



Comhairle Cathrach Chorcaí
Cork City Council

Traffic Operations Division

Works Requirements

For

Road Safety Improvement Schemes

Tenders to be submitted via the etenders electronic tender box.



We are Cork.



**Cork
City Council**
Comhairle Cathrach Chorcaí

Traffic Operations Division

Road Safety Improvement Schemes

Works Requirements, Volume A1

Document Control Sheet

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Numbered Appendices to TII Specification

1 Introduction

Cork City Council have identified locations throughout its jurisdiction where it intends to progress schemes of road works with the objective of improving road safety, convenience, and public amenity for all road users.

The proposed schemes of works will be located at several locations throughout Cork City Council's jurisdiction on open National, Regional and Local Roads with live vehicular and pedestrian traffic in urban, public realm, suburban and rural settings.

The works on the schemes will primarily consist of: site clearance, excavation of existing road and footpath pavements, installation of subsurface utility ducting and drainage, construction of new road pavements, footpaths, traffic calming features, landscaping, and installation of traffic signalling and public lighting equipment.

This contract is to be procured using the Open Procedure of the Capital Works Management Framework. Tenderers are now requested to submit a tender for the works detailed in these Works Requirements.

This document, the "Volume A - Works Requirements", describes the location and nature of the works, and prescribes the form of Contract, Specifications, Standards and Codes of Practice etc according to which the Works must be executed by the Contractor.

This document must be read in conjunction with "Volume A2 – Scheme Drawings", and any other document referred to in the Works Requirements.

2 Title of Contract

This Contract shall be known as the "*Road Safety Improvement Schemes*" Contract.

3 Conditions of Contract

The Conditions of Contract in "PW-CF5 Minor Building and Civil Engineering Works Designed by the Employer" shall apply to this Contract.

4 Specification

4.1 General Specifications

All works to be completed under this project, including materials supplied, working methods, temporary works, standard of workmanship and testing must be compliant with the General Specification. The General Specifications sets out the standard requirements with respect to materials, products, construction methods, quality control and workmanship. The General Specifications applicable to this Contract shall consist of the following, in order of precedence:

1. The Works Requirements Volume A1 (this document)
2. Cork City Council's ITS "*Exterior Lighting Design Requirements, Guidance & Specification Manual for Lighting Equipment Supply, Installation & Maintenance*" Rev 11
3. TII "*Specification for Works*", Document Nos TII-CC-SPW-00100 - 05500"
4. TII "*Standard Construction Details*" Document Nos TII-CC-SCD-0001 to 90524"
5. TII "*Requirements for Measuring & Pricing*" Document Nos TII-CC-RMP-00010 to RMP-02900
6. The Traffic Signs Manual, Chapters 0-9, (Department of Transport, 2019-2021)
7. Guidelines for Managing Openings in Public Roads, (Roads Management Office, 2017)

In the case of the above, the edition current on the date of issue of the invitation to tender shall apply.

The TII Specification, Standard Construction Details and Requirements for Measuring and Pricing are freely available for viewing and download on the TII Publications website.

The "Traffic Signs Manual" and "Guidelines for Managing Openings in Public Roads" are available from the websites of the publishing organisation.

4.2 Particular Specification / Numbered Appendices to TII Specification for Works

The Particular Specification sets out the specific requirements applicable to this Contract, they are unique to the scheme of works to be carried out under the contract. The particular specification shall consist of the following:

- Works Requirements Volume A2 – Scheme Drawings
- The TII Numbered Appendices to this document.

Due to the specialised nature of much of the work in the Contract, the TII prescribed format of Appendices to the Specification has not been followed precisely, and specific construction details have in general been identified on the scheme drawings.

4.3 Contractor's Queries and Clarification by Employer's Representative

Should the Contractor consider that there is a lack of information or clarity in any aspect of the Works Requirements/Specifications, they are reminded of their obligation to bring the matter to the notice of the Employer's Representative promptly. The ER will issue any necessary clarification on the matter.

5 Contractor Presumed to have Read & Understood Works Requirements

Upon submitting a tender for the Contract, all tenderers, and the successful Contractor (if awarded) will be deemed to have fully read and understood the contents of these Works Requirements and all other documentation issued under the e-Tenders notice.

In submitting a tender, they shall also be deemed to have read, understood and accepted any and all constraints, restrictions and conditions stated in these Works Requirements.

The Contractor will be deemed to have included for the managing of any such stated constraints, restrictions and conditions in their tendered rates.

No claims for additional costs will be entertained where part or all of the basis of the claim is that the Contractor was unaware of a constraint, restriction or condition expressly stated in the Works Requirements, or which could be implied and reasonably foreseeable by a competent contractor having visited the site and read the works requirements.

6 Contractor Obligation to Execute Works According to Works Requirements

The Contractor is obliged to carry out the Works in full compliance with the works requirements, scheme drawings, and any other specifications which apply to the works, and in compliance with any Instructions issued to them by the Employer's Representative.

Where it is determined by the Employer's Representative that products or materials not complying with the relevant point of specification have been incorporated into the works by the Contractor, or that the works are otherwise not in full compliance with the Works Requirements, or an instruction issued by the Employer's Representative, the Employer's Representative will instruct the contractor to rectify the situation by removing the non-compliant materials, products or works elements, and re-execute the work at the Contractor's expense to the satisfaction of the ER's satisfaction.

No claims will be entertained for the re-execution of any works or works elements where the Employer's Representative has determined that such works were not in compliance with the Works Requirements with respect to materials, products, workmanship, or otherwise.

7 Scope of Works

7.1 Location of Works (Initial Scope)

The initial scope of work for this scheme will initially consist of (and may be limited to) those locations listed in Table 7.1 below.

Works Section / Site	Location (click to hyperlink to location on Google Maps)
A	L98492 Coolgarten Park & R849 Glasheen Road
B	L98492 Coolgarten Park & R608 Magazine Road
C	L5108 Tower St, L5186 Friar St & L5026 Friars Walk
D	R614 & R616 White's Cross Junction

Table 7.1: Locations for works sections in initial scope

The Works will be at multiple works locations throughout Cork City Council's jurisdiction on a mix of open National, Regional and Local roads with live vehicular and pedestrian traffic in urban, public realm, suburban, and rural settings. Some work locations will close to schools, healthcare facilities, parks, churches, and other busy institutional and community facilities.

The Contractor shall visit the sites at tender stage, and they shall be aware of the types, volumes and patterns of vehicular and pedestrian traffic that are likely to be encountered during the works at each location. They shall take this into account when preparing their Tender and Works Proposals.

7.2 Scope of Works

The work will generally consist of the activities listed in

Table 7.2 at each of the sites. The activities will not necessarily need to be carried out in the exact order indicated in the table.

The Scheme Drawings (Volume A2) provides full details of the work to be carried out at each site.

Table 7.2: List of Project Milestone Activities

#	Milestone Activity	Activity Led By
1	Site survey and marking out all underground utilities, ducts and pipelines, liaising with the relevant utility operator where necessary	Main Contractor
2	Set out works according to Works Requirements & Scheme Drawings	Resident Engineer Main Contractor
3	Installation of traffic and pedestrian management	Main Contractor
4	Site clearance - removal of vegetation, road signage, street furniture, boundary railings and demolition.	Main Contractor
5	Saw cut, break out and excavation in existing footpaths, road pavement and green areas	Main Contractor
6	Installation of subsurface, drainage ducting and utility chambers etc	Main Contractor
7	Construction of new kerb lines and footpaths	Main Contractor
8	Construction of concrete/stone masonry walls, fences railings and other boundaries and structures.	Main Contractor
9	Road pavement construction, including speed tables and flat top ramps.	Main Contractor
10	Reinstatement and making good of other footpath and road pavements, and landscaped areas	Main Contractor
11	Laying out of new areas of landscaping.	Main Contractor
12	Fit out and commissioning of traffic signalling equipment and public lighting and associated electrical equipment and cabling.	Electrical Subcontractor
13	Installation of road traffic signage and road markings.	Main Contractor
14	Facilitate acceptance inspection by client, snagging, handover and re-opening of area to the public.	Main Contractor

7.3 Changes to Scope of Works

Cork City Council may, at its discretion and in accordance with the contract, instruct for changes to the scope of the works on this scheme. Such changes to the scope may consist of:

- Addition of a new Work Section / Site onto the initial scope.
- Omission/removal of a Work Section / Site from the initial scope.
- Changes to the proposed layout and details of the proposed works at any Works Section.

7.3.1 Possible Additional Work Sections / Sites

1. There is a possibility that further work locations may be added to the scope of work.
2. Where additional works locations are to be added to the scope, the Contract Sum will be adjusted by Change Order on the basis of the tendered rates.
3. Where the tendered rates of equivalent line-items in the bill of quantities differ between the bills for the initially tendered works section/locations, then for any new works added into the scope the rates used for valuation of the additional works will be an average of the equivalent line-item rates tendered across all of the works locations in the initial scope.
4. Notwithstanding the above, there will be no obligation on Cork City Council to instruct any additional works to be added to the scope.
5. Cork City Council also will maintain a right to procure other similar works independently outside of this contract at its absolute discretion.

7.3.2 Removal of Works Section/Site from initial Scope (Descoping)

1. Cork City Council may, at its absolute discretion, remove or omit a Works Section/Location listed in the initial scope from the Contract.
2. Where Cork City Council decides to descope/remove a Works Section/Location from the contract, this will be instructed by the ER issuing of a Change Order, in accordance with the Contract.
3. The Contract Sum will be adjusted as appropriate according to the Tendered Rates and Bills in the Pricing Document, and according to the provisions of the Contract.

7.3.3 Other Changes to Scope

1. Other changes to the scope of works may be instructed, which may consist of altering the layout or design details at a Works Section.
2. Such changes will be instructed by the ER issuing of a Change Order, in accordance with the Contract.
3. The Contract Sum will be adjusted as appropriate according to the Tendered Rates and Bills in the Pricing Document wherever possible, and according to the provisions of the Contract.

8 Reserved Specialists - Electrical Contractors

For all electrical work, including general electrical work, Public Lighting and Traffic Signals, the contractor is required to appoint a suitable electrical contractor or contractors from Cork City Council's Electrical Contractor's Panel, or Traffic Signal Contractors Panel, as appropriate.

The Electrical Contractors on the Panel are listed in Table 8.1 below.

Table 8.1: Pre-qualified electrical contractors

Panel of Electrical Contractors	
Electric Skyline Ltd. CRF House, Dalton Street, Claremorris, Co. Mayo Cormac MacNally 094 9360954 cmacnally@electricskyline.ie	Enerveo Ireland Limited, Unti 42, Block 528, Grant's View, Greenogue Business Park, Rathcoole, Co. Dublin D24 C6CV Caitriona Martin, 01 211 8976 Caitriona.martin@enerveo.com
Al Read Electrical Co. Ltd, 1 Lorcan Grove, Whitehall, Dublin, D09 PX72. Philip Reed, 087 248 5176 phil@alreadelectrical.com	Killaree Lighting Service Ltd, Killaree, Threecastles, Co. Kilkenny. Damien Lennon 089 893 1619 klighings@gmail.com
McSherry Electrical Ltd, Mallow, Co. Cork. Neil McSherry 022 42409 n.mcsherry@mse.ie	Sean Ahern Ltd 16 Southlink Park, Ballycureen, Cork. Michael Ahern 021 427 3227 michaelahern@ahernelec.ie

Appendices to TII Specification

APPENDIX 0/1: CONTRACT SPECIFIC ADDITIONAL, SUBSTITUTE AND CANCELLED CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

1 Health & Safety – Additional Clause

1.1 General Obligations of the Contractor

The Contractor shall execute the works in full compliance with all relevant requirements of the following:

1. Safety, Health and Welfare at Work (General Application) Regulations 2013-2019,
2. Health, Safety and Welfare at Work (Construction) Regulations 2013-2020,
3. Any relevant Codes of Practice or Guidelines issued by the Health and Safety Authority.

Where, in the opinion of Cork City Council, any non-compliances with the Regulations are identified with respect to the safe execution of the works, Cork City Council will instruct the contractor rectify those non-compliances in a timely manner.

The Tender Sum and all rates shall be deemed inclusive of **all** costs and overheads related to compliance with the Health and Safety Regulations, including provision of PSCS services.

1.2 Project Supervisor Construction Stage (PSCS) Appointment

The contractor will be appointed as Project Supervisor for the Construction Stage (PSCS) and they shall be responsible for discharging all duties required of the PSCS under the Regulations.

The contractor may appoint a suitably competent member of their staff to manage the PSCS role or they may appoint a third-party health and safety advisor/consultant to as a Health and Safety Co-ordinator to assist them in managing their PSCS duties.

The contractor must forward the name and contact details of the person assigned by them to manage the PSCS role Cork City Council prior to commencement on site.

1.3 H&S Documentation

In particular, the contractor will be required to submit the following documents to Cork City Council before commencement of works on site;

1. Construction Stage Safety and Health Plan, prepared in accordance with HSA guidelines,
2. Safe Systems of Work: Method Statements and Risk Assessments for the work
3. Traffic and Pedestrian Management Plan.

The Contractor shall amend and update these documents as may be necessary and as agreed with Cork City Council from time to time during the works.

The Contractor shall provide the Employer's Representative (ER) with all information including drawings, utility locations, maintenance/instruction manuals, etc, as may be requested for inclusion in the Project Safety File.

1.4 Site Safety Inspections

Cork City Council staff carry out formal Health and Safety inspections of all construction related activities under their remit, including all work carried out by contractors.

Inspections will consider all H&S matters relevant to the works. The following non-exhausting list outlines some of the inspection points:

1. H&S Documentation - such as Safety Plan, Safety Statements, Method Statements, Risk Assessments, compliance with legislation, permits, permissions etc.
2. Plant and Equipment – suitability, condition and testing/certification.
3. Vehicle Safety – road going vehicles.
4. Excavations – stability, dewatering, spoil transport and stockpiling
5. Temporary Traffic Management – TTM design, maintenance, personnel training and quals
6. Training and CSCS certification for all personnel

7. Correct provision, use and storage of PPE among staff
8. Provision of appropriate First Aid and emergency facilities and fire precautions
9. Manual Handling
10. Housekeeping
11. Welfare Facilities

All contract construction projects can expect at least one safety inspection. Multiple inspections are likely on larger scale works, or on works being carried out more than one location.

Inspections will be carried out at random and will be unannounced.

Where the inspections identify any deficiencies, the contractor will be directed to rectify the matter in an agreed timeframe.

Where the inspection identifies serious deficiencies, the Contractor may be directed to suspend the works in part or in whole until the issue is rectified.

Where the ER instructs for works to be suspended on account of safety deficiencies, whether the deficiency is identified in an inspection or identified incidentally, no contractor claims for delay costs will be entertained. In submitting a tender, the contractor is deemed to be aware of and agreeing to this provision.

The HSA will be notified in the event of any reportable incident or dangerous occurrences being identified.

2 Insurance Requirements – Additional Clause

Prior to Contract Award, the Contractor will need to verify they hold the following minimum insurance cover:

- Public Liability cover of € 6,500,000 with a maximum excess of € 10,000,
- Employers Liability cover of € 13,000,000 with no excess.

3 Permits & Licences for Works on Public Roads & Footpaths – Additional Clause

Cork City Council may require the Contractor to obtain Works Permits/Licences for works taking place on public taken-in-charge roads, footpaths and public realm areas.

Table 0/1 below lists the types of Works Permits and whether they are applicable to this project.

Contractor must ensure that all Works Permit applications are submitted and terms agreed with the Traffic Operations Division in good time prior to the commencement. Road Opening Licences and Road Closures Licences should be applied for at least 4 weeks in advance of commencement. For all other licence and permit types, applications should be made a minimum of 2 weeks in advance of commencement.

Contractor/PSCS should contact Cork City Council Traffic Operations Division well in advance for any clarification on permit/licence requirements.

The Contractor should note that most Permit/Licence types require submission of a Traffic Management Plan.

The Contractor is also advised that Permits to Dig from utility companies such as ESB Networks, Gas Networks Ireland, Eir, etc may be necessary and the contractor should liaise with the relevant utilities in this regard.

The contractor shall be responsible for any costs incurred in securing any licences or permissions and shall include for such in their tendered rates.

The contractor shall be responsible for paying any bond which may be required in relation to any road opening licence or other permission and shall include for this in their tendered rates. There shall be no additional charge or fee made against Cork City Council in this regard.

3.1 Road Opening Licences

The Contractor must apply for a Road Opening Licences for all works requiring excavation on a public road or footpath. Licence applications must be applied for through the online process referred to in Table 0/1.

For all Road Opening Licences for this project, Cork City Council will waive the requirement for a bond. However, the Contractor will still be required to pay the relevant application fee.

Table 0/1: Works Permits/Licences and Application Procedures

Works Permit Type	Related Activities	Applicable to Project	Application Procedure
Road Closures	Temporary Road Closure, One Way flow or Lane Restrictions	Yes	https://corkcity.submit.com/show/227 (apply minimum of 4 weeks in advance)
Road Opening Licences	Any excavations in roadways or footways	Yes	http://www.rmo.ie/maproad-users.html (apply minimum of 4 weeks in advance)
Hoarding and Scaffolding	Placement of site hoarding, fencing or scaffolding on road or footway	No	https://corkcity.submit.com/show/55 (apply minimum of 2 weeks in advance)
Mobile Crane/Hoists	Placement of crane/hoist on roads or footways	Yes	https://corkcity.submit.com/show/52 (apply minimum of 2 weeks in advance)
Abnormal Load Permit	Transport of oversized or heavy loads	No	https://corkcity.submit.com/show/45 (apply minimum of 2 weeks in advance)
Skip Placement	Placement of a skip by a licenced skip operator on a public roadway or footway	Yes	https://corkcity.submit.com/show/57 (apply minimum of 2 weeks in advance)
Commercial Vehicle Work Permit	Use or parking of commercial or work vehicles on the public road.	Yes	https://corkcity.submit.com/show/223 (apply minimum of 2 weeks in advance)

4 Meetings, and Progress Reports & Communications – Additional Clause

The contractor may be requested to attend meetings with Cork City Council representatives from time to time to discuss the works, interface with the public, and temporary traffic management. The contractor may also be requested to provide reports to Cork City Council from time to time, detailing the progress and status works, according to the requirements of the Employer's Representative.

At a minimum the Contractor will be required to attend the following meetings:

- Pre-Commencement Meeting
- Fortnightly progress meeting with the Employer's Representative
- Weekly update meeting with Cork City Council Traffic Operations

All written communications shall be by e-mail or unless agreed otherwise.

All notifications and instructions issued under the Contract shall be strictly in writing via email.

Meetings may be either in-person, online, or as may be agreed between the parties from time to time.

Pre Commencement Meeting

The Contractor will be required to attend a pre-commencement meeting with the Employer's Representative as soon possible after award of the Contract. The purpose of this meeting shall be, at a minimum, to

- a) establish the main duty holders and points of contact for the purposes of the Contract,
- b) Review and agree the starting programme of works, as required by the contract
- c) Discuss and clarify any queries the Contractor may have in relation to the works
- d) Discuss and agree the contractor's working methods, phasing of works, and
- e) Any other relevant topics

The meeting will be chaired by the Employer's Representative or their nominee.

Weekly Update Meetings with CCC Traffic Operations

The purpose of these meeting is to agree and co-ordinate the timing and phasing of the works on an ongoing basis with respect to agreeing Temporary Traffic & Pedestrian Management, road closures and diversions etc with a view minimising impact of the works on traffic congestion and road safety.

The Employer's Representative will nominate a CCC Traffic Operations contact after award of the Contract.

Fortnightly Project Progress Meetings with Employer's Representative

Project Progress meetings will be scheduled, roughly every 2 weeks for the duration of the Works, or as might be determined to be necessary by the Employer's Representative from time to time. The following topics, at a minimum, shall form the basis of the agenda for such meetings:

- a) Health & Safety
- b) Temporary Traffic Management
- c) Co-ordination & phasing of works
- d) Technical, specification, design and quality matters
- e) Budget, payments, claims etc
- f) Programme
- g) Any other relevant topics

The Contractor must agree a meeting agenda with the ER and circulate a written copy of the agenda to the meeting attendees at least 24 hours in advance of the scheduled meeting.

Meetings will be chaired by the Employer's Representative, or their nominee.

The Contractor shall document the minutes of the meeting, issue a draft of the minutes to the ER for review and agreement, and forward the agreed minutes to the meeting attendees within 24 hours of the meeting.

5 Contractor's Compound/Yard – Additional Clause

The Contractor shall establish for their own use, such welfare facilities and works compound/yard as they may determine necessary in order facilitate the execution of the works in an effective, efficient and safe manner.

Cork City Council will not be able to provide a yard or grounds for establishment of such a compound - the Contractor shall make their own arrangements in this regard.

The Contractor is reminded of their obligation to provide adequate staff welfare facilities under the Safety, Health and Welfare at Work (General Application) and (Construction) Regulations. The compound shall facilitate provision of such staff welfare facilities.

The compound shall be located in reasonably close proximity to the Works so as to facilitate effective servicing of the works from the compound.

The compound shall have adequate space for storage of such materials and plant/machinery as may be necessary for the works. The compound shall also be secured against unauthorised access and be well-lit during the hours of darkness.

The Contractor shall permit the Employer's Representative to access the compound at reasonable notice in order to inspect materials or items of plant used on the project where necessary.

The Contractor shall include details and location of their proposed compound in their Works Proposals.

6 Delivery & Storage of Materials – Additional Clause

6.1 Delivery of Materials

The Contractor shall ensure that vehicles used to deliver materials to sites, or to remove excavated materials, comply with the gross vehicle weights prescribed in the Road Traffic (Construction, Equipment and Use of Vehicles) Regulations 1963-2014. Owners of vehicles engaged by the Contractor for the delivery and removal of materials should be notified in advance that where the vehicle and its load exceed the permitted gross vehicle weight the materials will not be accepted.

6.2 Storage of Materials

The Contractor shall store all materials and products in a tidy manner, separating different materials and protecting them from physical damage and environmental degradation. All materials shall be handled and stored in accordance with manufacturers' and suppliers' recommendations. The Contractor shall arrange to store only the limited amount of materials on site for works in progress. Remaining materials shall be stored off site and only be brought to site when required for incorporation in the Works.

7 Utilities & Services – Additional Clause

7.1 Existing Utilities & Services

The Contractor shall ascertain the exact positions of underground services in any given area prior to undertaking work in that area and take all precautions for the protection of same. The Contractor shall make good any damage resulting from operations and shall indemnify the Employer against any claim for damages to ducts, drains, sewers, pipelines, cables, water pipes, and chambers or other property caused by their works. Contractor's prices must include for all protective, repair and/or other necessary work due present utilities.

7.2 Temporary Services

The Contractor shall provide all temporary services such as water supply, power, telecoms and the like where necessary for the proper execution of the works and for the continuity of services to nearby residences, businesses, and institutions.

8 Public Liaison – Additional Clause

8.1 General

The Contractor shall co-operate with Cork City Council to promote a pro-active public liaison approach.

The Contractor shall establish and maintain liaison with local businesses, residents, public transport operators, schools and other institutions who might be impacted or inconvenienced by the works, including those not immediately adjoining the works but who might be affected by diversion routes, traffic queues etc.

The purpose of the liaison will be to reasonable accommodation for the needs of the business and residents and to provide for their various requirements in conjunction with the construction works, such as deliveries, car parking, 24 hour access, emergency ambulance access etc. for the duration of the works.

The Contractor shall provide all the necessary manpower and material resources to meet these needs.

The Contractor shall monitor, on an on-going basis, the effects of construction activities on local stakeholders, residential, businesses or institutional, and will immediately endeavour to resolve any problems which arise.

8.2 Notification of Works to Residents and Businesses

Prior to commencement of works at any works section, the Contractor shall give at least 1 weeks notice to owners and occupiers of properties at all works areas, including those affected on side streets used for diversion routes. The notification should consist of a letter describing the nature of the proposed works and the likely impacts and be accompanied by a map highlighting the areas affected, alternative routes, and other traffic management measures proposed.

9 Dust Control – Additional Clause

The Contractor shall indemnify the Employer against all claims for damage or nuisance arising from their operations. They shall employ the best practical means to control dust emissions from their operations. This shall include:

- Limiting the operational capacity and speed of vehicles and machinery, operation of water spray equipment and any other measures deemed necessary to control dust emissions to within specified limits.
- Continuously spraying earthworks and haul routes in dry conditions with water, where the Employers Representative judges this to be necessary.
- All on-site cutting of paving materials on site shall be by wet-cutting mechanical plant. Dry-cutting of paving materials on site will not be permitted unless authorised by the Employers Representative.

10 Contractor Must Visit the Site – Additional Clause

In submitting a Tender the Contractor is presumed to have visited the site of the works and ascertained all local conditions and restrictions likely to affect the execution of the Works.

The Contractor will be deemed to have acquainted themselves generally with the layout, setting and nature of the site and particularly any features or irregularities of surfaces or site conditions, and the presence of utilities, structures, appliances, and any other obstacles which are not clearly shown or delineated on plans.

For the avoidance of doubt it should be noted that service connections to individual premises are generally not shown on any drawing but nevertheless their presence will be regarded as foreseeable to an experienced contractor. The Contractor should, in addition, carry out any investigation necessary as will enable them to fully appreciate and estimate for the works involved in the Contract.

No claims will be entertained for issues encountered during the works relating to: site and ground conditions, presence of buried services and utilities, temporary traffic and pedestrian management, or any other issue which ought to be reasonably foreseeable by a competent Contractor with experience of working on schemes of a comparable nature and scale who has visit the site in advance of the works.

11 Site Housekeeping & Waste Disposal – Additional Clause

11.1 Cleaning of Roads

The Contractor shall be responsible for maintaining all public roads and footpaths used in the course of the works in a clean, safe and passible condition for vehicles, cyclists and pedestrians.

They shall also take every precaution to prevent dirt, mud or other material being dropped or spread by traffic associated with the Works on roads in public use, whether such traffic is the Contractor's own vehicles, their sub-contractor's or their suppliers', and shall clean up any such spillages promptly.

If the Contractor fails to keep roads or footpaths clean, the Employer's Representative may deduct from the Contractor's account the cost of road cleaning operations carried out by the Employer.

11.2 Tidy Site on Completion of Work

On completion of the works at any section/location or any sequentially phased section of the works and prior to hand-over, Contractor shall leave the site and any adjoining property affected by their activities in a neat and tidy condition to the satisfaction of the Employer's Representative.

Carriageway and footpath surfaces shall be thoroughly swept and freed from mud, debris and mortar. Boundary walls, building facades, walls and any fences to adjacent properties shall be cleaned of any splashings of dirt, concrete or bitumen which may be attributed to the work.

Paintwork and plasterwork shall be touched up (or redone if deemed necessary by the Employer's Representative), where it has been damaged due to the Contractor's activity. All pipelines and chambers shall be cleaned and flushed out to the satisfaction of the Employer's Representative

12 Disposal of Waste – Additional Clause

The Contractor shall be responsible for the safe, responsible and legal disposal of all waste materials generated in the course of the works. Such material may consist of but is not limited to:

- Unacceptable Materials Class U1,
- Hazardous Material Class U2,
- Packaging from products
- Domestic/Commercial wastes from the site welfare and office facilities
- Waste material surpluses and offcuts etc

All wastes shall be disposed of in at an appropriately licenced waste facility. Prior to commencement of works the Contractor shall notify the Employer's Representative of the name and location of the licenced waste facilities that they intend to use.

The Contractor shall retain all dockets obtained from waste facilities. The Employers representative may, at their discretion, request proof of legal waste disposal and for the Contractor to supply the necessary dockets from the waste facility.

The Contractor is responsible for all arrangements and costs associated with disposal of wastes generated from the works. In submitting their tender, the Contractor is deemed to be aware of the types and quantities of wastes which are likely to arise during the works, and account and include for such in their tendered rates.

No claims will be entertained for any additional costs associated with disposal of wastes.

13 Damage to Pavements and Surfaces – Additional Clause

Any damage which may be caused by the contractor to road surfaces, road marking, footpaths, kerbs, green areas or other surface, street furniture or structure as a consequence of the works must be repaired by the contractor to the satisfaction of the Employer's Representative.

Any such repairs shall be affected in a timely manner shall be executed at the sole expense of the contractor. The contractor shall therefore execute due care and attention in their execution of the works to avoid damage to surfaces and structures.

All surface repair and reinstatement work shall be carried out in accordance with the Department of Transport's "Guidelines for the Management of Openings in Public Roads", unless agreed otherwise.

14 Enclosure of Site & Site Security – Additional Clause

The Contractor shall take adequate precautions to prevent trespass on the site by unauthorised persons as follows:

- **Quieter areas, or rural:** low footfall: minimum of surrounding the sites with interlocking plastic "Eurobarriers", secured against toppling with driven timber stakes secured to the barriers.
- **Busy sites:** city/town/village centre sites with high footfall, or suburban areas where children may congregate, or where there is a likelihood of antisocial behaviour. Min 2m high Heras security fencing, secured against toppling by being fixed to driven timber stakes.

The applicable enclosure and security measure shall be kept in place, and closed against unauthorised entry at all times for the duration of the works, both during working hours and when the site is closed.

15 Checking of Drawings – Additional Clause

The Contractor shall be responsible for checking all drawings, schedules and details of the works. In the event of any discrepancy being found between such drawings, schedules and details or if the Contractor considers that additional drawings or information are required, then in either case the Contractor shall report such discrepancy to the Employers Representative for instruction or apply for such detail drawings or information at least 21 days before the works concerned is to be executed.

16 Property Condition Surveys – Additional Clause

All buildings and structures adjoining the proposed works shall be surveyed prior to commencement of works.

The Contractor will be required to provide an experienced engineer or chartered surveyor to carry out the property condition surveys in accordance with TII-CC-SPW-00100 CI 136.

The Employer's Representative reserves the right to reject the proposed Structural Condition Surveyor if the experience and qualifications provided do not match the above requirements of CI 136.

The surveys shall consist of a detailed pre-works photographic record of all exterior and interior faces of building facades, boundary walls, fences, gates, and fixtures etc, and a written report detailing the condition of each property, and the nature and extent of any notable defects identified at each property.

The survey reports/photos shall be sent to the Employer's Representative prior to commencement of works.

17 Accommodation Works – Additional Clause

Unless otherwise agreed with the Employer's Representative, the Contractor shall, at all times, maintain access to all properties affected by the permanent or temporary works. The Contractor shall liaise with all the relevant property owners and occupiers before and during the Works to establish their access requirements.

The Contractor shall provide Temporary walkways and accesses, temporary vehicle crossovers and access or the like and/or carry out temporary backfilling and reinstatement or plating of excavations as necessary to meet these requirements.

The Contractor is deemed to have included for all such accommodation works in their tendered rates. No claims will be entertained for additional costs associated with any accommodation works which could have been reasonably foreseen to be required by a competent, experienced contractor having visited the site prior to submitting a tender.

Where applicable, Accommodation Works for residences, businesses and institutions are to be completed as soon as possible so that inconvenience to the property owners is minimised.

18 Protection of Water Quality in Watercourses: – Additional Clause

The Contractor shall take precautions to prevent pollution of watercourses due to sediment runoff from the site and from fuel/oil spills. Specific measures to be taken to prevent the above shall include the following:

- Contractor's plant, equipment etc. shall be free of any mechanical defects and be well maintained so as to prevent oil or fuel leaks into a watercourse.
- If there is a likelihood of suspended solids entering a watercourse, the Contractor shall provide a geotextile screen so as to prevent contaminants from entering the river.
- Where construction activity may damage a river bank, a temporary fence is to be erected to prevent damage and entry of spoil to the river.

19 Protection of Trees – Additional Clause

All trees are to be retained unless otherwise stated in the Contract Drawings. These trees are to be protected so that no damage is caused either to the trunk, limbs or the root system.

Felling, trimming or limbing of any trees shall done by a fully insured competent tree surgeon firm only.

20 Failure of the Contractor to carry out any reasonable order or instruction of the Employer's Representative or to complete properly any section of the works.

Should the Contractor fail to carry out any reasonable order or instruction of the Employer's Representative or fail to properly completing any section of the work, the Employer's Representative may have the work done and deduct the cost of doing so from any payment due to the Contractor.

APPENDIX 0/4: SCHEDULE OF CONTRACT DRAWINGS

Refer to Drawing DWG No. 000 of the Contract Drawings for the Drawing Schedule.

APPENDIX 1/1: ACCOMODATION & EQUIPMENT FOR THE EMPLOYERS REPRESENTATIVES SITE STAFF

The Contractor shall make a chainmen/assistant available to assist the Employer's staff at reasonable notice.

The Contractor shall make the equipment below available for use by the Employer's staff at reasonable notice:

- GNSS RTK Rover Survey Kit, and all associated accessories necessary for general use
- Laser Level kit, with tripod and 5m telescopic staff
- Engineer's Trundle Wheels
- 1200mm and 600mm Spirit Levels
- 30m Fibreglass measuring tapes

The Contractor shall ensure that equipment is kept in good condition and calibrated every 6 months where relevant.

APPENDIX 1/4: WORKING AND FABRICATION DRAWINGS

All drawings for the works are included in the Scheme Drawings in Volume A2

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR

The Employer's Representative may, at its absolute discretion, request that the Contractor arrange for testing of any material or product proposed or used for the works for compliance with the relevant standards referred to in the TII Specification for Works. The Contractor shall arrange for the testing to be carried out promptly.

The ER will determine the type and frequency of testing of materials and products at their absolute discretion.

The testing shall be carried out at a suitable lab or facility agreed between the Contractor and Employer's Representative. Test facilities/labs must be NSAI accredited and certified to carry out the requested test types.

For all tests carried out, a test result certificate shall be supplied to the ER within 24 hours of the test occurring.

The costs of all testing will be at the Contractor expense.

APPENDIX 1/6: SUPPLY AND DELIVERY OF SAMPLES TO THE EMPLOYER'S REPRESENTATIVE

The Employer's Representative may, at their absolute discretion, request that the Contractor supply samples of any material or product that is necessary for the works. The contractor shall provide the requested samples and deliver them to the Employers Representative's premises without unnecessary delay.

Alternatively, if it is not practical to deliver samples to the Employers Representative, the Contractor may arrange for the ER to inspect samples on site, or to visit the premises of the material/product supplier.

APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE

1 Extent of the Site

The locations and extents of the Sites will as be seen in the Scheme Drawings.

If the Contractor proposes the use of areas outside the Site for temporary advance signing and traffic management, he shall submit his proposals to the Employer's Representative for approval and the relevant areas shall considered as being included within the Site.

It should be noted that the Contractor will be restricted to only those activities and to the durations which are necessary for the carrying out of the Works. On completion, the areas shall be reinstated to their original condition, to the satisfaction of the Employer's Representative.

2 Location and Nature of the Sites

The Works will be at multiple works locations throughout Cork City Council's jurisdiction on a mix of open National, Regional and Local roads with live vehicular and pedestrian traffic in urban, suburban, and rural settings. Some work locations will close to schools, healthcare facilities, parks, churches, and other busy institutional and community facilities.

The Contractor shall visit the sites at tender stage, and they shall be aware of the types, volumes and patterns of vehicular and pedestrian traffic that are likely to be encountered during the programmed works at each location. They shall take this into account when preparing their Tender and Works Proposals.

3 Timescale and Phasing of the Works

The contractor may programme the work to allow for works to be ongoing on multiple Works Sections/Locations concurrently, if they so wish. The contractor shall submit their proposals in this regard and their works programme along with their tender.

The Contractor shall agree the proposed phasing of works or works section with the Employer Representative prior to commencement and at the scheduled progress meetings.

4 Working Hours & Restrictions on Working Hours

4.1 Normal Working Hours

Normal working hours for shall be as specified below:

Monday to Saturday -	0800-2000hrs
Sundays & Public Holidays -	no works, unless otherwise agreed.

4.2 Restrictions on Working Hours

Due to the nature of the works being on or adjacent to busy public roads, in many cases being in close proximity to business campuses, schools and other institutions, there is the potential for "on-line" works to cause traffic congestion or otherwise interrupt normal safe and efficient flow of vehicular & pedestrian traffic.

On-line works is defined as any activity in the Road or footway which has the potential to interfere with the normal flow of vehicular and pedestrian traffic. Such activities include road opening and reinstatement, kerb & footpath construction, or works which require suspension or restriction of a lane of traffic for any reason.

There will be restrictions on the times of day that on-line activities may be carried out. The restricted time periods for on-line work generally aim to avoid the morning and evening rush hour. Night-time only working for on-line works are specified for particularly busy roads.

The restrictions for working times for on-line works are listed in Table 1/7 for each location in the initial scope.

Off-line works which do not negatively affect the flow of traffic to a significant degree may proceed during normal working hours as defined in Section 4.1, and outside of the restricted times listed in Table 1/7.

Hours stated in Table 1/7 are preliminary. The Contractor shall confirm the permitted working hours for on-line and off-line works during their ongoing liaison with the Cork City Council Traffic Operations representative.

Works Section	Location (click to link to location on Google Maps)	Normal permitted day-time working hours
A	L98492 Coolgarten Park & R849 Glasheen Road	0930-1600hrs
B	L98492 Coolgarten Park & R608 Magazine Road	0930-1600hrs
C	L5108 Tower St, L5186 Friar St & L5026 Friars Walk	0930-1600hrs
D	R614 & R616 White's Cross Junction	0930-1600hrs
E	Other potential sites - TBC	TBC

Table 1/7: Restrictions on on-line Working Times

5 Limitations on the Use of the Site, Possession of the Site and Land Entry

1. The Contractor shall not have access to all areas of the site at the commencement of the Contract. The availability of areas of the site must be agreed with Cork City Council on a week-by-week basis.
2. The Contractor's possession of public roads and public realm areas will be subject to agreement of Cork City Council Traffic Operations at the weekly meetings referred to in Appendix 0/1. The Contractor is obliged to abide by any conditions and agreements made at these meetings.
3. Contractor shall be aware that discussions with Cork City Council Traffic Operations and An Garda Síochána may result in some elements of work only being permitted outside normal working hours.

6 Schedule of Stated constraints:

This list of Constraints is not exhaustive and all others suggested or implied by the Contract Documents or by the Contractor following their inspection of the site shall be deemed accounted for in their tender.

The following constraints will apply.

1. Should the Contractor wish to work outside normal working hours permission must be obtained from the Employer's Representative in writing. The Employers Representative may approve particular times for work outside normal hours and reserves the right to withdraw their approval to all or any particular time.
2. Access to all educational, businesses and other premises to be accommodated at all times, including out of hours deliveries, refuse collections etc. The Contractor shall take all necessary measures to minimise the impact of their activities on the businesses in the locality and shall meet and liaise with the business representatives to agree the extent of that impact and any accommodation works considered reasonable.
3. Rush hour traffic is defined as 07:00 – 09:30 hrs in the morning and 16.00 – 19:00 hrs in the evening. The Contractor is required to factor this into the program and minimise traffic delay during these times.
4. The Contractor shall suspend all works and remove all equipment and materials from all main arterial routes to Cork City Centre for a period commencing the **1st December to 7th January**.

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

1 Noise

Permissible noise levels are shown in the following table.

Period	Hours	Hours over which L_{eq} is applicable	Noise L_{eq} dB(A)*	Maximum dB(A)**
Mondays to Fridays	07.00 – 08.00	1.00	50	55
	08.00 – 19.00	11.00	65	70
Saturdays/Sundays/Public Holidays (if permitted)	7.00 – 19.00	12.00	50	55
Every Day	19.00 – 07.00	12.00	50	55

* The Equivalent Continuous Sound Level (L_{eq})
 **Maximum dB(A refers to BS 5969 Type 1 or 2 levels set to SLOW response & freq weighting A

2 Vibration

1. The Contractor shall use plant and work methods that minimise vibration. Generally, vibration shall not exceed a peak particle velocity of 8.5mm per second at any building or structure wall.
2. Peak particle velocities at Irish Water Trunk Mains must not exceed the following maximum limits:
 - 5mm/s at frequencies of less than 10Hz/s; and
 - 12mm/s at frequencies of 10-50Hz
3. The Contractor shall monitor ground vibrations at all works sections continuously using calibrated & certified vibrograph equipment that can record vibrations in three axes simultaneously.
4. Vibration measurements shall be taken at the base of buildings, on the side facing the source of vibration. Measurements should be taken on a hard surface on the ground outside the building.
5. The Contractor shall provide at least one vibration monitoring stations at all works sections within 50m of buildings or structures unless otherwise agreed with the Employers Representative.
6. The Contractor shall record all vibration measurements and shall provide these to the ER on request.

APPENDIX 1/12: SETTING OUT & EXISTING GROUND LEVELS

1. The Employers Representative and the Contractor shall agree co-ordinates and levels of Bench Marks and Control Stations before setting out.
2. The setting out, co-ordinates, levels and lines of all works are to be set out and agreed with the Employers Representative in advance of commencement of construction works.
3. No works shall take place until setting out has been checked and approved in writing by the ER.
4. The Setting Out tolerances shall be +/– 10mm horizontally and +/– 5mm vertically.

APPENDIX 1/13: PROGRAMME OF WORKS

1 Preliminary Programme – Tender Stage

1. All Tenderers shall provide a draft programme for the project at Tender Stage.
2. The preliminary programme shall include all significant project milestones and for all works sections. At an absolute minimum, the project milestones indicated in

3. Table 7.2. and indicative durations for each stage shall be shown, along with expected start and finish dates for each works section.
4. A Critical Path Analysis shall be done, and the Critical Path shall be indicated on the Gantt Chart.

2 Detailed Programme

1. The Contractor shall provide a detailed programme in a form of a Gantt Chart which identifies the project's critical path at least 2 weeks before commencement of works.
2. The Programme should also indicate the associated time for completion of these elements.
3. This Programme is to be compiled using Microsoft Project software or similar and show the critical path.
4. The programme shall be continually updated and presented at the scheduled Progress meetings.
5. The Programme shall show a level of detail appropriate to each stage of the Works.
6. All elements shall be given earliest and latest start dates.
7. Programme shall be read in conjunction with Traffic Management Plans, showing the intended sequence.

APPENDIX 1/14: MONTHLY STATEMENTS

1. Monthly statements submitted to the Employers Representative shall be set out under headings similar to those in the Bill of Quantities and shall separately identify each item, quantity, unit, rate and value.
2. Items not described in the Bill of Quantities but appropriate for inclusion as measured work shall be shown at the end of the relevant section indicating location, description, quantity, unit rate and value.
3. The Contractor shall allow the Employers Representative to inspect invoices for goods or materials included in the statement pursuant to the Conditions of Contract as may be required.

APPENDIX 1/16: PRIVATELY AND PUBLICLY OWNED SERVICES AND SUPPLIES

1 Utilities - General

Buried and overhead utilities will be within the work areas, including telecommunications, traffic signalling, water, drainage, electricity and natural gas. Utilities may be owned by public or private utility operators.

The Contractor shall maintain the 100% continuity of service for all utilities for the duration of works. Service interrupts may be permitted only with the written consent of the ER and the relevant utility provider.

The guidance in the HSA publication "Code of Practice for Avoiding Danger from Underground Services" must be observed during the course of the works.

The contractor must liaise with all relevant utility providers before commencement and during the works in order to determine the locations of buried services, and agree any working methods and precautions, outages, disconnections, and temporary or permanent diversions.

Prior to any breaking of ground at each installation location, the contractor will be required to CAT scan the area for buried services and mark out their location.

No claim for additional costs will be entertained for dealing with buried utilities where their presence could have been reasonably foreseen by a competent contractor having visited and inspected the site and environs.

The Contractor shall assume that buried services are present on site until proven otherwise by surveys and liaison with utility providers.

2 Utilities Mapping

The Contractor shall refer to the Preliminary Safety and Health Plan for indicative locations of utilities on the sites. The Contractor is also strongly advised to avail of Dial Before You Dig services made available by several utility companies. Links to these services are given in the Preliminary Safety and Health Plan.

The Contractor shall note that utility connections to individual properties are not indicated on utility mapping.

APPENDIX 1/17: Temporary Traffic and Pedestrian Management

1 General

- 1 Access for pedestrians, cyclists, and vehicular traffic is to be maintained throughout the site unless otherwise agreed with the Employers Representative.
- 2 The contractor shall prepare a Traffic & Pedestrian Management Plan. This must be approved by Cork City Council prior to commencement of works on site. A Draft Traffic and Pedestrian Management Plan shall be submitted with the tender as part of the Works proposals. A final Plan shall be prepared and agreed prior to commencement of works.
- 3 This plan shall be prepared by a suitably trained and experienced TTM Designer and shall be compliant with the following standards published by the Department of Transport:
 - Temporary Traffic Management Design Guidance
 - Temporary Traffic Management Operations Guidance
 - Chapter 8 of the Traffic Signs Manual
- 4 The TTM Designer, TTM Operations Supervisor and any operatives with responsibility for traffic management must hold a recognised and current training qualification for their role. The plan must be approved by the Employers Representative before works may commence.
- 5 During the works, the contractor must deploy and maintain all necessary traffic management in accordance with the Traffic and Pedestrian Management Plan for as long as may be deemed necessary.
- 6 The Plan must encompass all the individual installation locations concerned under this contract. The Plan shall be updated as might be necessary and agreed with Cork City Council from time to time.
- 7 The contractor's tender sum and unit rates will be deemed to be inclusive of all costs relating to provision and maintenance of traffic & pedestrian management measures.
- 8 The Contractor shall include for any costs and resources necessary for altering updating and maintaining the approved temporary traffic management scheme as the works progress.

2 TTM is a Contractor's Risk

The Contractor is deemed to have inspected the site and satisfied themselves as to traffic and pedestrian volumes, and of the Temporary Traffic Management measures required to comply with the DoT Standards.

No claims whatsoever will be entertained for any costs associated with the deployment, maintenance, alteration, re-deployment or removal of any TTM measures. All TTM will be at the Contractor's expense and will be a contractor's risk. They shall be aware of this and include for this in their tendered rates.

3 Constraints on Traffic Management

The following restrictions/constraints shall apply:

1. The use of temporary traffic lights will, as a rule, not be permitted in urban areas of Cork City Council's jurisdiction unless specifically agreed with CCC on a case by case basis.
2. Road Closures will not be permitted for Temporary Traffic Management, unless specifically agreed with CCC on a case by case basis.
3. Pedestrian barriers used on the TTM scheme shall be of red plastic, Eurobarrier or equivalent.
4. Pedestrian barriers **must** be used for delineating pedestrian diversions, walkways, and the works areas.
5. Marker tape strung between cones will not be acceptable for delineating pedestrian walkways, and if present, the ER will direct it's removal and replacement with approved pedestrian barriers.
6. Temporary lighting shall be provided on pedestrian diversion routes which are not otherwise sufficiently lit.

4 Inspection of Traffic and Pedestrian Management

Cork City Council carries out routine inspections of TTM as part of its safety inspections, as detailed in App 0/1.

Inspections will examine the following points at a minimum:

1. Suitability and adequacy of Traffic and Pedestrian Management Plan
2. Compliance of the on-site TTM with the Plan
3. Condition and proper maintenance of the TTM,
4. Qualifications and training of staff and personnel with responsibility for TTM
 - a. TTM Designer
 - b. TTM Operations Supervisor

At least one inspection will be carried out at all TTM installations.

Inspections will be random and unannounced.

Where the ER considers that the TTM is not satisfactory, they will instruct the Contractor to rectify the deficiency to the ER's satisfaction and the Contractor shall complete this without unnecessary delay.

Where the ER determines that the defects are of a serious nature which pose an imminent threat to safety, they may at their discretion direct that works cease until the deficiencies in the TTM scheme have been rectified to their satisfaction.

No claims whatsoever will be entertained for rectification or improvement of TTM deficiencies, or for any work stoppages associated with an instruction to cease works on account of deficiencies in the TTM.

5 Maintenance of Public Transport

The Traffic Management Plan shall include for existing bus services to be maintained to each of the bus stops, within the works areas, or at a suitable safe location nearby for the duration of the works. The Contractor shall liaise with affected bus operators in advance of works and agree alternative stop locations where necessary.

Bus Eireann is the main public transport operator in Cork and may be contacted at 021 4837785.

APPENDIX 1/18: TEMPORARY DIVERSIONS FOR TRAFFIC

Any proposed diversions shall be indicated in the Draft Traffic Management Plan. Proposed diversions are subject to approval of the Gardai and Cork City Council Traffic Operations at the weekly meetings.

No claims will be entertained in the event of refusal of proposed diversions.

APPENDIX 1/22: CONDITION AND PROGRESS PHOTOGRAPHS

Prior to commencement of construction work the Contractor shall photograph and record the external condition of **all** adjacent buildings, facades, boundary walls, roads, footpaths, etc. within 50m of the proposed permanent works.

The dates and locations of each photograph shall be identified and recorded, and provided to the ER.

APPENDIX 1/26: IRISH AGRÉMENT BOARD, ROAD AND BRIDGE CERTIFICATES

All materials, products, goods and proprietary systems used must comply with the requirements of the European Union (Construction Products) Regulations 2013, and must have a CE Mark and Declaration of Conformity. If this is not available then Agrément Certifications shall be available for the material/product.

Materials, products and goods not demonstrating the above shall not be permitted to be used on the project except with the written consent of the Employer's Representative.

APPENDIX 2/3: RETENTION OF MATERIAL ARISING FROM SITE CLEARANCE

All road fixtures and furniture which are recovered from the site clearance work, and which are still in a good usable or salvageable condition, shall be either retained on site for re-incorporation into the works where possible, or returned to a nominated premises of Cork City Council at the direction of the ER.

Such fixture and furniture shall include, but is not limited to:

1. Road signs and poles
2. Traffic signalling equipment
3. Street furniture such as benches, rubbish bins, planters etc
4. Manhole and utility chamber covers and frames
5. Paving cobbles/setts/flags and kerbing stones/precast kerbs.

Where it is decided by the Employer's Representative that any recovered material is not in good enough condition and is not re-useable or salvageable, then they will direct the Contractor to dispose of the materials off-site at the contractor's expense.

APPENDIX 2/5: HAZARDOUS MATERIAL

All Hazardous materials shall be handled and disposed of safely and by licenced waste management operators. The Contractor is expected to be competent in dealing with typically encountered commonplace hazardous materials and these should be controlled by good management and good site practices.

See Appendix 0/1 for requirements for handling and disposal of waste materials including hazardous materials.

APPENDIX 5/1: DRAINAGE REQUIREMENTS

1 Pipe Types

Unplasticised polyvinylchloride (uPVC) pipes are to be used for all foul and surface water drains and sewers and shall comply with IS 424 or BS 4660 or BS5481.

3 Pipe Gradients

All sewers shall be laid to levels and grades shown on the drawings with even gradients between manholes. If no grade is shown, 150mmØ sewers shall have a minimum gradient of 1 in 150 and 225mmØ sewers or larger shall have a minimum gradient of 1 in 200.

4 Bedding and Haunching to Pipes

Bedding and haunching shall be granular material to Clause 503.3(1 as per CC-SCD 00521, Type S or T.

5 Backfilling of Trenches

Backfill of all trenches shall be in accordance with Standard Drawings SD7-SD14 of the DoT's "Purple Book".

6 Chamber Covers and Frames

All chamber covers and frames shall be compliant with EN 124 and shall product selection shall be in accordance any details indicated on the Contract Drawings or, where not specified in the Contract Drawings, product selection shall be of the appropriate **load class** for the location on the road and intended function.

Covers and frames shall be installed by:

- a) building up to the appropriate levels using engineering Class A bricks of 125N/mm² compressive strength, with designation (i) mortar, in accordance with SPW 02400.
- b) Bedding frame in a mastic asphalt mortar, building up a 200mm deep in mastic asphalt.
- c) Placing of mastic asphalt wearing course surround with PSV 60 coated aggregate applied to surface.
- d) cover, frame and surround shall have a level tolerance of +/- 2.5mm to surrounding finished road level.

The "Tarstone Road Mastic Ironworks Install System" would be an acceptable method of cover and frame installation, or any other system of equivalent performance approved by the ER.

7 Raising or Lowering Existing Covers or Gratings

Raising or lowering of chamber covers and gully gratings will generally involve the retention of the existing ironwork. Any new covers and/or frames required at the request of the ER shall be supplied by the contractor.

APPENDIX 5/2: SERVICE DUCT REQUIREMENTS

1 General Ducting Requirements

Trenches for **all** utility ducts shall, unless explicitly stated otherwise, be excavated, bedded and backfilled in accordance with the relevant details and dimensions in the following ESB Network ducting specifications:

- ESB Networks MV-LV Ducting Specification Summary, available at www.esbnetworks.ie/docs/default-source/publications/summary-of-standard-specification-for-esb-networks-mv-lv-ducting.pdf
- ESB Networks MV-LV Ducting Installation Drawings, available at: www.esbnetworks.ie/docs/default-source/publications/mv-amp-lv-cable-installation-drawings.pdf

All ducting bends shall be long radius bends (minimum 1.2m).

Contractors shall confirm the ducting specification with the utility providers before starting ducting works.

2 Proposals for Trenchless Ducting Methods

Proposals for trenchless ducting methods may be considered. The relevant utility operator must review the proposal and given written consent. Then the ERs agreement and written consent will also be then required. The ER is under no obligation to accept any proposal, and may direct that ducts are to be installed conventionally in trenches, in line with the Works Requirements.

3 Trench Excavation, & Cover

1. Duct trenches in landscaped or grass areas shall be a minimum of 325mm wide.
2. Duct trenches in footways or carriageways shall be a minimum of 450mm wide.
3. Cover to crown of all ducts shall be 875mm at a minimum in road carriageways.
4. Cover to crown of all ducts shall be 725mm at a minimum in footways, and grass/landscaped areas.

4 Bedding to Ducts

1. A minimum bed and surround depth of 250mm shall be provided to ALL ducts.
2. Bedding of all ducts and pipes in areas under footways and carriageways shall be a CI 503 Granular Material complying with Table 5/4.
3. Bedding of duct in grass/landscape areas shall be CBGM B as per CI.822, compacted according to CI. 813.

5 Warning Tapes

1. Suitable warning tapes/tile strip to be provided above all ducts, as per ESB specifications above.
2. “ESB” labelled warning tape/strip shall be used for all ESB ducts. ESB labelled tape shall **NOT** be used on any duct that does not carry an ESB cable.
3. Other utility ducts shall be provided with suitably marked and colour tape

6 Marker Posts

1. Marker posts shall be provided at all locations where service ducting, pipes or cables cross boundary walls, fences, ditches, or other boundary.
2. Marker posts shall be of precast concrete or a tough, durable material such as solid recycled plastic.
3. Minimum width of posts shall be 150mm
4. Marker posts shall be 600mm above ground level and be set in a 300 x 300 x 225mm ST4 concrete base.
5. The utility type and name and any other relevant details such as depth, voltage, pressures, etc shall be indicated on the post in a prominent and legible way such as engraved onto a conspicuously coloured aluminium plate or engraved into the marker post material.
6. All marker posts shall be of a type approved by the relevant utility company.
7. Marker posts by “ELKE International” of Lambourne, Ashlawn, Dundrum, Dublin 16 would be suitable, or an alternative of equivalent format and performance.

7 Backfilling of Trenches

1. All duct trenches shall be backfilled and reinstated in accordance with the Department of Transport’s “Purple Book” with particular reference to the Standard Drawing No.s SD4-SD14.
2. In the case of ESB duct trenches, these shall also be laid with ESB approved marker tapes/tiles.

8 Chambers, Covers and Frames

1. Unless stated otherwise, all chambers shall be block built as per CC-SCD-00565. Alternatively, suitable precast concrete or structural plastic equivalents may be used with the ER's approval.
2. All proposed chamber covers and frames, and re-setting of existing covers and frames shall be carried out in accordance with the material and method requirements already stated in Appendix 5/1.

9 ESB Networks Ducting

1. All ducting, marker tapes, chambers and other associated hardware intended for carrying ESB Networks supply cables shall be of a type approved by ESB-Networks and obtained from ESB-Networks approved suppliers. Approved suppliers list available at:
https://www.esbnetworks.ie/docs/default-source/publications/approved-material-suppliers-for-lv-mv-38kv-110kv-associated-works.pdf?sfvrsn=615d33f0_20
2. Where there is any doubt as to the acceptability of a particular product, the Contractor shall consult with ESB Networks and the Employer's Representative to establish suitability.
3. All ducting, marker tapes, chambers and other related hardware shall be installed in accordance with the ESB Networks guidance available at the following web links:
 - a. [Summary of Standard Specification for ESB Networks MV/LV Ducting](#)
 - b. [Duct Specifications of LV Cable for Non-domestic Connections](#)
 - c. [MV/LV Cable Installation Drawings](#)
 - d. [Electrical Services Guidebook For Housing Schemes](#)
4. Failure to adhere to ESB Networks specifications and material and installation standards will result in ESB Networks refusing to connect their service.
5. Where it is established that, for whatever reason, the contractor has supplied and/or installed ducting, marker tape, chamber materials that do not meet ESB Networks standards, or has not installed ducting in accordance with ESB Networks specifications, the Contractor shall be required to excavate and remove all non-compliant work and re-execute in a manner that satisfies ESB Networks requirements. The contractor shall be responsible for doing all such re-executing of works entirely at their own cost.

10 Ducting Connections to ESB Mini-Pillar Vaults

Ducting connections into existing mini-pillar vaults shall be made to the side faces of the existing vault only.

Where ducts are connected to the front face of the vault, ESB Networks will refuse to connect the service. In this case, the Contractor will be required to excavate and re-lay the ducting and remake the duct entry in the appropriate manner at their own expense.

11 Cork City Council Ducting – Public Lighting, Traffic Signalling, Street Furniture Etc

1. All other non-ESB ducting shall be, unless otherwise stated, uPVC compliant with EN 61386, twin-wall ducting of 110mm diameter with wall thickness minimum of 5mm.
2. Colour coding of ducts shall be according to IS 370:2016 unless stated otherwise.
3. Clearances from other services shall be as per ESB Networks Electrical Services Guidebook.
4. Suitably marked 125mm marker tapes shall be used above all ducts and services. **ESB Networks marker tapes shall not be used above any duct or service which is not an ESB Networks duct or service.**

12 Testing and Proving of Ducts

1. All ducting, on completion of sections between adjacent access chambers or terminations, shall be tested by drawing a mandrel through the duct with a 10mm polypropylene rope.
2. Before testing, ducts shall be cleared of any debris by drawing through a suitably sized duct brush.
3. The test shall be witnessed by the Employer's Representative or their staff. Mandrel tests that are not so witnessed will require to be re-done with ER witness present.
4. The mandrel used for testing shall be sized as per the table below:

Nom Duct Size	Mandrel Diameter	Mandrel Length
50mm	40mm	75mm
75mm	65mm	100mm
100mm	85mm	150mm
110mm	95mm	250mm
125mm	105mm	250mm
160mm	135mm	250mm

5. The draw force shall be monitored and recorded by a suitable and accurate method as the mandrel is drawn through the ducting.
6. As an alternative to mandrel test, the ducts may be proved by CCTV inspection.
7. The Contractor shall produce a provide to the ER a brief one-page test report sheet for each section of duct tested or inspected by CCTV. The report shall include, at a minimum:
 - Date and location of the test, and the name of the person & organisation carrying out the tests
 - Duct size, type and intended service
 - Details of mandrel or CCTV equipment used.
 - Photograph of each end of duct.
 - Log of draw-forces recorded during the test along duct's length, at intervals equal to the mandrel length.
 - The maximum draw force registered during the test, and the location by the mandrel
 - Still images of the interior of the duct if CCTV inspection was used.
 - Details of any defects or anomalies found in the ducts
8. A test which requires excessive force at any point to draw the mandrel through, or where it is not possible to draw the mandrel through shall be considered failed and the duct will not be accepted.
9. A CCTV inspection which shows deformation, cracks, breakages or misaligned joints in the ducting shall be considered failed and the duct concerned will not be accepted.
10. Where a duct section has failed test/inspection the Contractor will be required to excavate and carry out any repairs necessary at their own cost to the satisfaction of the Employer's Representative. The duct shall be re-tested/reinspected as appropriate.

13 Cleaning, Roping and Sealing of Ducts

After proving, all ducts shall have a suitably sized brush drawn through to clear the duct of any dirt and debris.

All ducts to be roped with 10mm diameter polypropylene rope and plugged with suitable end caps. The draw rope shall pass through the end cap through a 12mm hole and be knotted or tied off.

APPENDIX 5/6: LINEAR DRAINAGE CHANNEL SYSTEMS

Linear drainage systems shall be as specified on the Scheme Drawings, and shall comply with the following:

- be of robust construction with composite, HDPE or precast concrete channel.
- Cast/forged steel grating covers which can be locked to the channel with locking fixtures.

Linear drainage shall be compliant with IS EN 124 and the particular units chosen shall be of a loading class appropriate to the intended location, as per EN 124.

All drainage channels shall be laid in a bed and surround of ST-4 concrete of at least 150mm thick, and in accordance with the manufacturer's recommendations.

APPENDIX 6/2: REQUIREMENT FOR DISPOSING CLASS U2 UNACCEPTABLE MATERIAL

All excavated or milled bituminous materials shall be disposed of in accordance with the relevant environmental guidelines and regulations. Waste disposal sites or recycling facilities shall have waste licences.

The Contractor shall allow in their rates for disposal of Class U2 material and compliance with these regulations

APPENDIX 6/8: TOPSOILING, GRASS SEEDING AND TURFING

1 Topsoiling

All topsoil shall be site sourced Class 5A or imported Class 5B, deposited and compacted as per the requirements of Clause 618 in consultation with Cork City Council Parks Department.

Topsoil shall be free from stones larger than 40mm and any foreign or waste materials such as timber, vegetation, lumps of concrete, plastic or other rubbish.

Minimum topsoil thickness shall be 100mm unless stated otherwise.

2 Seed Mixes

Areas identified on the Scheme Drawings for seeding shall be sown with a wildflower meadow seed mix consisting of a mixture of all of the following species:

Perennials wildflowers in seed mix: 10% include Birdsfoot Trefoil, Betony, Cornflower Perennial, Poppy Perennial, Cowslip, Dames Violet, Field Scabious Maltese Cross, Meadow Buttercup Meadow Vetchling, Musk Mallow Ox Eye Daisy, Ragged Robin,, Red Campion , Ribwort Plantain, Rough Hawkbit, Salad Burnet, Self Heal, Small Scabious,, Tickseed, Common Sorrel , White Campion , Wild Carrot ,Yarrow, Yellow Rattle,

Grass species in seed mix: Browntop bent, Crested Dogtail, Sheeps Fescue, Chewings Fescue, Slender Creeping Red Fescue, Yellow oat Grass, Sweet Vernal Grass

Seed shall be spread at a rate of 5g per square meter.

Fertilizer shall be spread with the seed mix at a rate recommended by the supplier for newly sown meadows.

The seed bed shall then be lightly tilled in by rake or chain harrow and lightly rolled.

In dry weather the sown seed shall be watered as needed from time to time until the grass is established.

APPENDIX 6/9: LANDSCAPE AREAS

1 Planting Schemes

Unless indicated otherwise on the Scheme Drawings, or elsewhere in the Works Requirements, the planting scheme for low maintenance landscaping shall consist of either “Low Maintenance Low Level Landscaping” or “Native Hedgerow” as detailed in Tables 6/1.

2 New Low Maintenance Landscaped Areas

Any new low maintenance landscaped areas shall be constructed according to the layouts and details shown on the Scheme Drawings. The build-up/bed of the new landscaping shall be as follows:

- Subgrade of acceptable material, subbase or bare subsoil will be acceptable.
- Any hard impervious surface, or old road pavement shall be broken out and removed.
- 100-125mm thickness of good quality topsoil Class 5A or 5B
- A layer of black heavy duty 90g/m² landscaping membrane
- 100mm clear bark mulch, 30-50mm chip size.
- Plants set according to the prescribed plantings scheme.

In dry weather the sown seed shall be watered as needed from time to time until the grass is established.

3 Native Hedgerow Planting

Native hedgerow planting shall be according to the details and layouts shown on the scheme drawings. The build-up shall consist of hedgerow species specified in Table 6/1.

Once planted, the new hedgerow shall be kept well watered during periods of dry weather. Any plants dead after 6 months shall be removed and replaced with new plants of the same variety.

4 Reinstatement of Existing Landscaped Areas

- Existing landscaped areas excavated shall be reinstated to match the original layout, and condition.
- Where lawn grass surfaces are being excavated, the turf shall be stripped carefully and set aside for later reinstatement of the surface.
- Where areas of planted landscaping are to be excavated, the plants, small trees, shrubs present shall be carefully dug out, removed and stored securely, where possible. They shall be reinstated to their original layout with additional topsoil and/or compost added as required.
- Where weed barrier membrane is to be removed, this shall be cut cleanly. During reinstatement new weed barrier membrane shall be used which matches the original in thickness, type and colour. A minimum overlap of 600mm to the existing shall be ensured.
- Bark mulch, stone chips, etc removed shall be reinstated with new material to match the original.

Table 6/1 Low Maintenance Low Level Landscaping and Native Hedgerows

Low Maintenance, Low Level Landscaping			Native Hedgerow			
Variety	Form	Size	Variety	Form	Size	Proportion
Spirea jap. 'Goldmound'	2lt	20-30cm	Blackthorn	Bareroot	90cm	30%
Vinca major	2lt	20-30cm	Whitethorn	Bareroot	90cm	30%
Hebe albicans	3lt	20-30cm	Holly	3lt	90cm	20%
Genista lydia	3lt	30-40cm	Honeysuckle	3lt	30cm	10%
Euonymus fort. 'Emerald Gaiety'	3lt	20-30cm	Dog Rose	3lt	90cm	10%
Ceanothus thyrs. 'Repens'	3lt	30-40cm	-	-	-	-
- Plant varieties in equal proportions. - Planting in minimum of 100mm clean topsoil. - Overlay with 90g/m² heavy duty landscape membrane - Cover with 100mm bark mulch, 30-50mm chip - Plants to be planted in equal proportions at a density of 3 plants per square meter, in groups of 5 by variety. - Apply suitable establishment fertilizer - Keep watered during dry weather - Replace any dead plants within 6 months			- Mixing varieties evenly throughout length - In minimum 200mm clean topsoil - Cover with 100mm mulch, 30-50mm chip - Plant double row, 330mm between rows - Linear density – 330mm, both rows staggered. - Apply suitable establishment fertilizer - Keep watered during dry weather - Replace any dead plants within 6 months			

APPENDIX 7/1: PERMITTED PAVEMENT OPTIONS

The Permitted pavement options are listed in the following table.

Table 7/1 Pavement options for Carriageways, including Flat Top Ramps and Speed Tables

Pavement	TII Clause	Material Description	Typical Compacted Layer Thickness
Surface Course	SPW-0900 Cl.5.1.1	SMA 10 SURF PMB 65/105-60 DES (red binder) 10mm Stone Mastic Asphalt, w. red binder dye -- or -- SMA 10 SURF PMB 65/105-60 DES 10mm Stone Mastic Asphalt.	40-50mm
Binder/regulating course	SPW-0900 Cl.3.1.6	AC 20 DENSE BIN 40/60 DES 20mm Asphalt Concrete	60-100mm
Base	SPW-0900 Cl.3.1.6	AC 20 DENSE BIN 40/60 DES 20mm Asphalt Concrete	100-200mm
Sub-Base	SPW-0800 Cl.2.1.4	Unbound Granular Material – Mixture B -- or -- Hydraulically Bound Material – Mixture B	150-300mm

APPENDIX 7/4: BITUMINOUS SPRAYS

All base and binder/regulating courses shall be sprayed with bitumen bond coat as per TII-CC-00700.

The bond coat shall be Cationic bitumen emulsion Class K1-40 Tack Coat complying with BS 434 applied at a rate of spread of 0.45 litres per square metre.

The emulsion shall not be allowed to collect in hollows and shall be allowed to break before the next course is laid. All kerbs, manholes, gullies, etc. shall be painted with bitumen emulsion up to finished road level only.

All kerbs painted above finished road level shall be thoroughly cleaned with an approved solvent or replaced as directed by the Employers Representative.

APPENDIX 7/6: EXCAVATIONS AND REINSTATEMENT OF PAVEMENT AND PAVED AREAS

All excavations and reinstatement of footway, carriageway and landscaped surfaces shall be carried out in full compliance with the relevant direction in Sections 5, 6 and 7 of the *“Guidelines for Managing Openings in Public Roads”* published by the Department of Transport. This publication is available at: http://www.rmo.ie/...../guidelines_for_managing_openings_in_public_roads_apr_2017.pdf

Where reinstatement areas are shown on drawings, these are the minimum reinstatement areas. The final exact areas to be planed out and reinstated as dictated by the trim line requirements of Section 7 of the aforementioned document. The Contractor shall have particular regard to the reinstatement requirements detailed in Drawings GA1 to GA4 and SD1 to SD14 of the document.

Where the Employer’s Representative or Resident Engineer determines that the reinstatement has not been completed in full compliance with the aforementioned Guidelines, they shall direct the Contractor to re-execute the defective or substandard reinstatement at their own cost.

No claims for re-executing of non-compliant or defective reinstatement works will be entertained.

APPENDIX 11/1: KERBS, FOOTWAYS AND PAVED AREAS

1 New Concrete Footways

- Concrete footways shall be 125-150mm thick grade C30/37 concrete on 100 mm thick UGM-B material.
- At vehicular entrances footway surfacing shall be 150mm thick grade C30/37 concrete with A393 steel mesh reinforcement on 100 mm thick UGM-B material.
- Concrete footways shall be brush finish as per TII-CC-SCD-01105.
- Crossfalls shall be generally 1 in 50 towards kerb. The fall may be reduced to 1 in 100 locally where levels dictate. Cross-fall must never exceed 1 in 30. At footpath dishes where levels are dropped to meet road levels at pedestrian crossings or at vehicle crossovers footpath fall may be up to 1 in 12 max.
- The kerb edges of cast in situ footpaths, and edges which will abut a landscaped area, cobbled or brick paved areas, or similar, shall be finished with a 100mm steel edging trowel.
- The inner edges of footpath cast against structures shall be finished square with a brush finish applied.
- Expansion joints shall be formed at appropriate locations in the footpath at spacings not greater than 3m in the longitudinal and, where relevant, transverse directions.
- Expansion joints shall be formed at 3m centres using a suitably sized PVC expansion joint former.
- The slab edges of expansion joints shall be finished flush and square with the PCV strip, and a brush finish applied. **Expansion joints shall not be finished with an edging trowel.**
- Footpath shall be constructed with a case in-situ kerb detail as shown on the relevant Contract Drawings. Precast kerbing shall not be permitted unless approved and agreed with the Employers Representative. Where the use of precast kerbs is permitted, they shall be Type 2 precast concrete kerbs shall be used as per Spec. Clause 1101. Kerb face shall be 125mm as per CC-SCD-001101 Type A

2 General Requirements for Kerbs

Precast kerbs are not to be used unless otherwise specified or approved by the ER.

- Kerb lines shall be worked truly straight or circular, square and out of wind (i.e. no warp or twist with the top front and top back edges parallel or concentric to the dimensions specified subject to a tolerance of $\pm 2\text{mm}$. For radius of 12m or less, kerbs of radius as described in the Contract Drawings shall be used. Top front and top back edges shall be concentric, and the units cut radially.
- The acceptance of any granite elements shall be to the satisfaction of the Employer's Representative. Units to be laid as per the CC-SCD-01101 Type A, such that:
 - their surface level does not differ from the design level by more than $\pm 5\text{mm}$.
 - difference in level between two adjacent units does not exceed 2mm average with 3mm maximum.
 - the units shall be laid true to line and level and any unit deviating more than 3 mm in 3 m from level shall be made good by lifting and relaying
- All units are to be butt jointed, without pointing. Curved kerblines shall have kerb ends mitred.
- Units may be cut on site, but cuts of less than 400mm shall not be permitted.
- Unless noted otherwise, the standard height of the kerbs over the edge of the carriageway shall be 125 mm. At pedestrian crossings, kerbs shall be laid flush with carriageway level. At vehicular accesses and the like the kerb shall have a height of 20mm max above the road level. The slope of the transitional length of kerb between kerbs of standard height and dropped kerbs shall be not greater than 1:12.

3 Accessible Kerbing at bus stops

Precast concrete accessible kerbing shall be used at bus stops and it shall have the following characteristics:

- Nominal length of 1,000 mm per standard unit
- Kerb height 155mm above the adjacent carriageway
- Upper surface width of 300mm
- Kerb edge to be sloped 15 degrees from vertical and 100mm radius at joint with carriageway
- Blistered or tactile texture cast into the upper surface.

Precast transition kerbing units shall be installed at the leading and trailing edges of the kerbing line at each bus stop. The transition kerbs shall transition from 125mm kerb height to 155mm kerb height over a 1m. "Kassel Kerb" manufactured by Killeshal Concrete, or a comparable alternative type would be suitable.

4 Paving Bricks/Setts/Flags/Cobbles

- 1 Brick/Sett/Flag/Cobble paving to be laid at the indicated locations shall be as specified in the Drawings.
- 2 Where existing paving is to be lifted and re-used they shall be lifted intact, cleaned and stored.
- 3 The paving shall be reinstated as per the details on the Contract Drawings.
- 4 Only undamaged bricks shall be used in surface reinstalment.
- 5 Where new bricks are required to make up for shortages due to breakages or damage bricks, the replacement bricks shall be as close a match as possible in terms of size, colour, and surface texture. The Contractor shall obtain the approval of the Employer's Representative before use of any new bricks.
- 6 The requirements for new bricks shall be established prior to any paving reinstatement on any particular bay or footpath section commencing.
- 7 The new bricks shall be laid interspersed with the recovered bricks to give a more uniform finish.
- 8 Laying of large patches consisting solely of new bricks shall not be allowed.

APPENDIX 12/1: TRAFFIC SIGNS – GENERAL

1 General

All sign boards, poles and fixing clamps and hardware must be compliant (in terms dimensions, specification, structural design and detailing, graphic design and manufacture with the applicable sections of:

1. “Specification for Road Works Series 1200 - Traffic Signs and Road Markings”
2. “Traffic Signs Manual, Chapters 0-9” published by the Department of Transport.

2 Materials

All sign plates and sign boards are to be supplied complete with any clamps, straps, fixings etc that may be necessary for fitting to poles between 76mm and 220mm diameter. All fitting hardware shall be of stainless steel or hot dip galvanised mild steel. All signs shall have an anti-rotation device to prevent rotation.

1. The reverse of all sign boards/plates shall be a non-glossy Traffic Grey A (RAL 7042 finish).
2. Sign board substrate shall be aluminium alloy with a minimum thickness of at least 2.5mm
3. All poles shall be hot dip galvanised mild steel or, where specified, stainless-steel grade 1.4401 according to EN 10088-1:2005. (Grade 316 equivalent. Stainless steel poles shall have a brushed finish, to 1k or 2k to EN 10088. Minimum wall thickness shall be 4mm for all poles.
4. Poles shall have sizes of 76mm, 89mm, 114mm, 140mm with a grey plastic sealing cap fitting on top.
5. Retention sockets are to be of cast iron/steel, hot dip galvanised, “IPL Retention System” (or equivalent and approved and meet the EN124 B125 standard. (Sockets fabricated from stock bar steel and painted, galvanised etc are not acceptable.

3 Colours Permitted

The graphics of the signs shall be composed of the following RAL Colour Codes only:

RAL Colour Code	Colour	Typical uses
RAL 1023	Traffic Yellow	Warning Signs
RAL 3020	Traffic Red	Regulatory Sign borders
RAL 5017	Traffic Blue	Motorway Signs, Information Signs
RAL 6024	Traffic Green	National Road Directional Information Signs
RAL 9016	Traffic White	Regional/Local Directional Information Signs
RAL 9017	Traffic Black	Text, Symbols
RAL 7042	Traffic Grey A	Backing boards and reverse of signs
RAL 8016	Mahogany Brown	Tourist Information Signs
RAL 2009	Traffic Orange	Temporary Roadworks Signs

The reverse of all sign boards/plates shall be a non-glossy Traffic Grey A finish.

Other colours shall not be used unless agreed with Cork City Council.

4 Finishing of Traffic Sign Poles

All poles for regulatory, warning, information and fingerpost type direction signs shall be painted with alternating 300mm coloured bands in the dominant colours of the sign plate.

Painting of poles will not be required for large “stacked” type directional signs

Poles shall be painted in the following colours:

Warning Signs	Black & Amber
Regulatory Signs	Red & White or Blue & White, depending on sign plate colours.
Directional Signs	Black & White for Regional & Local Roads / Green & White for National Roads
Information Signs	Blue & White or Brown & White, depending on sign plate colours.

A three-coat paint system shall be used consisting of galvanised metals primer, a coloured undercoat, and a coloured gloss coat. Painting shall be according to the requirements of TII-SPW-01900, as applicable.

4.1 Pole Covers

The installation of 300mm long plastic pole covers in alternating colours may be considered if the Contractor can provide manufacturers verified test documentation, or guarantee, that the proposed covers will be resistant to UV light induced colour degradation for at least 10 years. It will be at the absolute discretion of the Employers Representative as to whether a proposal for pole covers will be accepted or not.

5 Pole Retention Sockets

1. All poles for regulatory, warning, signs information and traffic signals shall be fitted in appropriately sized retention sockets.
2. Sockets of the IPL Retention System type, or an alternative of comparable form and performance shall be used.
3. Sockets shall be installed in accordance with the manufacturer's recommendations with respect to foundation size.

APPENDIX 12/3: TRAFFIC SIGNS – ROAD MARKINGS AND STUDS

1 General

All Road Markings and Studs shall be supplied and installed in compliance with the requirements of TII-SPW-01200, and any further requirements listed hereunder or on the Scheme Drawings.

All road markings must be fully compliant with the relevant Sign Numbers as prescribed in the DoT Traffic Signs Manual and the Road Traffic (Signs Regulations 1997-2022. Any road markings installed which deviate from the prescribed patterns will be instructed to be removed and re-installed at the contractor's expense.

2 Removal of Road Markings

The removal of thermoplastic or other road markings shall be completely and efficiently accomplished so that no damage is caused to the existing road surface.

Hot compressed air lances/gas torching, or any other removal method which generates noxious fumes and smoke, is strictly prohibited as a means of marking removal on the scheme.

Less hazardous methods shall be used, such as high-pressure water jetting or mechanical scabbling.

3 Road Marking Materials

Road Markings shall comply with TII CC SPW Clause 1216, and Chapter 7 of the DoT "Traffic Signs Manual". Road marking materials may be either:

1. Hot applied Reflectorised Thermoplastic Screed or
2. Cold applied Methyl MethAcrylate (MMA)

Unless stated otherwise, markings shall be 4mm thickness as per Clause 1216(10).

Glass bead balloting as per Clause 1216(2) shall be evenly applied to the surface of the molten line at a rate of 400-500g/sq.m for all markings unless stated otherwise.

3.1 Application Methods

Application of road marking shall be in accordance with Cl. 1216 and the manufacturer's instructions.

Permanent longitudinal road markings shall be applied by a mechanical extrusion method. Temporary markings, symbols or text may be applied by draw-box, or other suitable method agreed with the ER.

The Contractor shall lay the appropriate thickness of marking following consultation with and as directed by the Employers Representative. Unless otherwise requested by the Employers Representative.

4 Road Studs

Road studs shall comply with EN Standards and should be of a type approved for use by Transport Infrastructure Ireland for national roads, or the Department of Transport for other roads.

The Contractor will be responsible for supplying the ER with verification of TII/DoT approval for use.

Road studs should be 3M Marker Series 290 type, or an equivalent alternative with comparable form and characteristics subject to the approval of the Employer's Representative.

5 Repair of Incidental Damage

Where damage is caused to any road markings or studs within the works area, or in areas adjoining the works, as a result of the works or machinery or vehicles associated with the works, the contractor shall arrange for the repair or renewal of those road markings and studs to the satisfaction of the Employers Representative. Any repair or replacement of road markings in this regard shall be completed at the contractor's cost.

APPENDIX 12/5: TRAFFIC SIGNALS – TRAFFIC SIGNALS

1 General

All traffic signal and controller equipment, and the configuration and set-up of same, shall be compliant with the standards and specifications listed hereunder:

1. Cork City Council Traffic Signal and ITS General Specification
2. Chapter 9 of the Traffic Signs Manual (Department of Transport)

The signal and controller equipment shall also comply with the additional requirements detailed under the headings which follow. In the event of any conflict between the Cork City Council Traffic Signal and ITS General Specification and the requirements listed under headings below, the requirements listed below prevail.

2 Traffic Signal Heads & Poles

- a) All signal lenses shall have a nominal diameter between 200mm and 210mm.
- b) All signal aspects and all pedestrian aspects shall be fitted with suitably sized lens hoods.
- c) All signal luminaries shall be modular Central Light Source LED luminary-lens units with an expected lifespan of at least 5 years.
- d) Pedestrian signal heads on all pedestrian crossings shall be 2 aspect, green and red (RPC 003). No amber aspect is required.
- e) All Signal Poles shall be galvanised steel and painted in alternating black & white bands 300mm high from top to bottom.
- f) All signal poles shall be installed in appropriate retention sockets, IPL or equivalent.

3 Pedestrian Push Button Units (PBU)

PBUs may be Prisma Daps, or a comparable type of equivalent performance and approved by Cork City Council. All Push Button Units shall have the characteristics and features listed hereunder.

- a) Robust construction and resistant to vandalism, corrosion and degradation by UV sunlight and general environmental conditions;
- b) Tactile braille panel arranged to indicate the road and crossing layout to visually impaired users;
- c) Touch activated demand request "button" or panel. (Mechanical push switches not acceptable)
- d) Audible and vibratory signals for indicating crossing demand request and pedestrian phase status to users. The vibratory signal generator shall be on the top face of the PBU.
- e) Visual LED indicator showing that a crossing demand has been requested.
- f) Functionality to enable, disable and adjust the pattern, frequency and volume/intensity of the audible and vibratory signals.

4 Vehicle and Pedestrian Detection

- a) Pedestrian kerbside detectors shall be Siemens Heimdall, or another type of equivalent performance and approved by Cork City Council.
- b) Vehicular detectors shall be Flir TraciCam X-Stream2, or another type of equivalent performance and approved by Cork City Council.

5 Controller Units and Cabinets

- a) Controller units shall be Dynniq PTC-1 Lite, or another type of equivalent specification and performance and approved by Cork City Council.
- b) The controller unit cabinets shall be approved for use as a signal controller unit cabinet by the manufacturer of the signal controller unit equipment, and it must also be of a type approved by Cork City Council. The cabinet dimensions shall be 985mmH x 701mmW x 368mmD. Cabinets of other dimensions may be used only with the approval of Cork City Council.
- c) The controller unit cabinet shall be provided with a base unit on a structural plastic riser. It shall include a glanding panel at its interface with the controller cabinet. “Low Level Controller Cabinet Base” by NAL Ltd, or an equivalent unit approved by Cork City Council may be used.

6 Traffic Signal Ducting

- a) All ducting shall be completed in accordance with Appendix 5/2.
- b) Bends in ducting shall be of a type that is intended for use with twin wall ducting.
- c) Bends must have a radius of at least 420mm

7 Electricity Supply Mini-Pillar

- a) Electricity supply Mini-Pillar cabinet to be of galvanised steel manufacture and of a type approved by ESB Networks for use as a customer supply mini-pillar, Piltown Engineering UP-1P or equivalent
- b) Mini pillar to be installed in accordance with ESB Networks’ current National Code of Practice for Customer Interface.

8 Approval of Contractor’s Proposals

- a) The contractor shall submit their proposals for the traffic signalling and control system to Cork City Council for approval prior to purchasing and installing the equipment.
- b) The proposal shall include details of all equipment and hardware to be installed and details of the proposed configuration and operating parameters of the system.
- c) Purchase and installation of traffic signal hardware and equipment may only commence after the proposal has been approved.

APPENDIX 13/1: ROAD LIGHTING COLUMNS AND BRACKETS

1 Road Lighting Columns

Road lighting columns shall be as indicated on the Scheme Drawings.

All lighting columns shall be of octagonal cross section in galvanised steel, and be of a passively safe design with certification as such.

Suitable lighting columns for this scheme would be the Piltown Engineering “OCX x 76” series, or an equivalent of comparable form and finish.

2 Road Lighting Lanterns

Road lighting lanterns shall be as indicated on the Scheme Drawings.

APPENDIX 14/2 - LOCATION OF LIGHTING UNITS AND FEEDER PILLARS

1 General Requirements

1. The Contractor will be responsible for supply and installation of all mini/micro pillars and chambers/vaults.
2. There is no requirement on the Contractor to complete any electrical wiring works relating to the electrical supply and electrical fit out for the bus shelters – all such electrical wiring and connection works will be completed by JC Decaux technical staff and ESB Networks.
3. The Contractor may also be required to complete or facilitate other items of electrical work, for example, localised diversion of services, alterations to existing street furniture or lighting fixtures, repair of any electrical installations or services damaged because of the Contractor's activities.
4. ESB Networks Mini-Pillars and Customer Supply Micro-Pillars shall be located as shown on the drawings or as agreed between the Contractor, ER and ESB Networks personnel.
5. All pillars, vaults and ducting and associated hardware must be ESB Networks approved types obtained from ESB Networks Approved Suppliers. The ESB Networks Approved Suppliers list is available at <https://www.esbnetworks.ie/docs/default-source/publications/approved-material-suppliers>
6. In case of any doubt regarding product suitability, ESB Networks shall be consulted for guidance.
7. It is the Contractors responsibility to ensure that acceptable products are supplied and installed correctly. The Contractor shall be responsible for remediation of any works deemed unacceptable by the Employer or ESB Networks as a result of use of unapproved or unsuitable products or hardware, or incorrect installation of same. No claims will be entertained for re-doing of substandard or out-of-spec work.

2 Connections to Existing ESB Networks Mini Pillars

The Contract Drawings indicate several locations where ducting will need to be connected into existing ESB Mini-Pillar vaults. Duct connections into existing mini-pillar vaults shall be made to side faces of the vault only.

Where ducts are connected to the front face of the vault, ESB Networks will refuse to connect the service. In this case, the Contractor will be required to excavate and re-lay the ducting and remake the duct entry in the appropriate manner at their own expense.

3 Proposed ESB Mini-Pillar Vaults

Mini Pillar vaults/chambers are required as a base for all ESB Mini Pillars.

Only ESB approved "VC1 / VC2" type shall be used. Class B125 steel covers and frames shall be fitted to vaults. The vaults may be of pre-cast concrete or plastic. Plastic vaults shall be backfilled with a base and surround of C12/15 concrete a minimum of 150mm thick.

4 ESB Mini-Pillars

Pillars will be supplied by ESB-Networks. The Contractor shall liaise with the nominated ESB Networks staff to arrange delivery of the pillars to site and marking out of the appropriate pillar locations on the site.

An ESB Networks approved earth mat must be supplied by the contractor and installed with all Mini-Pillars.

5 Customer Supply Micro-Pillars

The Contractor shall supply and install customer side Micro-Pillars which will have approximate dimensions as indicated on the Contract Drawings.

Pillars will typically be a "Piltown Engineering Type UP1P ", or an equivalent of similar form and size.

Generally, micro pillars should be installed in conjunction with a 450mm modular chamber with B125 cover and frame.

APPENDIX 14/3 - TEMPORARY LIGHTING

Temporary lighting shall be provided where an existing installation is to be disconnected during the works. Temporary lighting shall be provided on pedestrian diversion routes which are not otherwise sufficiently lit. The standard of lighting shall be appropriate to the speed and volume of traffic during construction. Any temporary lighting installation shall be approved by the Employer as part of Traffic Management. Temporary lighting shall not be removed or disconnected until the permanent installation is operative.

APPENDIX 14/4 - ELECTRICAL EQUIPMENT FOR ROAD LIGHTING

The Contractor shall be responsible for ensuring that all electrical systems for public lighting are designed and installed in compliance with the requirements of the NSAI New Wiring Rules IS-10101. All associated electrical Completion Certificates are to be sent to the Employer's Representative once issued.

APPENDIX 14/6 - PREPARATION AND FINISH OF METAL AND OTHER SURFACE

All lighting columns, pillars and road sign columns, and other similar steelwork shall be hot dip galvanised.

APPENDIX 17/3 CONCRETE – SURFACE FINISHES

Concrete surface finishes for footways and hardstanding areas shall be as described in Appendix 11/1. Concrete surface finish for any exposed structural concrete shall be "F3" type finish as per Clause 1708.

APPENDIX 17/4 CONCRETE GENERAL

1 General

1. The sequence of construction and assembly shall be as agreed with the Employer's Representative.
2. Reinforcement shall be type B-Grade 500 complying with BS 4449.
3. All structural concrete shall be designed concrete.
4. concrete shall be produced in accordance with Cl. 1706. Water shall not be added to delivered concrete.

2 Strength

Concrete strength testing shall be based on tests of 100 mm cylinders at 7 & 28 days.

3 Cube Testing

If the average strength of the test specimens taken to represent a given batch of concrete fails to meet the appropriate requirement, the whole of that batch of concrete represented by those specimens shall be deemed non-compliant with the specification. Concrete testing shall be carried out according to Appendix 1/5.

4 Action to be taken in the event of non-compliance with testing

The Contractor shall take such remedial action as the Employer's Representative may require, including the removal of the relevant concrete. In addition, the Contractor shall submit to the Employer's Representative details of the action proposed to ensure that the concrete still to be placed complies with the requirements.

5 Construction Joints

Construction joints shall only be formed where shown on the drawings, or where agreed with the ER.

APPENDIX 19/5: STEELWORK SURFACE PREPARATION & PAINTING

All existing steelwork which is to be painted shall be treated in the following manner:

- Surface preparation by wire brushing, media blasting or sanding to remove all dirt, loose paint and scale
- Painting using a three-coat system for outdoor metal surfaces, consisting of an appropriate primer, coloured undercoat and coloured gloss topcoat.

APPENDIX 24/1 BRICKWORK, BLOCKWORK AND STONEMWORK

Brickwork, blockwork, and stonework shall be as described on the Contract Drawings, supplemented where appropriate by CC-SCD Series 02400.