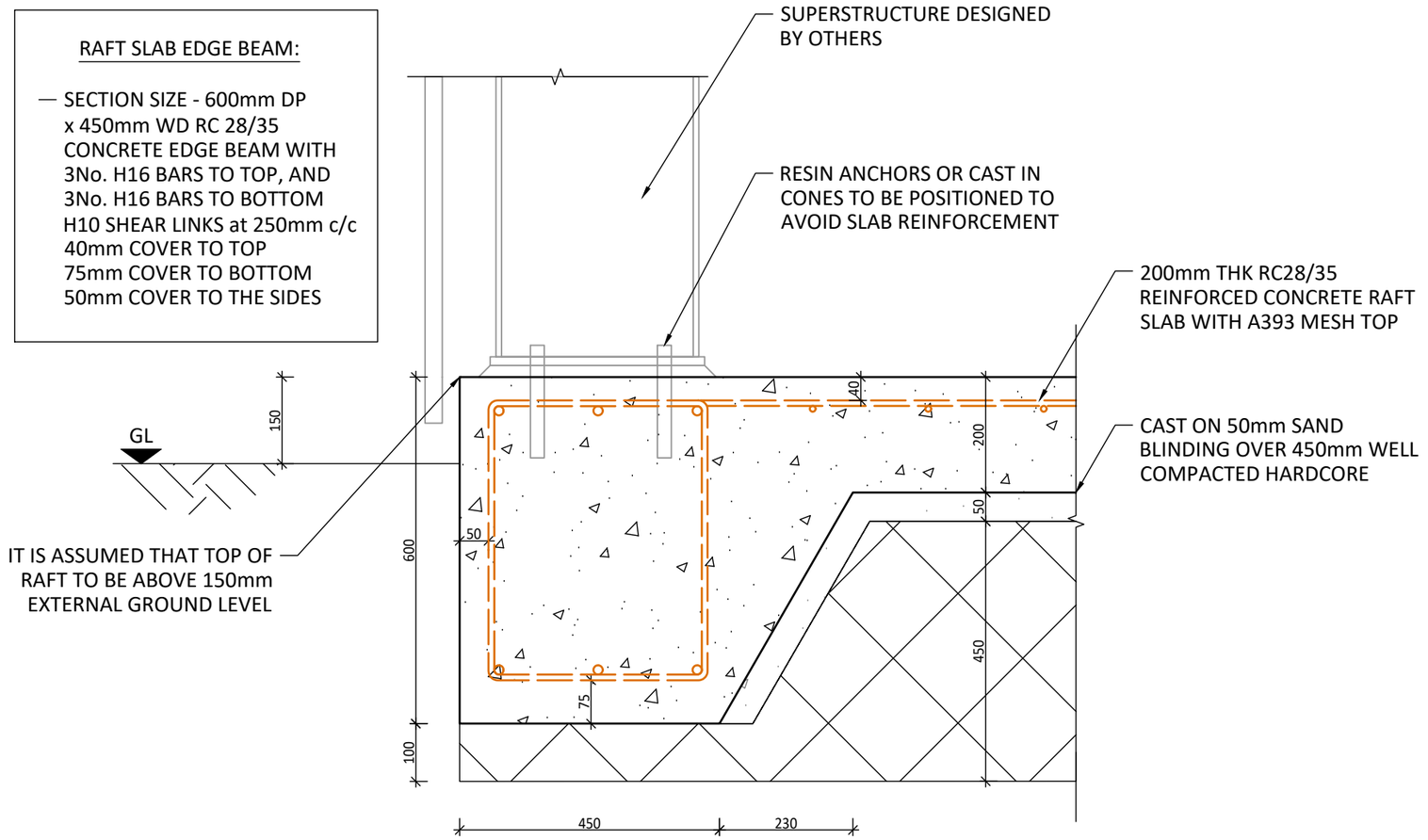
DRAWING NAME: FOUNDATION PLAN

DRAWN BY	APPROVED BY	DRAWING No.	REVISION
KP	RP	S01	/
SCALE: 1:100 @ A3	DATE CREATED: NOVEMBER 2022		

TENDER

RAFT SLAB EDGE BEAM:

— SECTION SIZE - 600mm DP x 450mm WD RC 28/35 CONCRETE EDGE BEAM WITH
3No. H16 BARS TO TOP, AND
3No. H16 BARS TO BOTTOM
H10 SHEAR LINKS at 250mm c/c
40mm COVER TO TOP
75mm COVER TO BOTTOM
50mm COVER TO THE SIDES



DETAIL 01

RAFT EDGE BEAM
SCALE 1:10

GENERAL NOTES

1. DIMENSIONS ON THIS DRAWING SHALL NOT BE SCALED.
2. ALL DIMENSIONS TO BE CHECKED ON SITE.
3. ALL DIFFERENCES BETWEEN THIS DOCUMENTATION AND CONDITIONS ON SITE MUST BE IMMEDIATELY REPORTED TO ENGINEER.
4. ALL TEMPORARY WORKS ARE TO BE DESIGNED AND CARRIED OUT BY APPOINTED CONTRACTOR.

SPECIFICATION

DRAWINGS TO BE READ IN CONJUNCTION WITH DESIGN STATEMENT

Rev.	Description	Date	Author
/	FIRST ISSUE	10.11.22	KP

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PROJECT NAME	PROJECT No.
STANLEY PARK	1196GE

DRAWING NAME: SUBSTURCUTRE DETAIL

TENDER

DRAWN BY	APPROVED BY	DRAWING No.	REVISION
KP	RP	S30	/
SCALE: 1:10 @ A3	DATE CREATED: NOVEMBER 2022		

1196GE – Stanley Park, Chippenham SN15 3RR

DESIGN STATEMENT AND SPECIFICATIONS

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Document

Project name	Stanley Park
Project ref	1196GE
Project address	Stanley Park Sports Ground, Stanley Lane, Chippenham SN15 3RR
Document name	Design Statement and Specifications
Document ref	1196GE-02
Document author	Konstantin Prochorenko MEng (Hons)
Approved by	Ralph Pelly MEng (Hons) CEng MIStructE

Version Control

Version	Date	Authorised	Description
1	10/11/22	Ralph Pelly	Tender issue

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Contents

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1 Introduction

The purpose of this report is:

- To convey the structural design information in respect of our scope of services to all parties including the client, contractor, architect, and other project members,
- To provide sufficient design information and supporting calculations to allow checking and approval of the design in accordance with the Building Regulations,

The contractor undertaking the works must read the design statement, structural specifications, and structural drawings in full, in conjunction with all other relevant information provided by the client, architect and other project members.

The structural calculations and supporting literature are provided for the benefit of the checking engineer and Building Control Officer.

This report has been prepared by Giraffe Engineering for use solely in relation to the client and project named above. Giraffe Engineering accepts no duty or responsibility to any party other than the named client and disclaims all liability of any nature whatsoever to any such party in respect of this report.

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1 Design Statement

1.1 General Project Information

1.1.1 The Project

A new maintenance storage building for vehicles as equipment. The superstructure will be a single storey steel frame, designed by others. The substructure is a reinforced concrete raft slab.

1.1.2 The Site

The site is relatively flat. Trial pitting was undertaken and soil encountered was up to 0.2m hardcore, 0.2m stoney clay made ground overlaying slightly sandy silty brown CLAY, representing the Kellaway sands/clay member. An allowable bearing pressure of 50 kPA has been assumed for design purposes.

It is assumed that the sandy clay has medium shrinkability.

1.1.3 The Structure

The new maintenance storage building is designed by others. Giraffe Engineering have designed raft slab to support lightweight steel structure and maintenance vehicles up to 7.5 tonnes.

1.2 Scope of Services

The scope of services provided by Giraffe Engineering are as follows:

- Structural Design:
    - New substructure

Design new superstructure and specification of the following items is not included in our scope of services:

- Below ground drainage design:
    - Design of all private below ground foul and surface water drainage in accordance with Building Regulations Part H.
- Finishes, cladding, waterproofing, ventilation, fire protection, glazing, partitions, handrails, parapets, stairs, external landscaping, decking, patios.

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1.3 Design Parameters

1.3.1 Design Loads

Allowable design load from superstructure:

- Point Load in corner of slab:
  - Dead Load = 9kN
  - Imposed Load = 11kN
- Point Load along slab edge:
  - Dead Load = 18kN
  - Imposed Load = 22kN
- Line Load along slab edge:
  - Dead Load = 3kN/m
  - Imposed Load = 2.5kN/m

Allowable design Imposed Load on slab:

- MAX Vehicle gross weight = 7.5 tonnes
- MAX UDL on slab = 5kN/m²
- MAX Point Load on slab = 20kN

1.3.2 Design Working Life

The design working life of the structural proposals is 50 years, in accordance with BS EN 1990 Table 2.1 Category 4, 'normal' category of building.

1.3.3 Fire Resistance

Fire protection is to architect's specification.

1.3.4 Design Standards

The structural design has been carried out in accordance with the following standards:

- BS EN 1990 Basis of structural design
- BS EN 1991-1-1 Actions on structures – Building loads
- BS EN 1991-1-3 Actions on structures – Snow loads
- BS EN 1991-1-4 Actions on structures – Wind loads
- BS EN 1992-1-1 Design of concrete structures
- BS EN 1993-1-1 Design of steel structures
- BS EN 1995-1-1 Design of timber structures
- BS EN 1996-1-1 Design of masonry structures
- Building Regulations – Approved document A

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1.4 Construction

1.4.1 Contractor designed elements

Contractor designed elements are listed below:

1. Temporary works
2. Superstructure

Where applicable, Giraffe Engineering will review fabrication drawings for design conformity and general conformance to contract documents only. The contractor is responsible for confirming dimensions and full compliance with contract documents.

1.4.2 Access Restrictions

The site is directly off A4 on the south eastern edge of Chippenham. There are no known restrictions for access to the property.

1.4.3 Phasing

The design proposals have been prepared on the understanding that all works are to be undertaken in one phase. Giraffe Engineering should be consulted if the works are to be undertaken in multiple phases.

1.4.4 Sequencing & Temporary Works

Suggested sequencing is for guidance only. The contractor is responsible for planning and undertaking the work in a safe manner, ensuring temporary works are suitably designed and the stability of the structure is maintained throughout construction. Construction is assumed to proceed in the traditional manner, proceeding from the foundations up to the roof structure.

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1.5 Health, Safety and Environment

1.5.1 CDM Regulations

Giraffe Engineering will perform its duties as a designer under the CDM Regulations 2015.

The client must be aware of their role under the CDM Regulations. Please refer to *Industry guidance for clients (CDM15/1), HSE* for further guidance.

Principal Designer duties will be performed by the architect.

1.5.2 Designer's Risk Assessment

Ref	Description of hazard/risk	Mitigation measures
1	Normal construction site hazards created by process and materials being used (dust, injury etc)	Contactor to ensure safe working methods, and appropriate personal protective equipment (PPE) is utilised.
2	Temporary stability of the structure during construction	The contractor is responsible for design and implementation of all temporary works. These works must ensure that stability is maintained throughout the construction phase.
3	Excavations	No persons to enter excavations which are unstable or deeper than 900mm without appropriate shoring/propping.

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2 Structural Specifications

1. General

1.1. These specifications must be read by the contractor in full and in conjunction with the design statement, the accompanying set of structural drawings, and in conjunction drawings and specifications produced by the architect and/or all other project design team members. Any questions or discrepancies should be reported to Giraffe Engineering.

2. Excavation and Filling

2.1. Hardcore:

2.1.1. Granular sub-base material to Type 1 of the Department of Transport Specification for Highway Works (Clause 803).

2.1.2. Compact in layers maximum 150mm thick.

2.2. Sand blinding:

2.2.1. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.

2.2.2. Permissible deviations on surface level: +0, -25mm.

3. Concrete

3.1. Reinforced concrete raft slab:

3.1.1. Grade RC28/35

3.1.2. Cement and combination type IIIA: 36% to 65% ground granulated blastfurnace slag.

3.1.3. Thickness: Refer to drawings.

3.1.4. Tolerances: Level of slab +/- 12mm, steps in slab +/- 3mm.

3.1.5. Worked finish: Trowelled finish.

3.1.6. Surface on completion: Uniform and smooth, free from towel marks and blemishes.

3.1.7. Reinforcement: A393 Mesh to top.

3.1.8. Cover to reinforcement: 40mm to top and 50mm to sides.

3.2. Reinforced concrete raft slab edge thickening:

3.2.1. Grade RC28/35.

3.2.2. Cement and combination type IIIA: 36% to 65% ground granulated blastfurnace slag.

3.2.3. Dimensions: Refer to drawings.

3.2.4. Reinforcement: 3No. H16 Bars top and bottom with 2No. legs 10mm DIA at 250mm centres

3.2.5. Cover to reinforcement: 75mm to bottom, 50mm to sides and 40mm to top

3.3. Steel reinforcement:

3.3.1. Ribbed bar reinforcement Grade B500B, standard fabric reinforcement Grade B500A (to BS 4449).

3.3.2. Minimum reinforcement laps: 40 x bar diameter

3.4. Chemical anchors into concrete:

3.4.1. Option 1: Hilti HIT-HY 200 resin with HIT-V 5.8 threaded anchors.

3.4.2. Option 2: Rawlplug R-KEM II resin with grade 5.8 threaded anchors.

3.4.3. Option 3: Wurth WIT VM-250 resin with W-VD-A/S 5.8 threaded anchors.

3.4.4. 85mm embedment depth into concrete unless noted otherwise.

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STRUCTURAL CALCULATIONS

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Document

Project name	Stanley Park
Project ref	1196GE
Project address	Stanley Park Sports Ground, Stanley Lane, Chippenham SN15 3RR
Document name	Structural Calculations
Document ref	1196GE-03
Document author	Konstantin Prochorenko MEng (Hons)
Approved by	Ralph Pelly MEng (Hons) CEng MIStructE

Version Control

Version	Date	Authorised	Description
1.0	10/11/22	Ralph Pelly	First issue

Stanley Park, Chippenham
STRUCTURAL CALCULATIONS

1 Introduction

1.1 Project Description

A new maintenance storage building is being built. Giraffe Engineering are undertaking the sub-structure design for this project.

1.2 Design Standards

The structural design has been carried out in accordance with the following standards:

BS EN 1990 Basis of structural design
BS EN 1991-1-1 Actions on structures – Building loads
BS EN 1991-1-3 Actions on structures – Snow loads
BS EN 1991-1-4 Actions on structures – Wind loads
BS EN 1992-1-1 Design of concrete structures
BS EN 1993-1-1 Design of steel structures
BS EN 1995-1-1 Design of timber structures
BS EN 1996-1-1 Design of masonry structures
Building Regulations – Approved document A

1.3 Design Working Life

The design working life of the structural proposals is 50 years, in accordance with BS EN 1990 Table 2.1 Category 4, 'normal' category of building.

1.4 Deflection limits

Standard deflection limits have been adopted, as per the recommendation given in the Eurocodes including their National Annexes.

1.5 Disproportionate Collapse

The building is Class 1 in accordance with the Building Regulations, therefore no additional measures are required beyond the standard detailing which has been followed.

2 Loading

2.1 Dead Load

Wall panels (sheet metal) = 0.6 kN/m²
Roof panels with light services = 0.5kN/m²

2.2 Live Load

Imposed load = 0.6 kN/m^2 (Category H, Roof maintenance only)
Vehicle imposed load = 5kN/m² (Category G, for vehicles gross weight up to 7.5t)
Vehicle imposed point load = 20kN (limited to 7.5t vehicles)

2.3 Wind Load and Snow Load

Wind and Snow Loading are out of scope for this calculation.

3 Stability

The stability of the structure is designed by others.

4 Raft slab design

4.1 Soil parameters overview

The soil at the base of the slab is a brown silty slightly sandy firm CLAY at depth of 0.75m

Assumed ground bearing capacity = 50 kN/m²

Assumed circle of depression is 3500mm

4.2 Slab loading

PL (vehicle, imposed loading) = 20 kN at 0.2m x 0.2m square

Area load (vehicle, imposed loading) = 5kN/m²

Edge Line Load (DL) = 0.6kN/m² x 5m = 3kN/m

Edge Line Load (wind load) = 1.0kN/m² x 2.5m = 2.5kN/m

Edge PL (DL, Frame) = 6m x 6m x 0.5kN/m² = 18kN

Edge PL (LL, Frame) = 6m x 6m x 0.6kN/m² = 21.6kN

Corner PL (DL, Frame) = 3m x 6m x 0.5kN/m² = 9kN

Corner PL (LL, Frame) = 3m x 6m x 0.6kN/m² = 11kN

USE 200mm THK RC28/35 GROUND BEARING SLAB WITH A393 MESH TO MIDDLE
WITH 600 DP x 450 WD EDGE THICKENING, 3No, H16 BARS TOP AND BOTTOM WITH 2No. 10mm DIA LEGS
Min. 450mm TYPE 1 SUBASE UNDERNEATH THE SLAB
(see ref: C401)

Giraffe Engineering 5 Union Road Chippenham Wiltshire SN15 1HW	Project Stanley Park			Job Ref. 1196GE	
	Section C401 - Raft Slab			Sheet no./rev. 1	
	Calc. by KP	Date 08/11/2022	Chk'd by RP	Date	App'd by	Date

RC RAFT FOUNDATION (EN1992)

RC RAFT FOUNDATION

In accordance with EN1992-1-1:2004 incorporating Corrigenda January 2008 and the UK national annex

Tedds calculation version 1.0.00

Design summary

Overall design status	PASS
Overall design utilisation	0.935

Slab

Description	Unit	Provided	Required	Utilisation	Result
Bearing load 1	kN/m^2	50.0	36.9	0.737	PASS
Top reinforcement	mm^2/m	393	207	0.526	PASS
Shear resistance	kN/m	74.2	63.5	0.855	PASS
Span to depth ratio		16.0	10.3	0.646	PASS

Edge/corner beam

Description	Unit	Provided	Required	Utilisation	Result
Bearing pressure (edge)	kN/m^2	50	35	0.694	PASS
Top reinforcement (edge)	mm^2	603	440	0.730	PASS
Bottom reinforcement (edge)	mm^2	603	475	0.787	PASS
Shear reinforcement (edge)	mm^2/m	628	360	0.573	PASS
Top reinf. bearing (corner)	mm^2	603	466	0.773	PASS
Top reinforcement (corner)	mm^2	603	564	0.935	PASS
Shear reinforcement (corner)	mm^2/m	628	360	0.573	PASS
Span to depth ratio (corner)		16.0	5.0	0.314	PASS

Concrete details - Table 3.1. Strength and deformation characteristics for concrete

Concrete strength class	C25/30
Aggregate type	Quartzite
Aggregate adjustment factor - cl.3.1.3(2)	AAF = **1.0**
Characteristic compressive cylinder strength	f_{ck} = **25** N/mm^2
Mean value of compressive cylinder strength	$f_{cm} = f_{ck} + 8$ N/mm^2 = **33** N/mm^2
Mean value of axial tensile strength	$f_{ctm} = 0.3$ N/mm^2 $\times$ $(f_{ck}/ 1$ N/mm$^2)^{2/3}$ = **2.6** N/mm^2
Secant modulus of elasticity of concrete	$E_{cm} = 22$ kN/mm$^2 \times (f_{cm} / 10$ N/mm$^2)^{0.3} \times$ AAF = **31476** N/mm^2
Ultimate strain - Table 3.1	ε_{cu2} = **0.0035**
Shortening strain - Table 3.1	ε_{cu3} = **0.0035**
Effective compression zone height factor	λ = **0.80**
Effective strength factor	η = **1.00**
Coefficient k_1	k_1 = **0.40**
Coefficient k_2	$k_2 = 1.0 \times (0.6 + 0.0014 / \varepsilon_{cu2})$ = **1.00**
Coefficient k_3	k_3 = **0.40**
Coefficient k_4	$k_4 = 1.0 \times (0.6 + 0.0014 / \varepsilon_{cu2})$ = **1.00**
Partial factor for concrete -Table 2.1N	γ_C = **1.50**
Compressive strength coefficient - cl.3.1.6(1)	α_{cc} = **0.85**
Design compressive concrete strength - exp.3.15	$f_{cd} = \alpha_{cc} \times f_{ck} / \gamma_C$ = **14.2** N/mm^2
Compressive strength coefficient - cl.3.1.6(1)	α_{ccw} = **1.00**
Design compressive concrete strength - exp.3.15	$f_{cwd} = \alpha_{ccw} \times f_{ck} / \gamma_C$ = **16.7** N/mm^2
Maximum aggregate size	h_{agg} = **20** mm
Monolithic simple support moment factor	β_1 = **0.25**

Density of reinforced concrete ρ_{conc} = **24.5** kN/m^3

Reinforcement details

Characteristic yield strength of reinforcement f_{yk} = **500** N/mm^2

Partial factor for reinforcing steel - Table 2.1N γ_S = **1.15**

Design yield strength of reinforcement $f_{yd} = f_{yk} / \gamma_S$ = **435** N/mm^2

Soil properties

Allowable bearing pressure q_{allow} = **50.0** kN/m^2

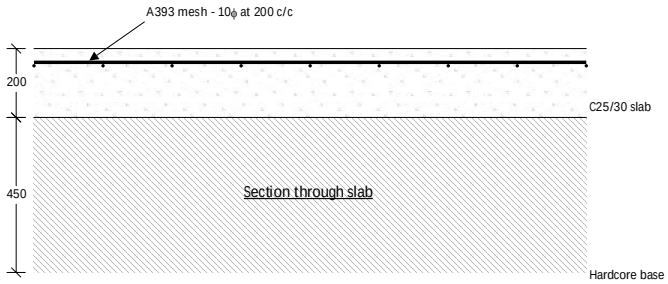
Soil classification D - Two or more variable soil types with variable density

Density of hardcore/compacted fill ρ_{fill} = **20.0** kN/m^3

Angle of dispersal through fill from horizontal α_{fill} = **60.0** deg

Assumed diameter of depression ϕ_{dep_basic} = **3500** mm

Slab details



Slab thickness h_{slab} = **200** mm

Hardcore thickness h_{fill_slab} = **450** mm

Diameter of depression modified for hardcore $\phi_{dep\_slab} = \phi_{dep\_basic} - h_{fill\_slab\_b1}$ = **3050** mm

Nominal cover to slab top reinforcement $c_{nom\_slab\_t}$ = **35** mm

Nominal cover to slab bottom reinforcement $c_{nom\_slab\_b}$ = **40** mm

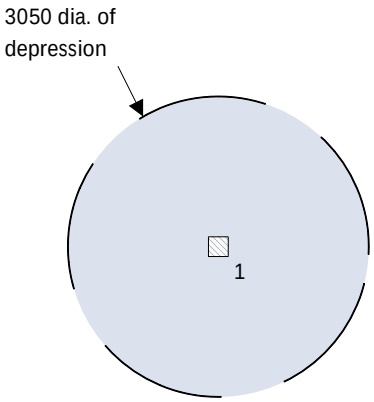
Top reinforcement provided A393 mesh - 10ϕ at 200 c/c

Area of top reinforcement provided $A_{s,prov\_t\_slab}$ = **393** mm^2/m

Average effective depth of top reinforcement $d_{avg\_t\_slab} = h_{slab} - c_{nom\_slab\_t} - \phi_{t\_slab}$ = **155** mm

Minimum effective depth of top reinforcement $d_{min\_t\_slab} = h_{slab} - c_{nom\_slab\_t} - 1.5 \times \phi_{t\_slab}$ = **150** mm

Loading



Slab UDL's

Permanent UDL 2.0 kN/m^2

Variable UDL 5.0 kN/m^2

Additional loading

1 - Vehicle Point Load: F_{Qk} 20.0 kN

Slab loading details

No.	Load type	Permanent	Variable	Width x	Width y
1	Vehicle Point Load	0.0 kN	20.0 kN	200 mm	200 mm

Slab UDL loading

Permanent UDL to slab — w_{G_slab} = **2.0** kN/m²

Variable UDL to slab — w_{Q_slab} = **5.0** kN/m²

Slab design check

Slab self weight — $w_{slab} = \rho_{conc} \times h_{slab}$ = **4.9** kN/m²

Slab fill self weight — $w_{fill\_slab} = \rho_{fill} \times h_{fill\_slab}$ = **9.0** kN/m²

Total uniform load at formation level — $F_{slab} = w_{slab} + w_{fill\_slab} + w_{G\_slab} + w_{Q\_slab}$ = **20.9** kN/m²

Bearing pressure beneath load 1

Effective loaded area — $A_{load\_1\_slab} = (b_{PLx\_1\_slab} + 2 \times (h_{slab} + h_{fill\_slab} / \tan(\alpha_{fill}))) \times (b_{PLy\_1\_slab} + 2 \times (h_{slab} + h_{fill\_slab} / \tan(\alpha_{fill})))$ = **1253538** mm²

Bearing pressure at formation level — $q_{max\_1\_slab} = (F_{Gk,point\_1\_slab} + F_{Qk,point\_1\_slab}) / A_{load\_1\_slab} + F_{slab}$ = **36.9** kN/m²

PASS - allowable bearing pressure exceeds bearing pressure at formation level beneath load 1

Self weight and UDL forces in slab

Effective span of slab — $l_{eff\_slab} = (\phi_{dep\_slab} + d_{avg\_t\_slab}) / 2$ = **1602** mm

Ultimate applied self weight and UDL's — $F_{ult\_slab} = 1.35 \times (w_{slab} + w_{G\_slab}) + 1.50 \times w_{Q\_slab}$ = **16.8** kN/m²

Moment at edge of depression — $M_{neg\_slab} = (F_{ult\_slab} \times \pi \times l_{eff\_slab}^2) \times (l_{eff\_slab} / 3) / (2 \times \pi \times l_{eff\_slab})$ = **7.2** kNm/m

Shear force at edge of depression — $V_{slab} = F_{ult\_slab} \times l_{eff\_slab} / 2$ = **13.5** kN/m

Forces in slab due to load 1

Ultimate applied load — $F_{ult\_1\_slab} = 1.35 \times F_{Gk,point\_1\_slab} + 1.50 \times F_{Qk,point\_1\_slab}$ = **30.0** kN

Moment at edge of depression — $M_{neg\_1\_slab} = F_{ult\_1\_slab} \times l_{eff\_slab} / (2 \times \pi \times l_{eff\_slab})$ = **4.8** kNm/m

Minimum dispersal width for shear — $b_{v\_1\_slab} = \min(b_{PLx\_1\_slab} + 2 \times b_{PLy\_1\_slab}, b_{PLy\_1\_slab} + 2 \times b_{PLx\_1\_slab})$ = **600** mm

Shear force at edge of depression — $V_{1\_slab} = F_{ult\_1\_slab} / b_{v\_1\_slab}$ = **50.0** kN/m

Total forces in slab

Moment at edge of depression — $M_{neg\_total\_slab} = M_{neg\_slab} + M_{neg\_1\_slab}$ = **12.0** kNm/m

Shear force at edge of depression — $V_{total\_slab} = V_{slab} + V_{1\_slab}$ = **63.5** kN/m

Reinforcement required in top of slab for bending

$K_{total\_t\_slab} = M_{neg\_total\_slab} / (d_{min\_t\_slab}^2 \times f_{ck})$ = **0.021**

$K' = (2 \times \eta \times \alpha_{cc} / \gamma_C) \times (1 - \lambda \times (\delta - k_1) / (2 \times k_2)) \times (\lambda \times (\delta - k_1) / (2 \times k_2))$ = **0.207**

Lever arm — $z_{total\_t\_slab} = \min(0.5 \times d_{min\_t\_slab} \times [1 + (1 - 2 \times K_{total\_t\_slab} / (\eta \times \alpha_{cc} / \gamma_C))^{0.5}], 0.95 \times d_{min\_t\_slab})$ = **143** mm

Minimum area of reinforcement required — $A_{s,min\_total\_t\_slab} = \max(0.26 \times f_{ctm} / f_{yk}, 0.0013) \times d_{avg\_t\_slab}$ = **207** mm²/m

Area of tension reinforcement required — $A_{s,req\_total\_t\_slab} = M_{neg\_total\_slab} / (f_{yd} \times z_{total\_t\_slab})$ = **193** mm²/m

PASS - Area of reinforcement provided exceeds area of reinforcement required

Shear resistance with no shear reinforcement

Strength reduction factor — $v_1 = 0.6 \times (1 - f_{ck} / 250\ N/mm^2)$ = **0.540**

Max allowable design shear force (cl.6.2.2) — $V_{Ed,max\_slab} = 0.5 \times d_{min\_t\_slab} \times v_1 \times f_{cwd}$ = **675** kN/m

PASS - Design shear force in slab is less than the maximum allowable shear force

Reinforcement ratio — $\rho_{l\_slab} = \min(A_{s,prov\_t\_slab} / d_{min\_t\_slab}, 0.02)$ = **0.00262**

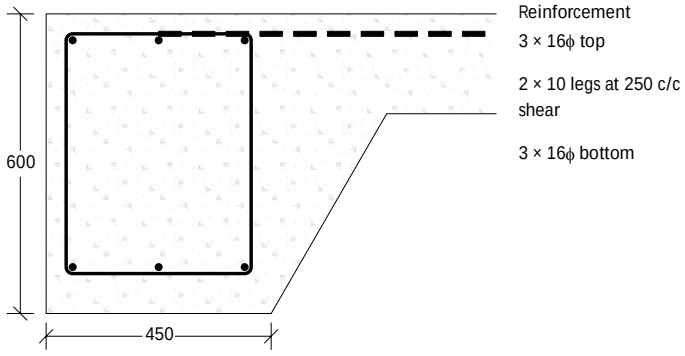
k coefficient — $k_{v\_slab} = \min(1 + (200mm / d_{min\_t\_slab})^{0.5}, 2)$ = **2.000**

C_{Rd} coefficient	$C_{Rd,c\_slab} = 0.18 / \gamma_C =$ **0.120**
Minimum shear stress	$v_{min\_slab} = 0.035\ N/mm^2 \times k_{v\_slab}^{3/2} \times (f_{ck} / 1N/mm^2)^{0.5} =$ **0.495** N/mm^2
Minimum design shear resistance	$V_{Rd,c,min\_slab} = v_{min\_slab} \times d_{min\_t\_slab} =$ **74.2** kN/m
Design shear resistance	$V_{Rd,c\_slab} = \max(C_{Rd,c\_slab} \times k_{v\_slab} \times 1N/mm^2 \times (100 \times \rho_{l\_slab} \times f_{ck}/1N/mm^2)^{1/3} \times d_{min\_t\_slab}, V_{Rd,c,min\_slab}) =$ **74.2** kN/m
	PASS - Design shear resistance exceeds design shear

Deflection control - Section 7.4

Reference reinforcement ratio	$\rho_{0\_slab} = (f_{ck} / 1\ N/mm^2)^{0.5} / 1000 =$ **0.00500**
Required tension reinforcement ratio	$\rho_{slab} = A_{s,req\_total\_t\_slab} / d_{min\_t\_slab} =$ **0.00129**
Required compression reinforcement ratio	$\rho'_{slab} =$ **0**
Structural system factor - Table 7.4N	$K_{b,defl\_slab} =$ **0.4**
Basic allowable span to depth ratio	$\delta_{basic\_slab} = K_{b,defl\_slab} \times [11 + 1.5 \times (f_{ck} / 1\ N/mm^2)^{0.5} \times \rho_{0\_slab} / \rho_{slab} + 3.2 \times (f_{ck} / 1\ N/mm^2)^{0.5} \times (\rho_{0\_slab} / \rho_{slab} - 1)^{1.5}] =$ **47.349**
Reinforcement factor - exp.7.17	$K_{s\_slab} = \min(A_{s,prov\_t\_slab} / A_{s,req\_total\_t\_slab} \times 500\ N/mm^2 / f_{yk}, 1.5) =$ **1.500**
Flange width factor	F1 = **1.000**
Long span supporting brittle partition factor	F2 = **1.000**
Allowable span to depth ratio	$\delta_{allow\_slab} = \min(\delta_{basic\_slab} \times K_{s\_slab} \times F1 \times F2, 40 \times K_{b,defl\_slab}) =$ **16.000**
Actual span to depth ratio	$\delta_{actual\_slab} = l_{eff\_slab} / d_{avg\_t\_slab} =$ **10.339**
	PASS - Actual span to depth ratio is within the allowable limit

Edge beam 1 details



Section through beam

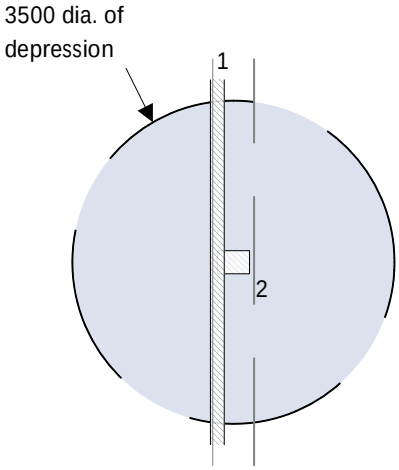
Depth of beam	$h_{edge} =$ **600** mm
Width of beam	$b_{edge} =$ **450** mm
Diameter of depression modified for hardcore	$\phi_{dep\_edge} = \phi_{dep\_basic} - h_{fill\_edge\_b1} =$ **3500** mm
Angle of chamfer	$\alpha_{edge} =$ **60** deg
Depth of harcore fill	$h_{fill\_edge} =$ **0** mm
Effective width of beam bearing	$b_{bearing\_edge} = b_{edge} + (h_{edge} - h_{slab}) / \tan(\alpha_{edge}) =$ **681** mm
Nominal cover to edge beam top reinforcement	$c_{nom\_edge\_t} =$ **35** mm
Nominal cover to edge beam bottom reinforcement	$c_{nom\_edge\_b} =$ **75** mm
Top reinforcement provided	3 × 16ϕ
Area of top reinforcement provided	$A_{s,prov\_t\_edge} =$ **603** mm^2
Effective depth of top reinforcement	$d_{t\_edge} = h_{edge} - c_{nom\_edge\_t} - \phi_{v\_edge} - \phi_{t\_edge} / 2 =$ **547** mm
Bottom reinforcement provided	3 × 16ϕ
Area of bottom reinforcement provided	$A_{s,prov\_b\_edge} =$ **603** mm^2

Effective depth of bottom reinforcement $d_{b\_edge} = h_{edge} - c_{nom\_edge\_b} - \phi_{v\_edge} - \phi_{b\_edge} / 2 =$ **507** mm

Shear reinforcement provided 2 × 10 legs at 250 c/c

Area of shear reinforcement provided $A_{sv,prov\_edge} =$ **628** mm²/m

Loading



Slab UDL's
Permanent UDL 2.0 kN/m²
Variable UDL 5.0 kN/m²

Additional loading
1 - Wall: F_{Gk} 3.0 kN/m F_{Qk} 2.5 kN/m
2 - Frame: F_{Gk} 18.0 kN F_{Qk} 21.6 kN

Edge beam loading details

	Load type	Permanent	Variable	Width x	Width y	Centroid
1	Longitudinal	3.0 kN/m	2.5 kN/m	150 mm	-	50 mm
2	Point	18.0 kN	21.6 kN	350 mm	250 mm	225 mm

Edge beam design check

Edge beam self weight $w_{edge} = \rho_{conc} \times (h_{edge} \times b_{edge} + (h_{edge} - h_{slab\_b1})^2 / (2 \times \tan(\alpha_{edge})) + h_{slab\_b1} \times (h_{edge} - h_{slab\_b1}) / \tan(\alpha_{edge})) =$ **8.9** kN/m

Total uniform load at formation level $F_{edge} = w_{edge} / b_{bearing\_edge} + w_{G\_slab} + w_{Q\_slab} =$ **20.0** kN/m²

Longitudinal dispersal of point loads

Total dead point load $F_{Gk,point\_total\_edge} = F_{Gk,point\_2\_edge} =$ **18.0** kN

Total live point load $F_{Qk,point\_total\_edge} = F_{Qk,point\_2\_edge} =$ **21.6** kN

Total ultimate point load $w_{ult\_point\_total\_edge} = w_{ult\_2\_edge} =$ **56.7** kN

Minimum width of point loads $b_{min\_point\_edge} = b_{PLy\_2\_edge} =$ **250** mm

Approx. moment capacity of bottom steel $M_{Rd\_approx\_b\_edge} = A_{s,prov\_b\_edge} \times f_{yd} \times 0.9 \times d_{b\_edge} =$ **119.7** kNm

Moment due to transverse line loads $M_{Ed_trans_edge} = 0$kNm = **0.0** kNm

Residual moment capacity $M_{Rd\_resid\_b\_edge} = M_{Rd\_approx\_b\_edge} - M_{Ed\_trans\_edge} =$ **119.7** kNm

Max. allow dispersal based on moment capacity $l_{disp\_mnt\_max\_PL\_edge} = (2 \times M_{Rd\_resid\_b\_edge} + \sqrt{(4 \times M_{Rd\_resid\_b\_edge}^2 + 2 \times w_{ult\_point\_total\_edge} \times M_{Rd\_resid\_b\_edge} \times b_{min\_point\_edge})) / w_{ult\_point\_total\_edge} =$ **8565** mm

Limiting max. dispersal to say 5 x beam depth $l_{disp\_mnt\_lim\_PL\_edge} = \min(l_{disp\_mnt\_max\_PL\_edge}, 5 \times h_{edge}) =$ **3000** mm

Total dispersal length of effective point load $l_{disp\_mnt\_eff\_PL\_edge} = 2 \times l_{disp\_mnt\_lim\_PL\_edge} + b_{min\_point\_edge} =$ **6250** mm

Equivalent ultimate UDL of load 2 $w_{equiv\_2\_edge} = w_{ult\_2\_edge} / l_{disp\_mnt\_eff\_PL\_edge} =$ **9.1** kN/m

Equivalent unfactored UDL of load 2 $w_{equiv\_sls\_2\_edge} = w_{equiv\_2\_edge} \times (F_{Gk,point\_2\_edge} + F_{Qk,point\_2\_edge}) / w_{ult\_2\_edge} =$ **6.3** kN/m

Centroid of longitudinal and equivalent line loads from outside face of raft

Load × distance of load 1 $M_{centroid\_1\_edge} = w_{ult\_1\_edge} \times x_{1\_edge} =$ **0.4** kN

Load × distance of load 2 $M_{centroid\_2\_edge} = w_{equiv\_2\_edge} \times x_{2\_edge} =$ **2.0** kN

Total load × distance	$M_{centroid\_total\_edge} = M_{centroid\_1\_edge} + M_{centroid\_2\_edge}$ = **2.4** kN
Total ultimate long. and equiv. line loads	$w_{equiv\_total\_edge} = w_{ult\_1\_edge} + w_{equiv\_2\_edge}$ = **16.9** kN/m
Centroid of loads	$x_{bar\_edge} = M_{centroid\_total\_edge} / w_{equiv\_total\_edge}$ = **144.1** mm

Bearing pressure

Total unfactored longitudinal and eff. line loads	$w_{equiv\_total\_sls\_edge} = F_{Gk,line\_1\_edge} + F_{Qk,line\_1\_edge} + w_{equiv\_sls\_2\_edge}$ = **11.8** kN/m
Allowable bearing width	$b_{brg\_allow\_edge} = 2 \times x_{bar\_edge} + 2 \times h_{fill\_slab\_b1} / \tan(\alpha_{fill})$ = **808** mm
Bearing pressure due to line and point loads	$F_{brg\_edge} = w_{equiv\_total\_sls\_edge} / b_{brg\_allow\_edge}$ = **14.7** kN/m^2
Total applied bearing pressure	$F_{brg\_total\_edge} = F_{brg\_edge} + F_{edge}$ = **34.7** kN/m^2

PASS - Allowable bearing resistance exceeds applied bearing pressure

Edge beam bending check

Divider for moments due to UDL's	β_{udl} = **10.0**
Divider for moments due to point loads	β_{pl} = **6.0**

Applied forces

Span of beam	$l_{edge} = \phi_{dep\_edge} + d_{t\_edge}$ = **4047** mm
Ultimate self weight UDL	$w_{ult\_edge} = 1.35 \times w_{edge}$ = **12.0** kN/m
Approximate ultimate slab self weight UDL	$w_{ult\_slab\_edge} = \max(0kN/m, 1.35 \times w_{slab} \times (\phi_{dep\_edge} / 2 \times 3/4 - (b_{edge} + (h_{edge} - h_{slab\_b1}) / \tan(\alpha_{edge}))))$ = **4.2** kN/m
Self weight and slab bending moment	$M_{sw\_edge} = (w_{ult\_edge} + w_{ult\_slab\_edge}) \times l_{edge}^2 / \beta_{udl}$ = **26.5** kNm
Self weight and slab shear force	$V_{sw\_edge} = (w_{ult\_edge} + w_{ult\_slab\_edge}) \times l_{edge} / 2$ = **32.7** kN

Moments due to applied uniformly distributed loads

Ultimate udl (approx)	$w_{ult\_udl\_edge} = (1.35 \times w_{G\_slab} + 1.50 \times w_{Q\_slab}) \times \phi_{dep\_edge} / 2 \times 3 / 4$ = **13.4** kN/m
Bending moment	$M_{udl\_edge} = w_{ult\_udl\_edge} \times l_{edge}^2 / \beta_{udl}$ = **21.9** kNm
Shear force	$V_{udl\_edge} = w_{ult\_udl\_edge} \times l_{edge} / 2$ = **27.1** kN

Moment and shear load 1

Bending moment	$M_{1\_edge} = w_{ult\_1\_edge} \times l_{edge}^2 / \beta_{udl}$ = **12.8** kNm
Shear force	$V_{1\_edge} = w_{ult\_1\_edge} \times l_{edge} / 2$ = **15.8** kN

Moment and shear load 2

Bending moment	$M_{2\_edge} = w_{ult\_2\_edge} \times l_{edge} / \beta_{pl}$ = **38.2** kNm
Shear force	$V_{2\_edge} = w_{ult\_2\_edge}$ = **56.7** kN

Resultant moments and shears

Total bending moment (sagging and hogging)	$M_{total\_edge} = M_{udl\_edge} + M_{sw\_edge} + M_{1\_edge} + M_{2\_edge}$ = **99.4** kNm
Maximum shear force	$V_{total\_edge} = V_{udl\_edge} + V_{sw\_edge} + V_{1\_edge} + V_{2\_edge}$ = **132.3** kN

Reinforcement required in top of beam

Width of section in compression zone	$b_{t\_comp\_edge} = b_{edge}$ = **450** mm
	$K_{t\_edge} = M_{total\_edge} / (b_{t\_comp\_edge} \times d_{t\_edge}^2 \times f_{ck})$ = **0.030**
	$K' = (2 \times \eta \times \alpha_{cc} / \gamma_C) \times (1 - \lambda \times (\delta - k_1) / (2 \times k_2)) \times (\lambda \times (\delta - k_1) / (2 \times k_2))$ = **0.207**
Lever arm	$z_{t\_edge} = \min(0.5 \times d_{t\_edge} \times [1 + (1 - 2 \times K_{t\_edge} / (\eta \times \alpha_{cc} / \gamma_C))^{0.5}], 0.95 \times d_{t\_edge})$ = **520** mm
Minimum area of reinforcement required	$A_{s,min\_t\_edge} = \max(0.26 \times f_{ctm} / f_{yk}, 0.0013) \times b_{edge} \times d_{t\_edge}$ = **328** mm^2
Area of tension reinforcement required	$A_{s,req\_t\_edge} = M_{total\_edge} / (f_{yd} \times z_{t\_edge})$ = **440** mm^2

PASS - Area of reinforcement provided exceeds area of reinforcement required

Reinforcement required in bottom of beam

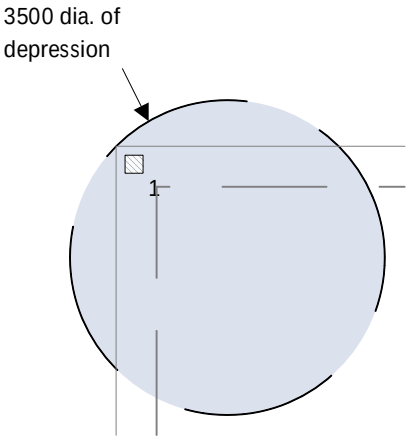
Effective flange outstand	$b_{eff,1\_edge} = 0.1 \times l_{edge}$ = **405** mm
Effective flange width	$b_{eff\_edge} = b_{eff,1\_edge} + b_{edge} + (h_{edge} - h_{slab\_b1}) / \tan(\alpha_{edge})$ = **1086** mm
	$K_{b\_edge} = M_{total\_edge} / (b_{eff\_edge} \times d_{b\_edge}^2 \times f_{ck})$ = **0.014**
	$K' = (2 \times \eta \times \alpha_{cc} / \gamma_C) \times (1 - \lambda \times (\delta - k_1) / (2 \times k_2)) \times (\lambda \times (\delta - k_1) / (2 \times k_2))$ = **0.207**
Lever arm	$z_{b\_edge} = \min(0.5 \times d_{b\_edge} \times [1 + (1 - 2 \times K_{b\_edge} / (\eta \times \alpha_{cc} / \gamma_C))^{0.5}], 0.95 \times d_{b\_edge})$ = **482** mm
Depth of neutral axis	$x = 2 \times (d_{b\_edge} - z_{b\_edge}) / \lambda$ = **63** mm
	$\lambda x <= h_{slab}$ - Compression block lies wholly within the depth of slab
Minimum area of reinforcement required	$A_{s,min\_b\_edge} = \max(0.26 \times f_{ctm} / f_{yk}, 0.0013) \times b_{edge} \times d_{b\_edge}$ = **304** mm^2
Area of tension reinforcement required	$A_{s,req\_b\_edge} = M_{total\_edge} / (f_{yd} \times z_{b\_edge})$ = **475** mm^2
	PASS - Area of reinforcement provided in top to span local depression is adequate

Shear resistance with no shear reinforcement

Strength reduction factor	$v_1 = 0.6 \times (1 - f_{ck} / 250\ N/mm^2)$ = **0.540**
Max allowable design shear force (cl.6.2.2)	$V_{Ed,max\_edge} = 0.5 \times d_{min\_t\_slab} \times b_{edge} \times v_1 \times f_{cwd}$ = **303.8** kN
	PASS - Design shear force in slab is less than the maximum allowable shear force
Reinforcement ratio	$\rho_{l\_edge} = \min(A_{s,prov\_t\_edge} / (b_{edge} \times d_{min\_t\_slab}), 0.02)$ = **0.00894**
k coefficient	$k_{v\_edge} = \min(1 + (200mm / d_{min\_t\_slab})^{0.5}, 2)$ = **2.000**
C_{Rd} coefficient	$C_{Rd,c\_edge} = 0.18 / \gamma_C$ = **0.120**
Minimum shear stress	$v_{min\_edge} = 0.035\ N/mm^2 \times k_{v\_edge}^{3/2} \times (f_{ck} / 1N/mm^2)^{0.5}$ = **0.495** N/mm^2
Minimum design shear resistance	$V_{Rd,c,min\_edge} = v_{min\_edge} \times d_{min\_t\_slab} \times b_{edge}$ = **33.4** kN
Design shear resistance	$V_{Rd,c\_edge} = \max(C_{Rd,c\_edge} \times k_{v\_edge} \times 1N/mm^2 \times (100 \times \rho_{l\_edge} \times f_{ck}/1N/mm^2)^{1/3} \times d_{min\_t\_slab} \times b_{edge}, V_{Rd,c,min\_edge})$ = **45.6** kN
	Design shear reinforcement required
Angle of comp. shear strut for maximum shear	θ_{max} = 45 deg
Compression chord coefficient - cl.6.2.3(3)	α_{cw} = **1.00**
Minimum area of shear reinforcement - exp.9.5N	$A_{sv,min\_edge} = 0.08\ N/mm^2 \times b_{edge} \times (f_{ck} / 1\ N/mm^2)^{0.5} / f_{yk}$ = **360** mm^2/m
Min lever arm in shear zone	$z_{min\_edge} = \min(z_{t\_edge}, z_{b\_edge})$ = **482** mm
Maximum design shear resistance - exp.6.9	$V_{Rd,max\_edge} = \alpha_{cw} \times b_{edge} \times z_{min\_edge} \times v_1 \times f_{cwd} / (\cot(\theta_{max}) + \tan(\theta_{max}))$ = **975.3** kN
	PASS - Design shear force at support is less than maximum design shear resistance
Design shear stress	$v_{Ed\_edge} = V_{total\_edge} / (b_{edge} \times z_{min\_edge})$ = **0.610** N/mm^2
Angle of concrete compression strut - cl.6.2.3	$\theta_{edge} = \min(\max(0.5 \times \text{Asin}(\min(2 \times v_{Ed\_edge} / (\alpha_{cw} \times f_{cwd} \times v_1), 1)), 21.8\ deg), 45deg)$ = **21.8** deg
Area of shear reinforcement required - exp.6.8	$A_{sv,des\_edge} = v_{Ed\_edge} \times b_{edge} / (f_{yd} \times \cot(\theta_{edge}))$ = **253** mm^2/m
Area of shear reinforcement required	$A_{sv,req\_edge} = \max(A_{sv,min\_edge}, A_{sv,des\_edge})$ = **360** mm^2/m
Shear reinforcement provided	2 × 10 legs at 250 c/c
Area of shear reinforcement provided	$A_{sv,prov\_edge}$ = **628** mm^2/m
	PASS - Area of shear reinforcement provided exceeds minimum required

Corner beam 1 details

Loading



Slab UDL's
Permanent UDL 2.0 kN/m^2
Variable UDL 5.0 kN/m^2

Additional loading
1 - Frame edge: F_{Gk} 9.0 kN F_{Qk} 11.0 kN

Corner beam loading details

	Load type	Permanent	Variable	Centroid x	Centroid y
1	Point	9.0 kN	11.0 kN	200 mm	200 mm

Total uniform load at formation level $F_{corn} = w_{edge} / b_{bearing\_edge} + w_{G\_slab} + w_{Q\_slab} =$ **20.0** kN/m^2

Net bearing pressure avail to resist line/point loads $q_{net\_corn} = q_{allow} - F_{corn} =$ **30.0** kN/m^2

Total line/point loads

Total unfactored line in x direction $w_{linex\_total\_corn} =$ **0.0** kN/m

Total factored line in x direction $w_{ult\_linex\_total\_corn} =$ **0.0** kN/m

Total unfactored line in y direction $w_{liney\_total\_corn} =$ **0.0** kN/m

Total factored line in y direction $w_{ult\_liney\_total\_corn} =$ **0.0** kN/m

Total unfactored point loads $w_{point\_total\_corn} = F_{Gk,point\_1\_corn} + F_{Qk,point\_1\_corn} =$ **20.0** kN

Total factored point loads $w_{ult\_point\_total\_corn} = 1.35 \times F_{Gk,point\_1\_corn} + 1.50 \times F_{Qk,point\_1\_corn} =$ **28.7** kN

Length of side of sq reqd to resist line/point loads $l_{req\_corn} = [w_{linex\_total\_corn} + w_{liney\_total\_corn} + \sqrt{((w_{linex\_total\_corn} + w_{liney\_total\_corn})^2 + 4 \times q_{net\_corn} \times w_{point\_total\_corn})}] / (2 \times q_{net\_corn}) =$ **817** mm

Bending moment about x-axis due to load/reaction eccentricity

Moment due to load 1 (Point) $M_{x\_1\_ecc\_corn} = \max(0\text{kNm}, w_{ult\_1\_corn} \times (l_{req\_corn} / 2 - x_{y\_1\_corn})) =$ **6.0** kNm

Total moment about x axis $M_{x\_total\_ecc\_corn} = M_{x\_1\_ecc\_corn} =$ **6.0** kNm

Bending moment about y-axis due to load/reaction eccentricity

Moment due to load 1 (Point) $M_{y\_1\_ecc\_corn} = \max(0\text{kNm}, w_{ult\_1\_corn} \times (l_{req\_corn} / 2 - x_{x\_1\_corn})) =$ **6.0** kNm

Total moment about y axis $M_{y\_total\_ecc\_corn} = M_{y\_1\_ecc\_corn} =$ **6.0** kNm

Moment due to edge beam spanning depression $M_{max\_total\_ecc\_corn} = \max(M_{x\_total\_ecc\_corn}, M_{y\_total\_ecc\_corn}) =$ **6.0** kNm

Assume all of this moment is resisted by edge beam

Total moment to be resisted $M_{Ed\_total\_brg\_corn} = M_{max\_total\_ecc\_corn} + M_{total\_edge} =$ **105.4** kNm

$K_{t\_brg\_corn} = M_{Ed\_total\_brg\_corn} / (b_{t\_comp\_edge} \times d_{t\_edge}^2 \times f_{ck}) =$ **0.031**

$K' = (2 \times \eta \times \alpha_{cc} / \gamma_C) \times (1 - \lambda \times (\delta - k_1) / (2 \times k_2)) \times (\lambda \times (\delta - k_1) / (2 \times k_2)) =$ **0.207**

Lever arm $z_{t\_brg\_corn} = \min(0.5 \times d_{t\_edge} \times [1 + (1 - 2 \times K_{t\_brg\_corn} / (\eta \times \alpha_{cc} / \gamma_C))^{0.5}], 0.95 \times d_{t\_edge}) =$ **520** mm

Minimum area of reinforcement required $A_{s,min\_t\_brg\_corn} = \max(0.26 \times f_{ctm} / f_{yk}, 0.0013) \times b_{edge} \times d_{b\_edge} =$ **304** mm^2

Area of tension reinforcement required $A_{s,req\_t\_brg\_corn} = M_{Ed\_total\_brg\_corn} / (f_{yd} \times z_{t\_brg\_corn}) =$ **466** mm^2

PASS - Area of reinforcement provided exceeds area of reinforcement required

Applied forces

Span of beam — $l_{corn} = \phi_{dep\_corn} / \sqrt{(2)} + d_{t\_edge} / 2 =$ **2748** mm

Ultimate self weight UDL — $w_{ult\_corn} = 1.35 \times w_{edge} =$ **12.0** kN/m

Approximate ultimate slab self weight UDL — $w_{ult\_slab\_corn} = \max(0kN/m, 1.35 \times w_{slab} \times (\phi_{dep\_corn} / (\sqrt{(2)} \times 2) - (b_{edge} + (h_{edge} - h_{slab\_b1}) / \tan(\alpha_{edge})))) =$ **3.7** kN/m

Self weight and slab bending moment — $M_{sw\_corn} = (w_{ult\_corn} + w_{ult\_slab\_corn}) \times l_{corn}^2 / 2 =$ **59.2** kNm

Self weight and slab shear force — $V_{sw\_corn} = (w_{ult\_corn} + w_{ult\_slab\_corn}) \times l_{corn} =$ **43.1** kN

Moments due to applied uniformly distributed loads

Ultimate udl (approx) — $w_{ult\_udl\_corn} = (1.35 \times w_{G\_slab} + 1.50 \times w_{Q\_slab}) \times \phi_{dep\_corn} / \sqrt{(2)} =$ **25.2** kN/m

Bending moment — $M_{udl\_corn} = w_{ult\_udl\_corn} \times l_{corn}^2 / 6 =$ **31.8** kNm

Shear force — $V_{udl\_corn} = w_{ult\_udl\_corn} \times l_{corn} / 2 =$ **34.7** kN

Moment and shear loads due to point load 1

Approx. x-axis moment due to load 1 — $M_{x\_1\_corn} = \max(0kNm, w_{ult\_1\_corn} / 2 \times (l_{corn} - x_{y\_1\_corn})) =$ **36.5** kNm

Approx. y-axis moment due to load 1 — $M_{y\_1\_corn} = \max(0kNm, w_{ult\_1\_corn} / 2 \times (l_{corn} - x_{x\_1\_corn})) =$ **36.5** kNm

Shear force due to load 1 — $V_{1\_corn} = w_{ult\_1\_corn} / 2 =$ **14.3** kN

Resultant moments and shears

Bending moment — $M_{total\_x\_corn} = M_{udl\_corn} + M_{sw\_corn} + M_{x\_1\_corn} =$ **127.5** kNm

Shear force — $V_{total\_x\_corn} = V_{udl\_corn} + V_{sw\_corn} + V_{1\_corn} =$ **92.1** kN

Bending moment — $M_{total\_y\_corn} = M_{udl\_corn} + M_{sw\_corn} + M_{y\_1\_corn} =$ **127.5** kNm

Shear force — $V_{total\_y\_corn} = V_{udl\_corn} + V_{sw\_corn} + V_{1\_corn} =$ **92.1** kN

Average bending moment — $M_{total\_corn} = (M_{total\_x\_corn} + M_{total\_y\_corn}) / 2 =$ **127.5** kNm

Average shear force — $V_{total\_corn} = (V_{total\_x\_corn} + V_{total\_y\_corn}) / 2 =$ **92.1** kN

Reinforcement required in top of beam

$K_{t\_corn} = M_{total\_corn} / (b_{t\_comp\_edge} \times d_{t\_edge}^2 \times f_{ck}) =$ **0.038**

$K' = (2 \times \eta \times \alpha_{cc} / \gamma_C) \times (1 - \lambda \times (\delta - k_1) / (2 \times k_2)) \times (\lambda \times (\delta - k_1) / (2 \times k_2)) =$ **0.207**

Lever arm — $z_{t\_corn} = \min(0.5 \times d_{t\_edge} \times [1 + (1 - 2 \times K_{t\_corn} / (\eta \times \alpha_{cc} / \gamma_C))^{0.5}], 0.95 \times d_{t\_edge}) =$ **520** mm

Minimum area of reinforcement required — $A_{s,min\_t\_corn} = \max(0.26 \times f_{ctm} / f_{yk}, 0.0013) \times b_{edge} \times d_{t\_edge} =$ **328** mm²

Area of tension reinforcement required — $A_{s,req\_t\_corn} = M_{total\_corn} / (f_{yd} \times z_{t\_corn}) =$ **564** mm²

PASS - Area of reinforcement provided exceeds area of reinforcement required

Shear resistance with no shear reinforcement

Strength reduction factor — $v_1 = 0.6 \times (1 - f_{ck} / 250 N/mm^2) =$ **0.540**

Max allowable design shear force (cl.6.2.2) — $V_{Ed,max\_corn} = 0.5 \times d_{t\_edge} \times b_{edge} \times v_1 \times f_{cwd} =$ **1107.7** kN

PASS - Design shear force in slab is less than the maximum allowable shear force

Reinforcement ratio — $\rho_{l\_corn} = \min(A_{s,prov\_t\_edge} / (b_{edge} \times d_{t\_edge}), 0.02) =$ **0.00245**

k coefficient — $k_{v\_corn} = \min(1 + (200mm / d_{t\_edge})^{0.5}, 2) =$ **1.605**

C_{Rd} coefficient — $C_{Rd,c\_corn} = 0.18 / \gamma_C =$ **0.120**

Minimum shear stress — $v_{min\_corn} = 0.035 N/mm^2 \times k_{v\_corn}^{3/2} \times (f_{ck} / 1N/mm^2)^{0.5} =$ **0.356** N/mm²

Minimum design shear resistance — $V_{Rd,c,min\_corn} = v_{min\_corn} \times d_{t\_edge} \times b_{edge} =$ **87.6** kN

Design shear resistance — $V_{Rd,c\_corn} = \max(C_{Rd,c\_corn} \times k_{v\_corn} \times 1N/mm^2 \times (100 \times \rho_{l\_corn} \times f_{ck}/1N/mm^2)^{1/3} \times d_{t\_edge} \times b_{edge}, V_{Rd,c,min\_corn}) =$ **87.6** kN

Design shear reinforcement required

Angle of comp. shear strut for maximum shear	θ_{max} = 45 deg
Compression chord coefficient - cl.6.2.3(3)	α_{cw} = **1.00**
Minimum area of shear reinforcement - exp.9.5N	A_{sv,min_corn} = 0.08 N/mm^2 × b_{edge} × (f_{ck} / 1 N/mm^2)$^{0.5}$ / f_{yk} = **360** mm^2/m
Min lever arm in shear zone	z_{min_corn} = z_{t_corn} = **520** mm
Maximum design shear resistance - exp.6.9	V_{Rd,max_corn} = α_{cw} × b_{edge} × z_{min_corn} × v_1 × f_{cwd} / (cot(θ_{max}) + tan(θ_{max})) = **1052.3** kN

PASS - Design shear force at support is less than maximum design shear resistance

Design shear stress	v_{Ed_corn} = V_{total_corn} / (b_{edge} × z_{min_corn}) = **0.394** N/mm^2
Angle of concrete compression strut - cl.6.2.3	θ_{corn} = min(max(0.5 × Asin(min(2 × v_{Ed_corn} / (α_{cw} × f_{cwd} × v_1),1)), 21.8 deg), 45deg) = **21.8** deg
Area of shear reinforcement required - exp.6.8	A_{sv,des_corn} = v_{Ed_corn} × b_{edge} / (f_{yd} × cot(θ_{corn})) = **163** mm^2/m
Area of shear reinforcement required	A_{sv,req_corn} = max(A_{sv,min_corn}, A_{sv,des_corn}) = **360** mm^2/m
Shear reinforcement provided	2 × 10 legs at 250 c/c
Area of shear reinforcement provided	$A_{sv,prov\_edge}$ = **628** mm^2/m

PASS - Area of shear reinforcement provided exceeds minimum required

Deflection control - Section 7.4

Reference reinforcement ratio	$\rho_{0\_t\_corn}$ = (f_{ck} / 1 N/mm^2)$^{0.5}$ / 1000 = **0.00500**
Required tension reinforcement ratio	ρ_{t_corn} = A_{s,req_t_corn} / (b_{edge} × d_{t_edge}) = **0.00229**
Required compression reinforcement ratio	ρ'_{t_corn} = **0**
Structural system factor - Table 7.4N	$K_{b,defl\_t\_corn}$ = **0.4**
Basic allowable span to depth ratio	$\delta_{basic\_t\_corn}$ = $K_{b,defl\_t\_corn}$ × [11 + 1.5 × (f_{ck} / 1 N/mm^2)$^{0.5}$ × $\rho_{0\_t\_corn}$ / ρ_{t_corn} + 3.2 × (f_{ck} / 1 N/mm^2)$^{0.5}$ × ($\rho_{0\_t\_corn}$ / ρ_{t_corn} - 1)$^{1.5}$] = **19.166**
Reinforcement factor - exp.7.17	$K_{s\_t\_corn}$ = min($A_{s,prov\_t\_edge}$ / A_{s,req_t_corn} × 500 N/mm^2 / f_{yk}, 1.5) = **1.069**
Flange width factor	F1 = **1.000**
Long span supporting brittle partition factor	F2 = **1.000**
Allowable span to depth ratio	$\delta_{allow\_t\_corn}$ = min($\delta_{basic\_t\_corn}$ × $K_{s\_t\_corn}$ × F1 × F2, 40 × $K_{b,defl\_t\_corn}$) = **16.000**
Actual span to depth ratio	$\delta_{actual\_t\_corn}$ = l_{corn} / d_{t_edge} = **5.024**

PASS - Actual span to depth ratio is within the allowable limit

ACO CHANNEL DRAIN

450Ø TYPE D CL 57.30 IL 56.81

450Ø TYPE D CL 57.02 IL 56.66

RE CL 57.30 IL 56.62

450Ø TYPE D CL 57.30 IL 56.47

RE CL 57.30 IL 56.49

1200Ø TYPE B CL 57.30 IL 56.30

450Ø TYPE D CL 57.30 IL 56.33

1800Ø HB CL 57.30 IL 56.22

GEOCELLULAR STORAGE CRATE
WAVIN AQUACELL (OR SIMILAR APPROVED) AT 95% POROSITY
DIMENSIONS 35m² x 0.35m DEEP
COVER LEVEL: 57.30
INVERT LEVEL: 56.25

HYDROBRAKE
DISCHARGE RATE 1l/s

OUTFALL TO EXISTING DITCH
IL: 56.13

EXISTING DITCH TO BE REGRADED

EXISTING GROUNDS MAINTENANCE STORAGE BUILDING

NEW GROUNDS MAINTENANCE STORAGE BUILDING

WATER TANK

car park

CAR PARK

+ FOOTPATH LINK

London Road

INDICATIVE

Notes:

1. Do not scale from this drawing. All dimensions are in metres, unless stated otherwise.
2. Ordnance Survey, (c) Crown Copyright 2020. All rights reserved. Licence number 100022432.
3. Drawing to be read in conjunction with all other drawings. Any discrepancies are to be reported to the engineer 5 working days in advance of undertaking any work.

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Key:

- Proposed Surface Water Sewer
- Attenuation Crate
- Headwall
- Channel Drain
- Rodding Eye
- Downpipe

Rev	Date	Details	Drawn by	Checked by
A	09.11	FIRST ISSUE	SC	KT

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CLIENT:
CHIPPENHAM TC

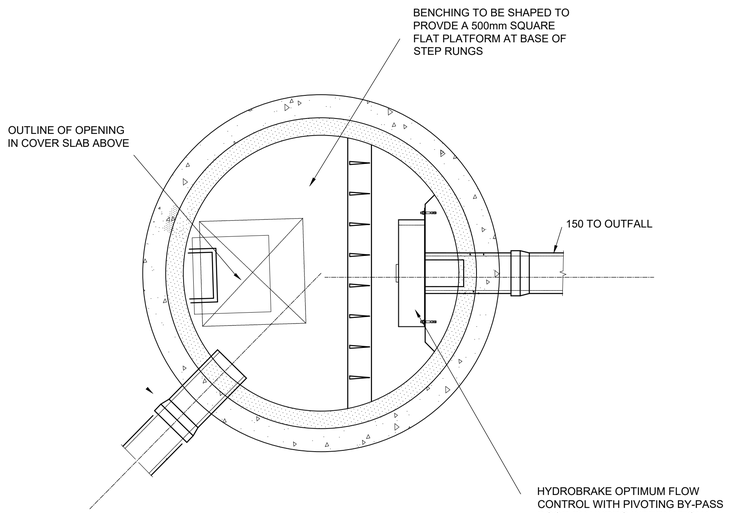
PROJECT:
STANLEY PARK SPORTS GROUND
PEWSHAM

TITLE:
ENGINEERING LAYOUT

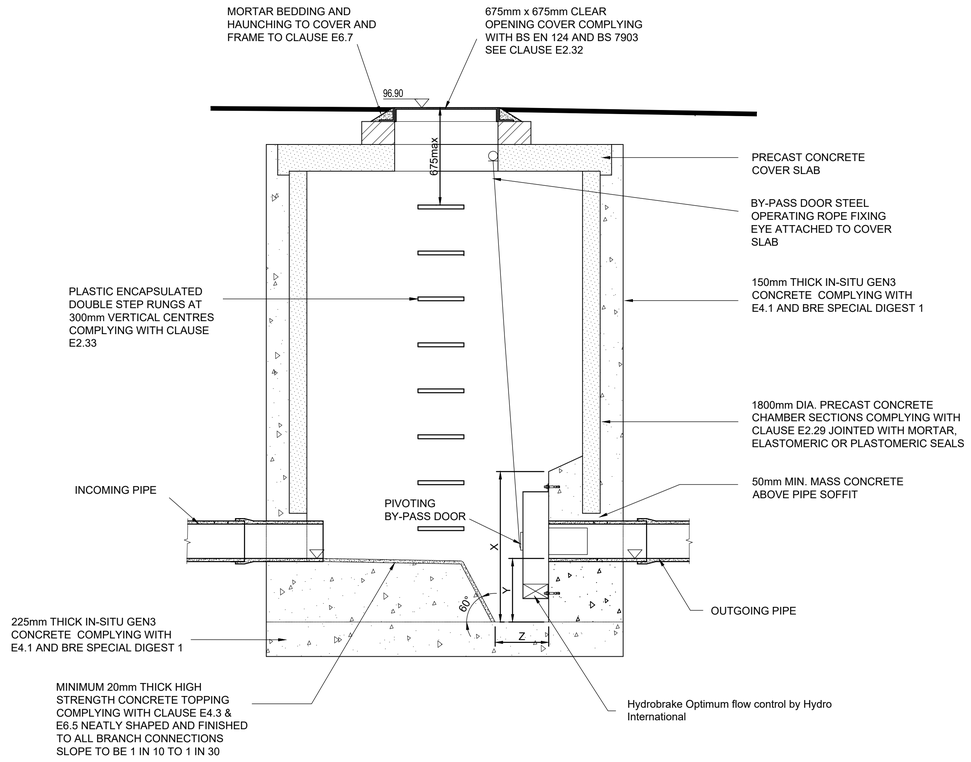
STATUS:
CONSTRUCTION

SCALE @ A3	DATE:	DRAWN:	CHECKED:	APPROVED:
1:250	09.11.22	SC	KT	KT

JOB NO:	DRAWING NO:	REVISION:
22-0447	C100	A



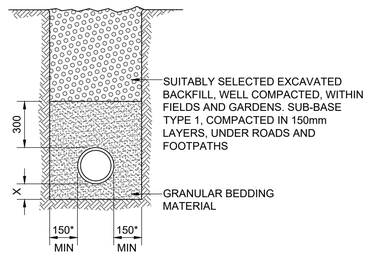
Plan



Section on centreline

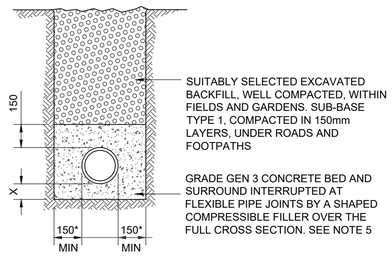
Hydrobrake Schedule								
Chamber Reference	Hydrobrake Reference	Head	Permitted Discharge	B	C	X	Y	Z
HB	SHE-0056-1000 -0300-1000	0.3m	1.0l/s	56mm	65mm	555mm	230mm	130mm

HYDROBRAKE CONTROL CHAMBER



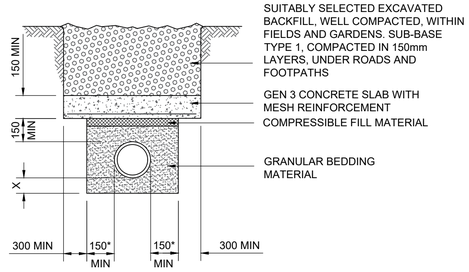
CLASS S BEDDING

FOR USE WHEN DEPTH TO SOFFIT IS GREATER THAN 1.2m



CLASS Z BEDDING

FOR USE WHEN DEPTH TO SOFFIT IS LESS THAN 1.2m



CONCRETE SLAB PROTECTION

REINFORCEMENT IN SLAB TO SUIT LOADING CONDITION

TYPICAL PIPE BEDDING FOR PIPES UP TO 800mm DIA

SCALE 1:10

BEDDING NOTES:

1. * = 150 FOR PIPES DIAMETER UP TO 300mm,
   * = 200mm FOR PIPE DIAMETERS OVER 300mmØ
   BASED ON NARROW TRENCH THEORY: DESIGNER TO CONFIRM FOR SPECIFIC PIPELINE.
2. BACKFILL MATERIAL TO BE SELECTED EXCAVATED MATERIAL WHERE THIS MATERIAL COMPLIES WITH CESWI. ADDITIONAL MATERIAL TO MAKE UP ANY DEFICIENCY TO BE GRANULAR SUB-BASE TYPE 1 UNLESS STATED OTHERWISE.

NOMINAL BORE OF PIPE (min)	AGGREGATE SIZE (mm)	
	SINGLE SIZED	GRADED
100	10	-
150	10 OR 14	14 TO 5
225-300	10,14 OR 20	14 TO 5 OR 20 TO 5
375-525	14 OR 20	14 TO 5 OR 20 TO 5
EXCEEDING 525	14,20 OR 40	14 TO 5 OR 20 TO 5 40 TO 5

DIM X ≥ 100mm FOR PIPES ≤ 100mmØ
DIM X ≥ 150mm FOR PIPES > 100mmØ
DIM X ≥ 200mm FOR PIPES TRENCHES IN ROCK

3. IN WET, SOFT, OR SILTY SOILS, WHERE LATERAL SUPPORT IS NOT OBTAINED OR WHERE FINES MAY MIGRATE, THE GRANULAR BEDDING MATERIAL SHALL BE SURROUNDED BY GEOTEXTILE FABRIC WITH MIN 200 OVERLAP.
4. TRENCH BACKFILL TO MEET HIGHWAY SPECIFICATION WHEN LAID IN ROAD OR FOOTPATH.
5. COMPRESSIBLE FILLER SHALL BE BITUMEN-IMPREGNATED INSULATING BOARD TO BS 622-1. THICKNESS AS TABLE.

NOMINAL DIAMETER OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450mm	18
450-1200mm	36
EXCEEDING 1200mm	54

NOTES:

1. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS STATED OTHERWISE.
2. ALL ADOPTABLE DRAINAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE - APPENDIX C, "DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS" VERSION 2 MARCH 2020.

Rev	Date	Details	Drawn by	Checked by
A	09.11.22	FIRST ISSUE	SC	KT

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CLIENT: CHIPPENHAM TC

PROJECT: STANLEY PARK SPORTS GROUND PEWSHAM

TITLE: DETAILS DRAINAGE SHEET 1

STATUS: CONSTRUCTION

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
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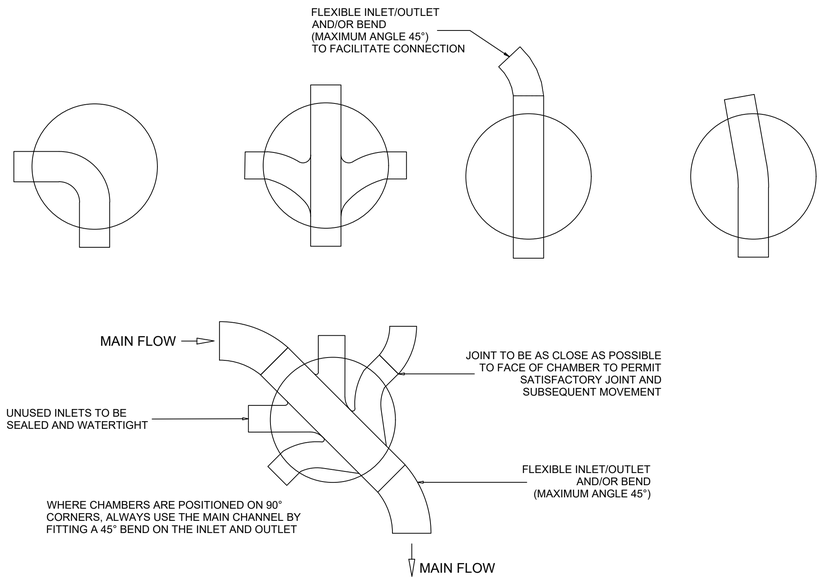
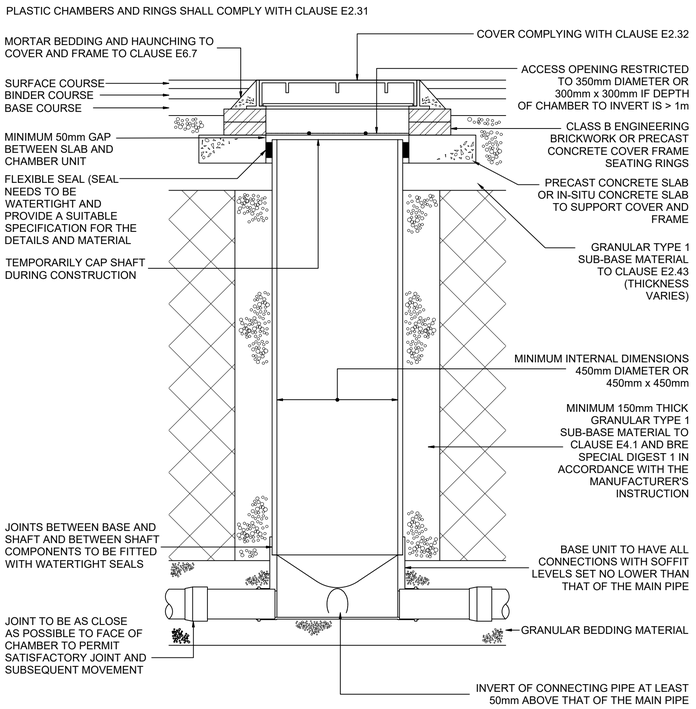
22-0447	C110	A



NOTE: WHERE A BEND IS USED IMMEDIATELY OUTSIDE
THE MANHOLE, THIS MAY BE USED AS THE ROCKER PIPE

TYPICAL BASE LAYOUTS FOR TYPE D CHAMBERS

NOT TO SCALE

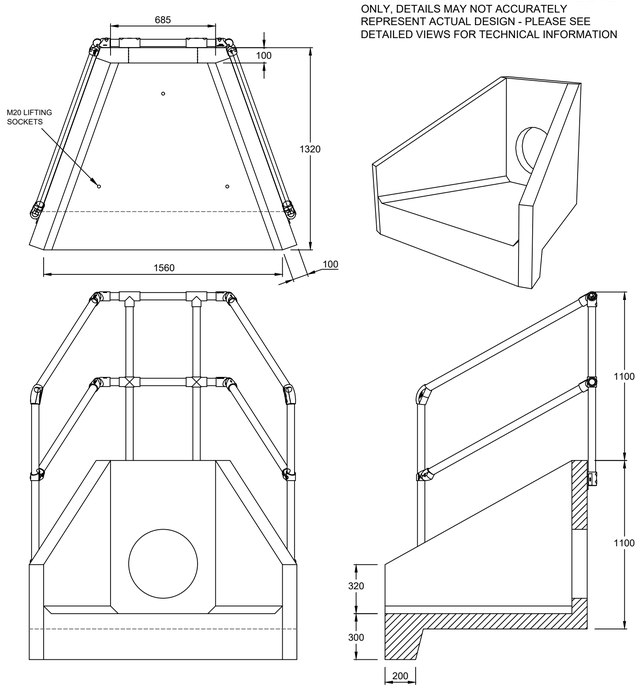


NOTE: WHERE THE ACCESS CHAMBER IS IN THE HIGHWAY THE
HIGHWAY AUTHORITY CAN HAVE SPECIFIC REQUIREMENTS

TYPICAL INSPECTION CHAMBER DETAIL - TYPE D

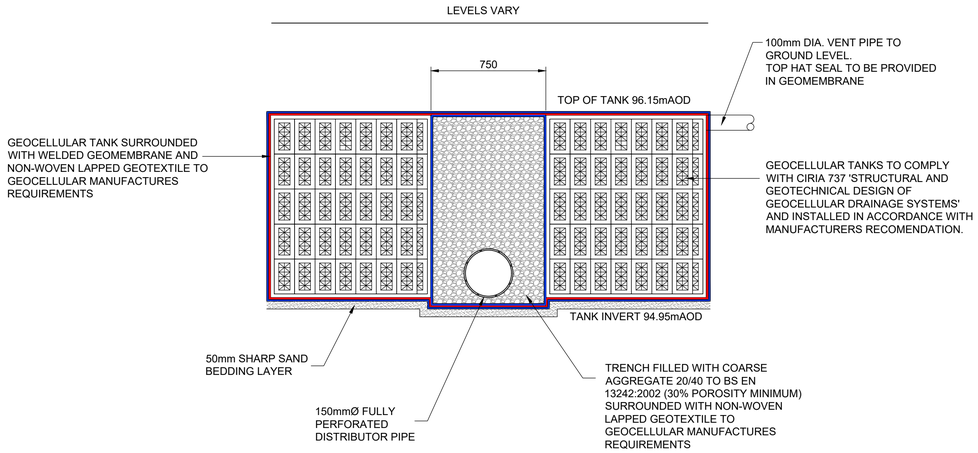
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE UP TO 2m
FLEXIBLE MATERIAL CONSTRUCTION FOR USE IN AREAS SUBJECT TO VEHICLE LOADING
NOT TO SCALE

NOTE: ISOMETRIC DRAWING IS FOR REFERENCE
ONLY, DETAILS MAY NOT ACCURATELY
REPRESENT ACTUAL DESIGN - PLEASE SEE
DETAILED VIEWS FOR TECHNICAL INFORMATION

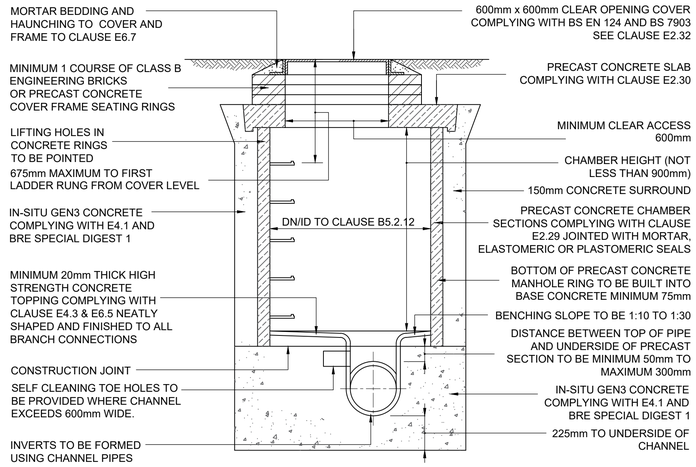


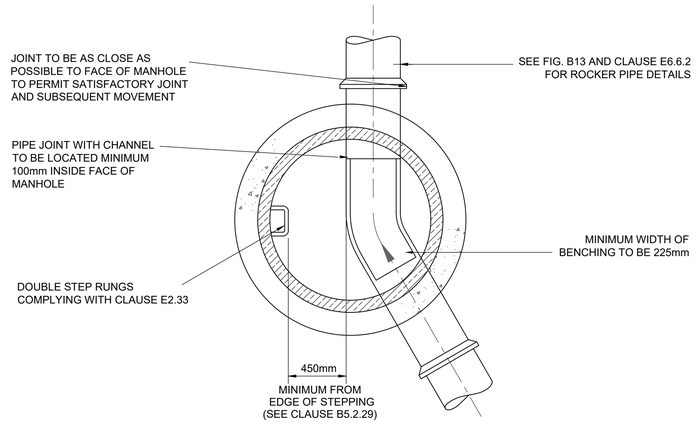
ALTHON H6C HEADWALL DETAIL

SCALE 1:20



GEOCELLULAR ATTENUTION TANK DETAIL





TYPICAL MANHOLE DETAIL - TYPE B

DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.35 TO 3.0m
RIGID MATERIAL CONSTRUCTION WITH CONCRETE SURROUND
NTS

NOTES:

1. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS STATED OTHERWISE.
2. ALL ADOPTABLE DRAINAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE - APPENDIX C, "DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS" VERSION 2 MARCH 2020.

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CLIENT: CHIPPENHAM TC

PROJECT: STANLEY PARK SPORTS GROUND PEWSHAM

TITLE: DETAILS DRAINAGE SHEET 2

STATUS: APPROVAL

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AS SHOWN	09.11.22	SC	KT	KT

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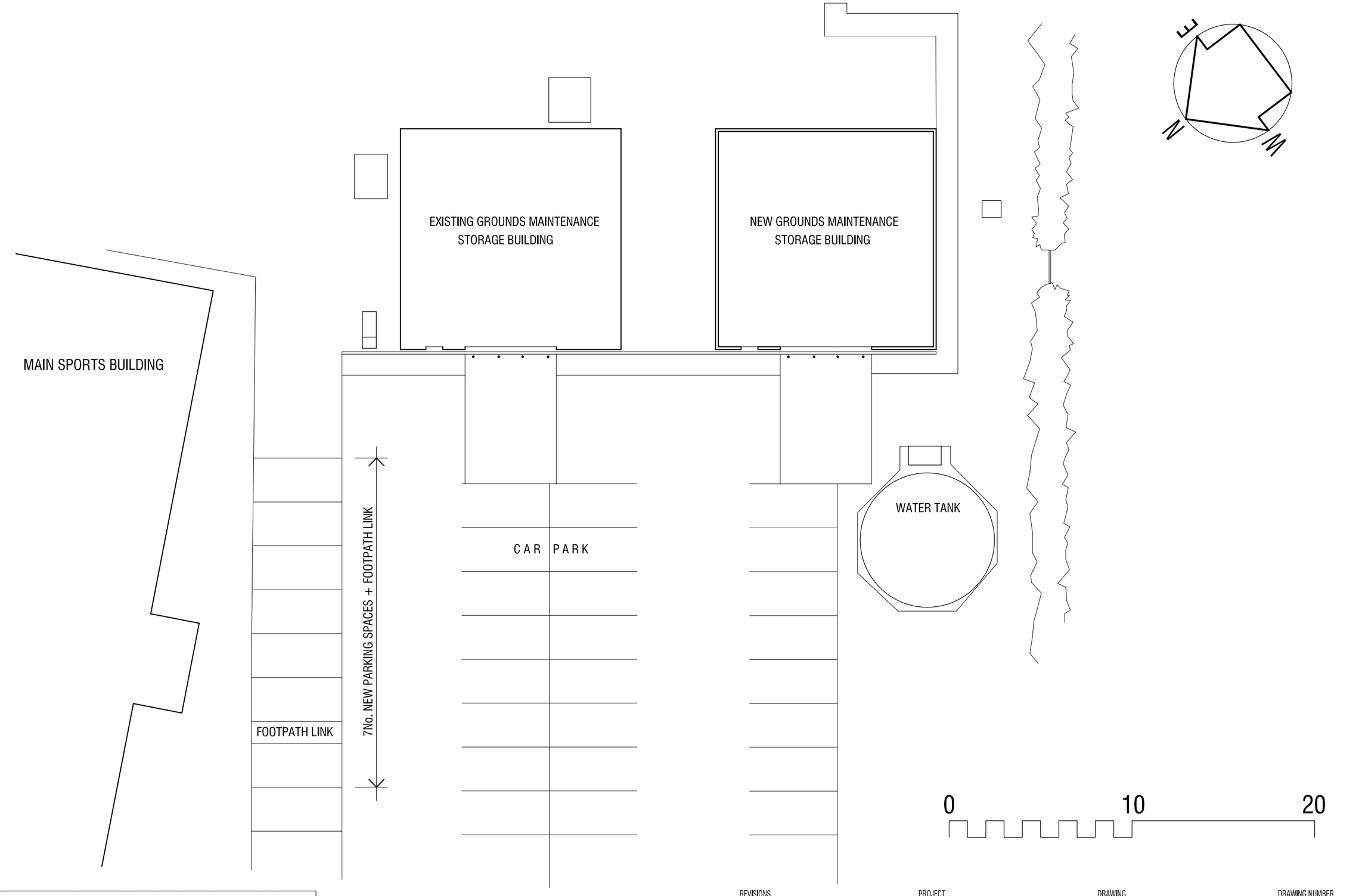
22-0447	C111	A



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PROJECT.
GROUNDS MAINTENANCE BUILDING
STANLEY PARK, CHIPPENHAM.

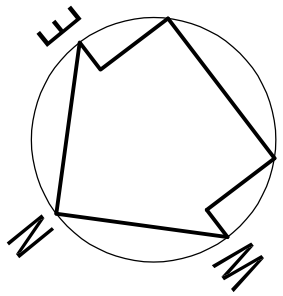
SCALE.
1:200 @ A3

DRAWING.
SITE PLAN
PROPOSED

DRAWN.
B.K.

DRAWING NUMBER.
996:04

DATE.
DECEMBER 2021



EXISTING GROUNDS MAINTENANCE
STORAGE BUILDING

NEW GROUNDS MAINTENANCE
STORAGE BUILDING

WATER TANK

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0 1 2 3 4 5

REVISIONS.

PROJECT.
GROUNDS MAINTENANCE BUILDING
STANLEY PARK, CHIPPENHAM.

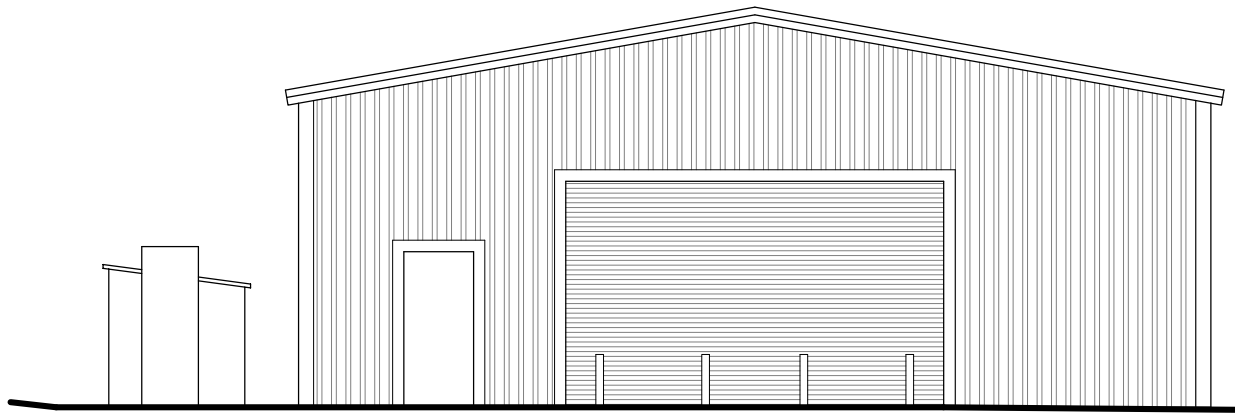
SCALE.
1:100 @ A3

DRAWING.
PLAN
PROPOSED

DRAWN.
B.K.

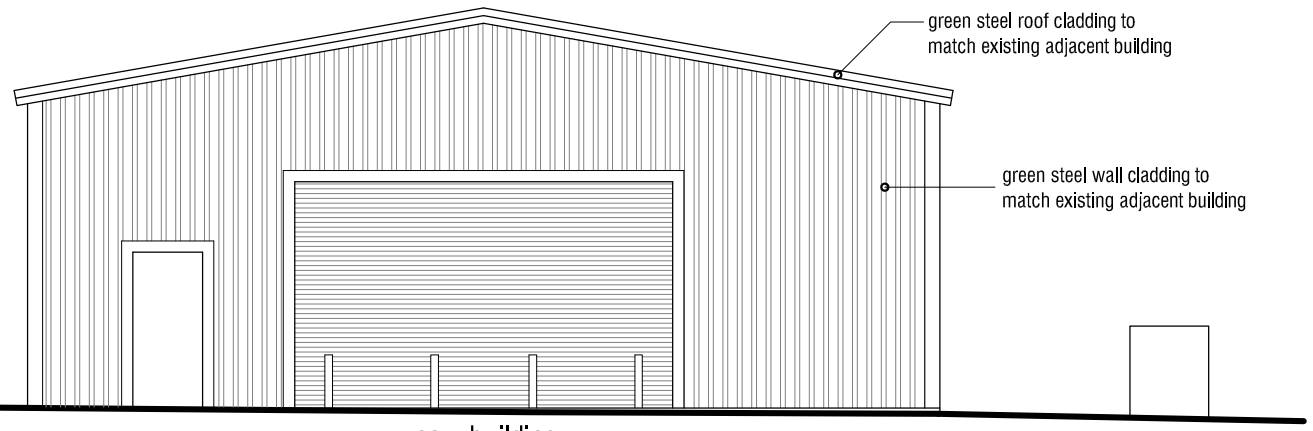
DRAWING NUMBER.
996:05

DATE.
DECEMBER 2021

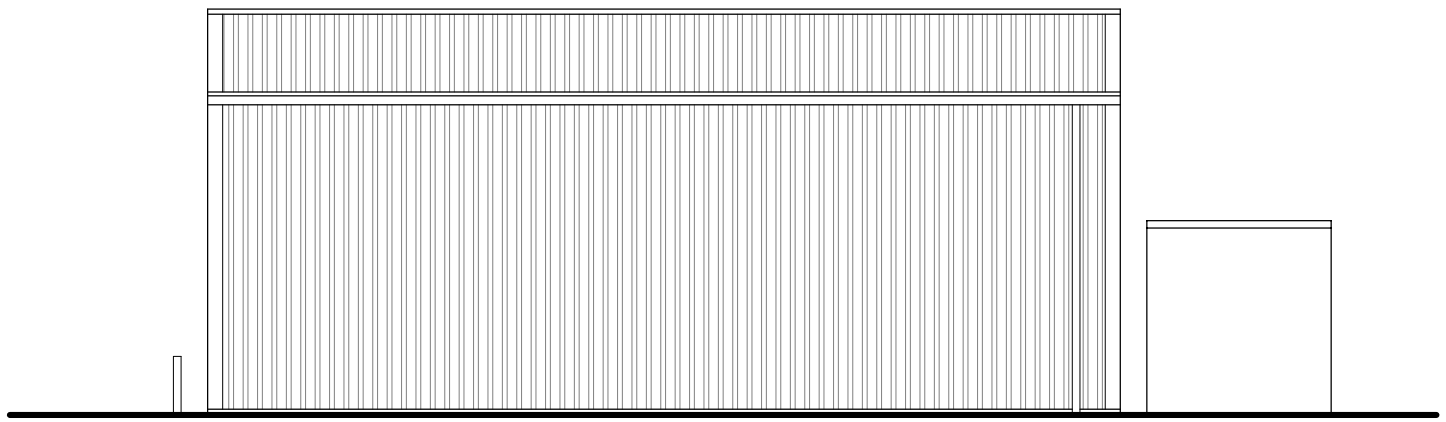


front : north west

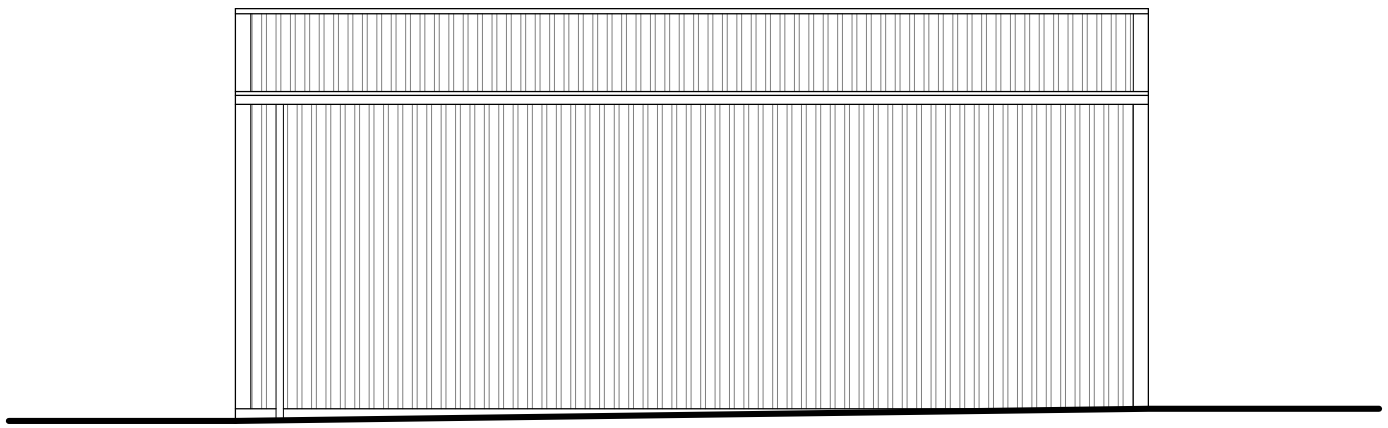
existing building



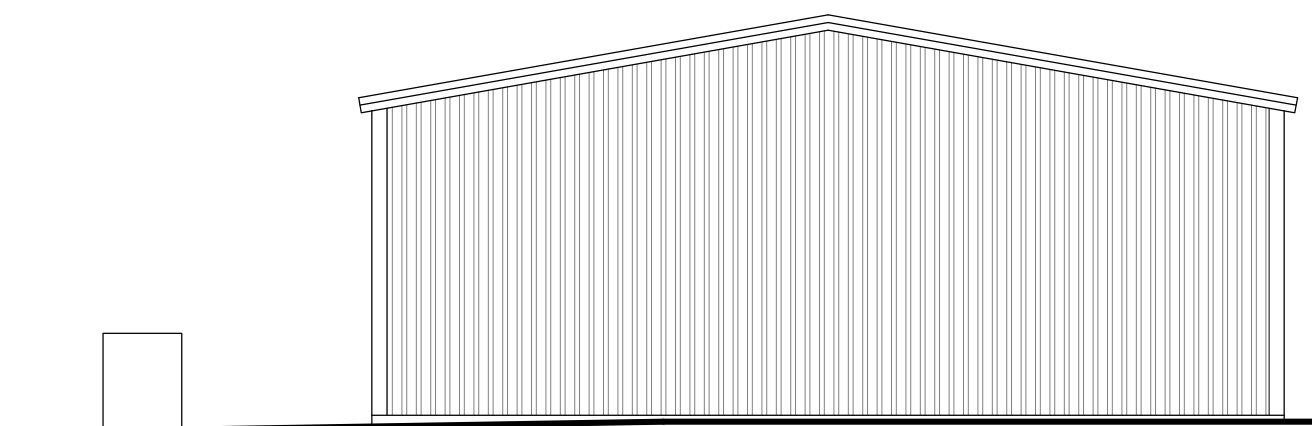
new building



side : south west

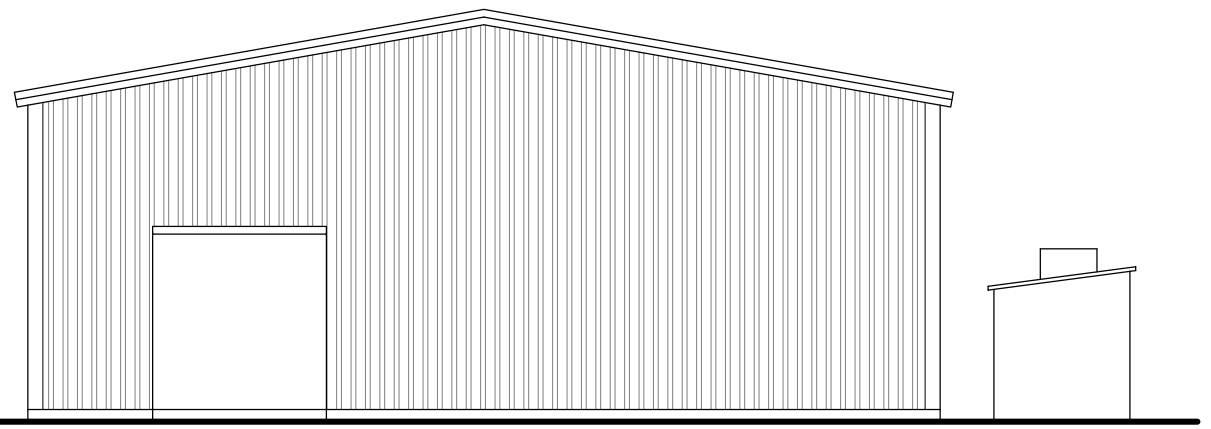


side : north east



rear : south east

new building



existing building

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REVISIONS.

PROJECT.
GROUNDS MAINTENANCE BUILDING
STANLEY PARK, CHIPPENHAM.

SCALE.
1:100 @ A3

DRAWING.
ELEVATIONS
PROPOSED

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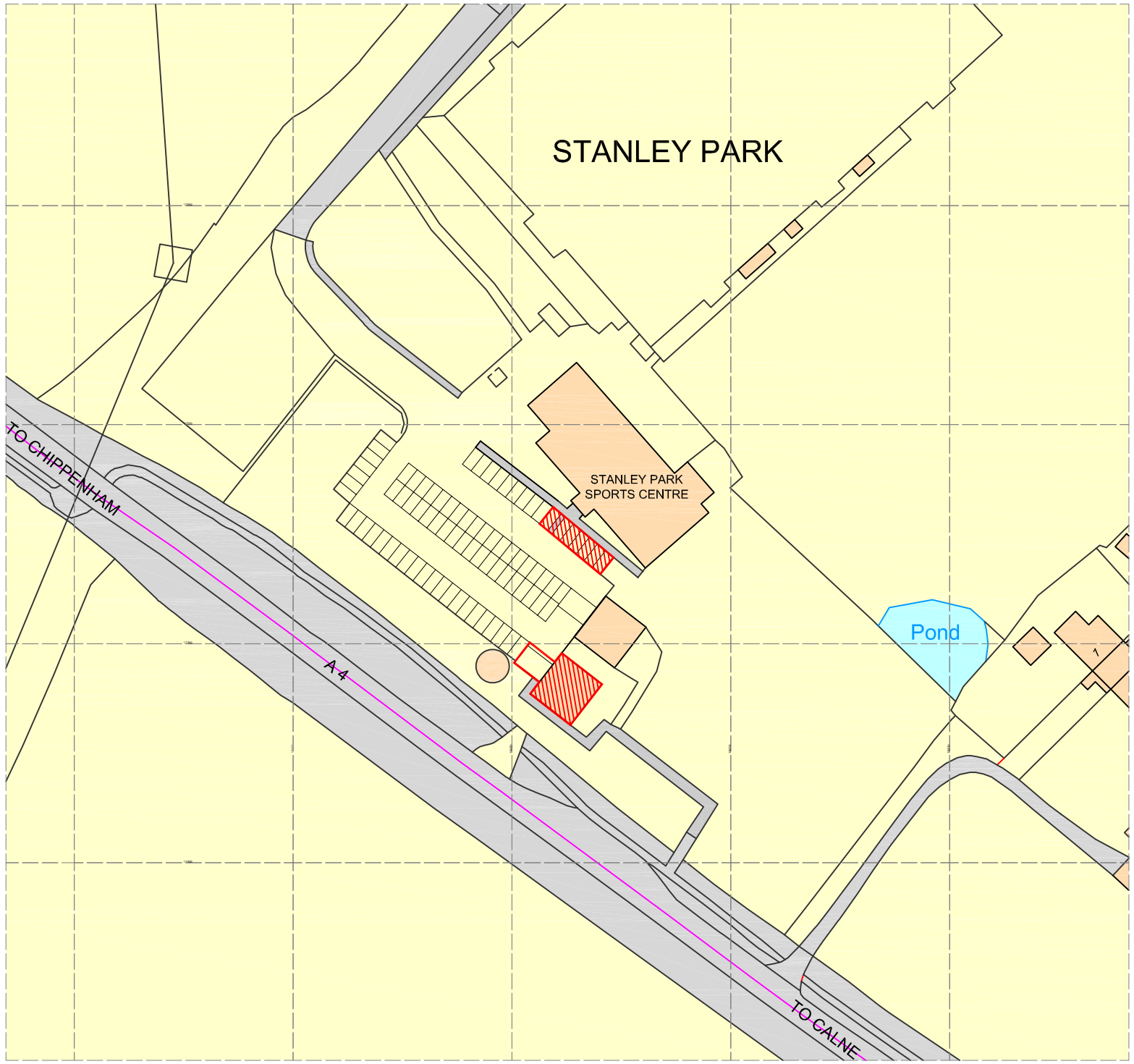
996:06

DATE.
DECEMBER 2021



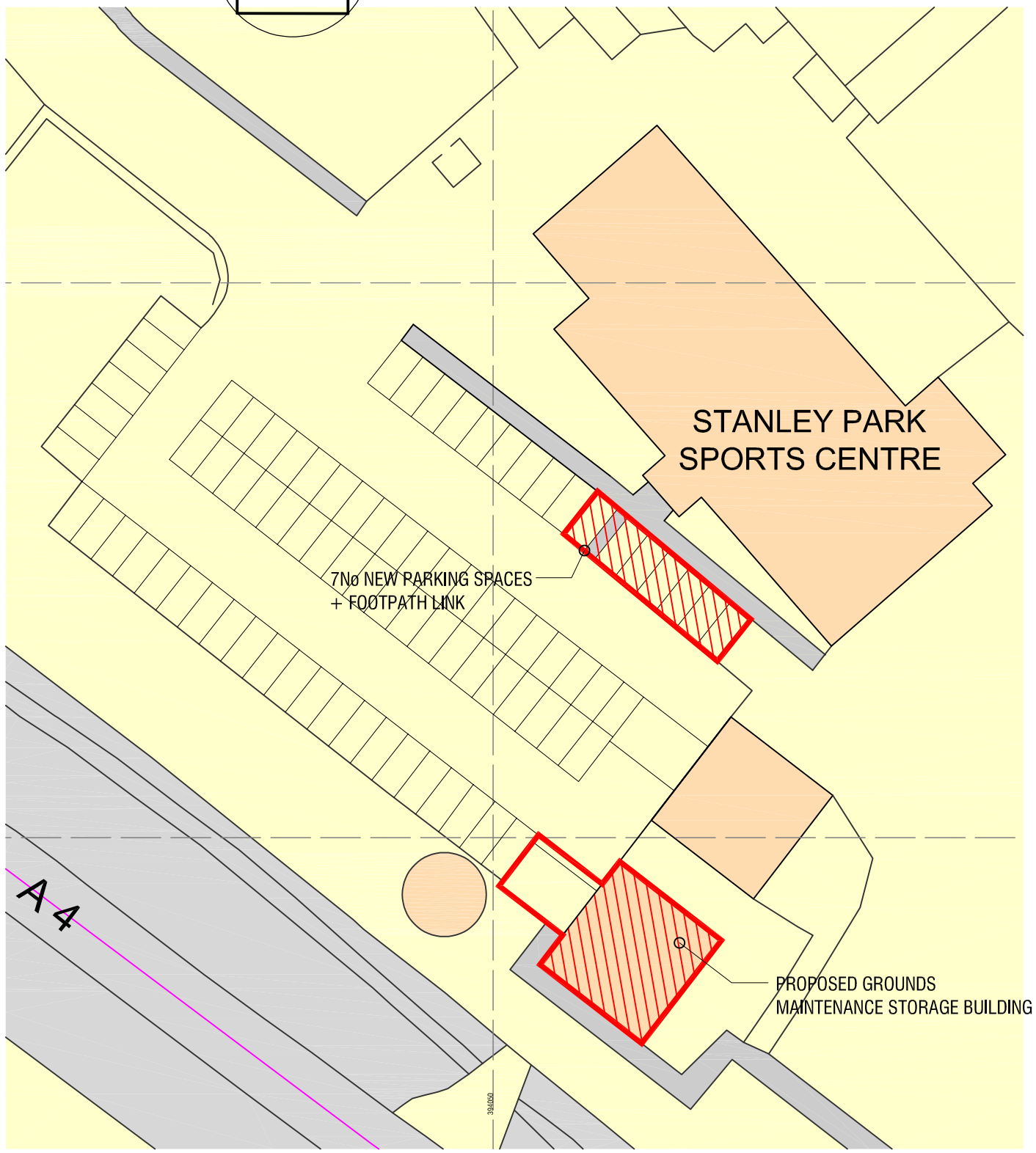
LOCATION PLAN
1:1250 @ A3

0 10 20 30 40 50

N
W
E

BLOCK PLAN
1:500 @ A3

0 10 20 30



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REVISIONS.

PROJECT.
GROUNDS MAINTENANCE BUILDING
STANLEY PARK, CHIPPENHAM.
SCALE.
1:1250 & 1:500 @ A3

DRAWING.
LOCATION PLAN
AND BLOCK PLAN
DRAWN.
B.K.

DRAWING NUMBER.
996:07
DATE.
DECEMBER 2021

PCIP (to follow)