Cork City Council

Local Area Development & Operations Directorate

Comhairle Cathrach Chorcaí
Cork City Council

Estate Roads Resurfacing Contract, 2027

Volume A2 – Specification

November 2026

Comhairle Cathrach Chorcaí
Cork City Council

SPECIFICATION

This document is based on the Specification for Roadworks dated March 2000 edition issued by the National Roads Authority including 2004, 2005, 2009, 2010 and more recent Amendments, using the most recent revisions in all cases.

Note: the provisions of the latest version of CC-SPW-00900 – Specification for Road Works Series 900 – Road Pavements – Bituminous Materials, published by Transport Infrastructure Ireland (TII) in July 2022 (or updated as appropriate) will apply to ALL roads and streets, as the specification used for all new pavement works and new pavement contracts on regional and local roads.

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1. Preamble to the Specification

1. The Specification referred to in the Tender shall be the "Specification for Road Works" - Volume 1 of the "Manual of Contract Documents for Road Works" dated March 2000 edition issued by the National Roads Authority including 2004 , 2005,2009,and 2010 and more recent Amendments, using the most up to date clauses in all cases and shall be hereafter referred to as the Specification. The Specification shall be read in conjunction with the full "Manual of Contract Documents for Road Works" published by the National Roads Authority in March 2000 and any subsequent amendments or revisions. The remaining volumes within the aforementioned "Manual" are the most recent revisions of the following:
    - Volume 2 "Notes for Guidance on the Specification for Road Works"
    - Volume 3 "Method of Measurement for Road Works" and "Notes for Guidance on the Method of Measurement for Road Works"
    - Volume 4 "Road Construction Details"

    The Specification shall be modified and extended by the following:
        (i) Appendix 0/1: Contract-specific Additional, Substitute and Cancelled Clauses and Tables;
        (ii) Appendix 0/2: Contract-specific minor alterations to existing Clauses and Tables;
        (iii) The Numbered Appendices listed in Appendix 0/3;
        (iv) Appendix 0/4 containing a list of the Contract drawings.

2. An Additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is a Contract specific alteration.

3. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is a Contract-specific alteration.

4. A Cancelled Clause as indicated by a suffix 'CR' in Appendix 0/1 is a Contract-specific alteration.

5. Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the Specification for Road Works the Numbered Appendices shall always prevail.

6. Any reference in the Contract to a Clause number or Appendix shall be deemed to refer to the corresponding Substitute Clause number or Appendix listed in Appendix 0/1 or 0/2.

7. Where a Clause is altered, any original Table referred to in the Clause shall apply unless the Table is also altered. Where a Table is altered any reference in a Clause to the original Table shall apply to the altered Table.

8. Where a Clause in the Specification relates to works, goods or materials which are not required for the Works it shall be deemed not to apply.

9. Any Appendix referred to in the Specification which is not used shall be deemed not to apply.

10. Any reference in the Specification to 'Clause xx of the Conditions of Contract' which clearly can be taken as referring to the IEI 3rd Edition, shall be taken as referring to a corresponding condition of the most recent version of Public Works Contract for Civil Engineering Works Designed by the Employer, (PW-CF3) if this is not already so altered in the Specification.

11. Substitute "the Employer's Representative" for "the Engineer" in this **Specification for Road Works**.

12. Where functions of the Employer's Representative are delegated to a resident engineer, any relevant clause referring to the Employer's Representative shall be read as also applying to the resident engineer.

2. APPENDICES

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

APPENDIX 0/1 Substitute Clauses

SR117.1 Traffic Safety and Management

When planning and undertaking work on roads open to traffic, the Contractor shall take account of the recommendations contained in *Guidance for the Control and Management of Traffic at Roadworks* published by the Department of Transport, the NRA and the LGMSB and the requirements of *Chapter 8 of Traffic Signs Manual* published by the Department of Transport December 2008 together with any revisions or amendments.

APPENDIX 0/1 Additional Clauses, Tables & Figures

AR 104.11 International and National Standards

Nothing stated in this Specification is to be construed or discriminating against products and materials manufactured or supplied from any of the Member States of the European Community. Where items to an Irish Standard Specification, or British Standard Specification, or any other standard specification of a Member state of the European Union are called for, this requirement shall be read as including items to a relevant international standard, or the relevant national standard of any Member of the European Union, which provides an equivalent guarantee of safety and suitability.

AR 104.12 British and Irish Standards

The Contractor shall supply for the use of the Employer's Representatives representative copies of all relevant and up to date British and Irish Standards which will be returned on completion of the contract.

AR 105.8 Storage of Materials

The Contractor shall store all materials in a tidy manner, separating different materials and protecting them from dirt, physical damage, rain, frost and snow, reaction with other materials, marking or staining, micro-organisms, mildew, vermin and fungus. 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.

AR 116.6 Existing Services

The Contractor shall ascertain the exact positions of underground services and take all precautions for the protection of same. He shall make good any

damage resulting from his operations and shall indemnify the Employer against any claim for damages to ducts, drains, sewers, mains, cables, fibre optic cables, water pipes, fittings, boxes or other property caused by his operations. His prices are to include for all protective, repair and/or other necessary work due to the presence of the services. The Contractor should also take note of Appendix 1/16 in relation to the identification and location of existing services.

AR 122.4 Façade and Progress Photographs

Prior to commencement of construction work, the Contractor shall have as described in Appendix 1/22, photographs, taken by an approved professional photographer of all adjacent buildings, boundary walls, roads, footpaths or any other feature which could be affected by the Works.

AR 126.4 Delivery/Removal of Materials

Attention is drawn to the damage caused to bridges and road pavements by overloaded vehicles. The Contractor shall ensure that vehicles used to deliver materials to Local Authority sites, or to remove excavated materials, comply with the gross vehicle weights prescribed in the Road Traffic (Construction, Equipment and Use of Vehicles, Amendment Regulations), 1992 (S.I. 352 of 1992). 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. In addition there shall be full compliance with the planning laws in relation to any proposed use of land as temporary quarries for the duration of the Works or for any other planning related matters.

Also the Contractor shall comply with the Waste Management Act 1996 and the Waste Management (Collection Permit) Regulations 2001 or any more recent revisions or amendments to same, where any carrier of waste material requires a permit from Cork County Council. Cork County Council operates the Collection Permits system on behalf of Cork City Council.

AR 126.5 Cleaning of Roads

The Contractor shall be responsible for maintaining all roads and footpaths used by members of the public in a clean condition. He 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, or on roads being part of the Works which are made available for public use by the Contractor, whether such traffic is the Contractor's own vehicles, his sub-contractor's or his suppliers', or vehicles hired by any of the above and shall clean up any such spillages promptly. If the Contractor fails to take adequate precautions or to clean the roads or footpaths in good time, the Employer's

Representative may deduct from the Contractor's account the cost of road cleaning operations carried out by the Employer.

AR 130.3 Offensive Fumes

Cork City Council will fully implement all statutory regulations in relation to exhaust emissions from plant. Any plant emitting offensive fumes will be stopped immediately. No claims will be entertained for aforementioned stoppages.

AR 130.4 Dust Control

Earthworks operations in dry conditions will lead to dust being produced by haulage plant unless the haul routes are continuously sprayed with water. Cork City Council will insist on the Contractor maintaining a water sprayer on site in such conditions. The Contractor shall arrange that any necessary on-site cutting of new paving materials on site shall be done by wet-cutting mechanical plant. Dry-cutting of new paving materials on site will not be permitted unless otherwise authorised by the Employer's Representative.

AR 130.5 Dust Emissions

The Contractor shall employ the best practical means to limit and control dust emissions produced by his construction operations and he shall indemnify the Employer against all claims for damage or nuisance arising from his operations. All vehicles and mechanical plant used on the Works shall be fitted out and operated to ensure that excessive dust emissions are not generated. This shall include limiting the operational capacity and speed of vehicles and machinery, adjusting vehicle and machinery exhausts, continuous operation of water spraying equipment and any other measures deemed necessary to control dust emissions to within specified limits. The Contractor shall be required to remove from the Works any item of equipment which, in the opinion of the Employer's Representative, is creating a dust nuisance. The Contractor shall organise his operations with regard to the positioning of plant and the location of haul routes, etc. so as to minimise dust emissions to adjacent properties. The Contractor shall ensure that at all properties outside the site boundaries the dust emissions arising from his activities shall not result in a daily average concentration in excess of 150 microgrammes of suspended particulate per cubic metre of air above background level or shall not result in an absolute daily average concentration in excess of 250 microgrammes of suspended particulate per cubic metre of air, whichever is the lesser value.

The measurement of suspended particulate shall be by the method described in Annex III, Part B to Council Directive No.80/779/EEC.

Air Quality monitoring stations shall be established at a number of locations throughout the Works, which shall be decided upon by the Employer's Representative.

AR 131.3 Public Liaison

This Programme of Works shall be formulated taking into consideration the requirements of the Gardaí and Cork City Council's Traffic Division and should be forwarded to the Employer's Representative for his approval at least 3 days prior to commencement of works. See also Appendix 1/17.

Once this Programme is approved by the Employer's Representative, the Contractor shall notify all local residents and businesses that may be affected by the Contractor's activities of the intended works no later than two working days prior to their commencement by way of advance notification signs on the roadway.

All residents and businesses that may be affected by the works are also to receive a letter drop informing them of the particulars of the works including timetable, parking restrictions, access restrictions and any other information the Employer's Representative may wish to include. This leaflet shall be approved by the Employer's Representative and shall be distributed no earlier than 4 working days prior to commencement and not later than 2 working days prior to commencement of the works. The letter shall also give a telephone number at which a representative of the Contractor may be contacted. No works may proceed if the letter drop described above has not taken place unless the Employer's Representative has given his consent in writing.

AR 131.4 Publicity

The Contractor shall not allow visitors to the works or photographs of the works or make or issue to the press or any other media for the dissemination of information, any statement relating to the Works or any other matter arising out of the Contract, without first obtaining the approval of the Employer's Representative in writing.

AR 132 Normal and Abnormal Working Hours,

Works other than pumping from excavations, watching and emergency works necessary for the safety of the Works shall not be executed outside normal working hours defined in this instance as from **08.00 hrs – 19:00 hours all days**, but subject to other restrictions in the Contract:- See Appendix 1/13. Abnormal working hours are defined as taking place at times other than between **08.00 hrs – 19:00 hours all days.** Should the Contractor wish to work outside normal working hours, permission shall be obtained from the Employer's Representative in writing in accordance with the Conditions of Contract. The Employer's Representative reserves the right to

withdraw his approval to all or any particular times involving out of normal hours working.

In cases where work during abnormal working hours is approved, the carting of spoil and deliveries of materials may continue to be prohibited outside normal working hours.

The Contractor shall carry out road resurfacing works on certain roads outside normal working hours as shown in Appendix 1/13 or as directed under the Contract.

AR 134 **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.**

In the event of the Contractor failing to carry out any reasonable order or instruction given by Employer's Representative or of not properly completing any section of the work, the Employer's Representative may have the work done by others and deduct the cost of doing so from any payment due to the Contractor. Such action of the Employer's Representative shall not vitiate the Contract.

AR 135 **Checking of Drawings**

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 Employer's Representative for instruction, or apply for such detail drawings or information at least 21 days before the Works concerned is to be executed.

AR702.11 **Joints and Road markings**

All joints in surface layers shall match the position of the final road marking lines i.e. centreline of carriageway, lane or edge lines. The central carriageway joint line shall be parallel to the kerb line and should be marked using a rope and spray line prior to surfacing. Where it is not possible for joints and road lining to coincide, both the vertical face and the surface of the joint shall be neatly and carefully sealed with a hot applied bitumen in accordance with TII Series 900, Clause 10.1.8.

AR 804.5 **Granular material type B - Sealing**

Where directed by the Employer's Representative the material shall immediately after laying and compaction be sealed with 70% bitumen emulsion, sprayed at a rate between 1.1 l/sq.m - 1.4 l/sq.m and covered with 6mm chippings at a rate of spread of 6kg/sq.m - 8 kg/sq.m all in accordance with Clause 919 or any revisions to same.

AR 907.5 **Regulating Course**

Unless otherwise stated, the materials to be used in the regulating course shall be Close Graded Asphalt Concrete Surface Course using 10mm or 14mm aggregate as per Series 900, Clause 5.1.10, or Binder Course Asphalt Concrete to Series 900 Cl. 3.1.5 using 20mm aggregate.

The actual material type to be used is dependent on depth of regulating course to be placed and will be directed by the Employer's Representative.

AR 944 **Traffic Calming – Speed Tables**

Speed tables shall be formed at the locations and to the dimensions shown on the drawings. For round top ramps the construction tolerance is minus 0mm/plus 25mm on the 75mm design height. In other words, the highest point of each ramp shall be between 75 and 100mm above the existing road surface. Other speed tables shall have finished levels generally equal to the adjacent footpaths except for the speed table slopes.

Speed tables shall be constructed of Close Graded Asphalt Concrete Surface Course using 10mm nominal aggregate size as per Series 900, Clause 5.1.13. Roadmarkings shall be applied as soon as possible but not later than three days after construction of the speed table. In the interim, traffic cones shall be located at the road edges. The Contractor shall take all necessary traffic management measures and if deemed necessary shall construct ramps in two stages, keeping one traffic lane open. Signage that alerts motorists to the presence of new ramps shall be erected before the ramps themselves are placed.

AR 1211.10 **Road markings – removal**

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 except in so far as a slight difference in texture will be tolerated between the area of pavement underneath the removed markings and the rest of the pavement.

APPENDIX 0/1 List of Cancelled Clauses, Tables & Figures

Cancelled Clauses

Where a Clause in the Specification relates to works, goods or materials which are not required for the Works it shall be deemed not to apply.

APPENDIX 0/2: CONTRACT-SPECIFIC MINOR ALTERATION TO EXISTING CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

Clause Number	Alterations to be made
113	Delete 'Clause 14' and insert 'Clause 4.9'
114	Delete 'Clause 60(1)' and insert 'Clause 11.1'
601.2.(i)	Delete 'material which does not comply with the permitted constituents and material properties of Table 6/1 and Appendix 6/1 for acceptable material'. Insert 'For the purposes of the Contract all material excavated from the Site shall be deemed to be unacceptable'.
702.1	Delete 'determined from one edge of the pavement surface', insert 'determined from the centre line of the carriageway surface'.
702.2	Unless otherwise directed, existing road edge levels shall be maintained, particularly at driveway entrances and pedestrian crossing points. On roads with flat or almost flat gradients, the Contractor shall ensure local falls to gullies during laying of the surfacing courses. Regulating course shall be used on roads with poor profile and shape to ensure that adequate camber is achieved.
901.16	Delete 'Vibratory rollers shall not be used in vibrating mode on bridge decks.' Insert: Bituminous Binder and Surface Course -compaction All rollers shall be fitted with smooth, quick acting reverse mechanism. Smooth steel wheeled rollers shall have wetting devices of at least the width of the rolls. The number of dead weight rollers which are needed on a normal site shall be: (a) at least one operational roller at all times; (b) a second roller when the daily tonnage exceeds either: (i) 100 tonnes of surface course; or (ii) 150 tonnes of regulating or Binder Course; (c) a third roller when the daily tonnage exceeds either; (i) 250 tonnes of surface course; or (ii) 450 tonnes of regulating course or Binder Course. The number of rollers shall be sufficient to enable these rollers, while travelling at a low but steady speed, to make sufficient passes to compact the bituminous mixture adequately.
1101.2	Delete: 'The joints shall be the width …… ……, such details shall include the intended treatment at kerbs and footways'. Insert: 'The joints between kerbs shall be 6mm wide and filled with Class 1

mortar, with neat bucket handle pointing.'

APPENDIX 0/3: LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THE CONTRACT

Any Appendix referred to in the Specification which is not used shall be deemed not to apply.

List A

Volume No.	Completed by	Appx. No.	Title
	(E)	0/1	Contract-specific Additional, Substitute and Cancelled Clauses and Tables included in the Contract
	(E)	0/2	Contract-specific Minor Alterations to Existing Clauses and Tables included in the Contract
	(E)	0/3	List of Numbered Appendices referred to in the Specification and included in the Contract
	(E)	0/4	List of Drawings included in the Contract
	(E)		
	(E)		**Preliminaries**
	(E)	1/1	Not used
	(E)	1/2	Vehicles for the Employer's Personnel
	(E)	1/3	Not used
	(E)	1/4	Not used
	(E)	1/5	Not used
	(E)	1/6	Not used
	(E)	1/7	Site Extent and Limitations on use
	(E)	1/8	Not used
	(E)	1/9	Control of Noise and Vibration
	(E)	1/10	Not used
	(E)	1/11	Not used
	(E)	1/12	Not used
	(E) (T)	1/13	Programme of Works
	(C)	1/14	Monthly Statement
	(E)	1/15	Not used
	(E)	1/16	Privately and Publicly owned Services and Supplies
	(T)	1/17	Traffic Safety and Management
	(T)	1/18	Temporary Diversions for Traffic
	(E)	1/19	Not used
	(E)	1/20	Not used
	(E)	1/21	Not used
	(E)	1/22	Not used
	(E)	1/23	Not used
	(E)	1/24	Not used

	(E)	1/25	Not used
	(E)	1/26	Not used
			Site Clearance
	(E)	2/1	Not used
	(E)	2/2	Not used
	(E)	2/3	Not used
	(E)	2/4	Not used
	(E)	2/5	Not used
			Fencing
	(E)	3/1	Not used
	(E)	3/2	Not used
			Safety Fences, Safety Barriers and Pedestrian Guardrails
	(E)	4/1	Not used
	(E)	4/2	Not used
			Drainage and Service Ducts
	(E)	5/1	Drainage Requirements
	(E)	5/2	Service Duct Requirements
	(E)	5/3	Surface Water Channels and Drainage Channel Blocks
	(E)	5/4	Not used
	(E)	5/5	Not used
	(E)	5/6	Not used
			Earthworks
	(E)	6/1	Requirements for Acceptability Testing etc. of Works Materials
	(E)	6/2	Not used
	(E)	6/3	Not used
	(E)	6/4	Not used
	(E)	6/5	Not used
	(E)	6/6	Not used
	(E)	6/7	Not used
	(E)	6/8	Not used
	(E)	6/9	Not used
	(E)	6/10	Not used
	(E)	6/11	Not used
	(E)	6/12	Not used
	(E)	6/13	Not used
			Road Pavements - General

	(E)	7/1	Permitted Pavement Options
	(E)	7/2	Excavation and Reinstatement of Existing Surfaces
	(E)	7/3	Not used
	(E)	7/4	Bituminous Sprays
	(E)	7/5	Not used
	(E)	7/6	Not used
			Kerbs, Footways and Paved Areas
	(E)	11/1	Kerbs, Footways and Paved Areas
			Traffic Signs
	(E)	12/1	Not used
	(E)	12/2	Not used
	(E)	12/3	Traffic signs: Road markings and studs
	(E)	12/4	Not used
	(E)	12/5	Not used
	(E)	12/6	Not used
	(E)	12/7	Not used
		13-26 incl.	Not used

Guide to Appendices:

(E) Employer's Representative compiles

(E/C) Employer's Representative partially compiles and Contractor completes and returns to the Employer's Representative.

(E/T) Employer's Representative partially compiles and Tenderer completes and returns with Tender

(C) Contractor completes and returns to the Employer's Representative

(I) For Contractor's information only

(P) This indicates the Appendix is a national proforma and format shall not be altered

APPENDIX 0/4: SCHEDULE OF CONTRACT DRAWINGS

Any reference in these documents and drawings to 'Stone mastic asphalt' shall be read as 'Polymer Modified Stone Mastic Asphalt Surface Course'.

The start and end points of both resurfacing and traffic calming works may vary from the drawings which are indicative only. Final start and end points shall be marked on site by Cork City Council (CCC). Also on a given road on which different types of resurfacing are to be carried out, the differing areas will be marked on site by CCC.

Roads Resurfacing

Road Name	**LEA**
Ballinure Cottages	SE
Belgard Downs, Douglas	SE
Bride Valley View	NW
Brookfield Park	SW
Church View, Ballincollig	SW
Clifton, Grange	SC
College View	NW
Curraheen Drive	SW
Donnybrook Drive, Douglas	SE
East View Terrace	SC
Elm Park, Wilton	SW
Grangeway Loop, Grange	SC
Greenmount Avenue	SC
Hawthorn Villas	SC
Hettyfield Mews	SE
Hollyville Estate	NW
Huggardsland	SW
Ilen Court	SW
Inchvale Avenue, Douglas	SE
Inchvale Park, Douglas	SE
Laurel Ridge	NW
Laureston Crescent, Tower	NW
Linden Avenue	SE
Listowel Avenue	SC
Maymount	SC
Murphy's Gardens	SC
Oaklands Estate, Ballincollig	SW
O' Connell Avenue	SC
O' Donovan Rossa Road	SC
O' Growney Crescent	SC
Pic du Jer Close	SE
Presentation Place	SC
Primrose Hill [East Arm], Tower	NW

Primrose Hill [West Arm], Tower	NW
Ravenscourt Avenue, Donnybrook	SE
Riverview Estate, Tower	NW
Silverdale Road	SE
St. Helen's Court	SW
St. Mary's Avenue	NW
Sunday School Lane	NW
The Avenue, Classes Lake, Ballincollig	SW
Tory Top Road	SC
Westgate Park	SW
Willison Lawn, Tower	NW
Willow Close, Donnybrook	SE
Wilton Lawn / Green Park	SW

3. NUMBERED APPENDICES TO THE SPECIFICATION

APPENDIX 1/2: Vehicles for the Employer's Personnel

1. General

1.1 Vehicles shall be new, previously unused and of any colour Approved by the Employer's Representative;

1.2 The vehicles shall be fitted with a GPS satellite navigation system, fire extinguisher, first aid kit, heater and demister, detachable hazard flashing unit with bulbs, heavy duty suspension, spare wheel, towbar, fuel filler cap lock, bonnet lock and spare wheel lock, 3 tonne trolley jack, internal and external mirrors, mud flaps, floor mats front and rear, interior sun visors, gearbox covers, tow rope, towing hooks front and rear and laminated windscreen and covers for universal joints, driver and passenger full size airbag with side impact protection/airbags, air conditioning and full remote controlled central locking system/ alarm/ immobiliser shall be fitted. They shall be fitted with hands free mobile phone kit compatible with the mobile phones with phone charger provided in accordance with Numbered Appendix 1/1 of the Specification included in Appendix 5 to this Annex 7 to Part 2 of this Schedule 4;

1.3 Vehicles shall be provided for the exclusive use of the Employer's Representative and Employer's Personnel at all times for whatever purpose the Employer's Representative so requires;

1.4 The Contractor shall indemnify the Employer, the Employer's Representative and their respective staffs authorised to drive the vehicles against claims in respect of damage to vehicles including, but not limited to, claims from passengers;

1.5 All vehicles shall be licensed for use on the public road and shall have comprehensive insurance cover for social, domestic, commuting and Class 2 business use for any qualified driver authorised by the Employer's Representative, together with any authorised passengers and the carriage of goods or samples;

1.6 All vehicles shall be taxed and insured at all times. All vehicles shall be serviced at intervals specified by the manufacturer and the vehicle service history books shall be provided to the Employer's Representative;

1.7 Mounted/ Ramped Wheel wash facilities, with pressure washer, shall be available at all times for use by the Employer's Representative, with washing area maintained by the Contractor;

1.8 The vehicles shall be free from markings identifying any company associated with the Contract or the Contractor;

1.9 1.9. Driver and passenger full size airbag with side impact protection / airbags, air conditioning and full remote-controlled central locking system / alarm / immobiliser shall be fitted to all vehicles. The Contractor shall provide vehicles of the types as listed in Table 1/2.1 of this Numbered Appendix 1/2 of the Specification included in Appendix 6 to Annex 7 to Part 2 of Schedule 4.

Table 1/2.1: Vehicle for the Employer's Representative		
Type	**Vehicle**	**Period Required**
A	The vehicle is to be non-commercial type, to be suitable for off-road use, have 4 wheel drive, have seating for 5 persons and be supplied in such colour as the Employer's Representative may approve. The vehicle shall be free from marking identifying any company associate with the Contract. The equipment shall include: Fire extinguisher, heater and demister, hazard flashing unit, heavy duty suspension, spare wheel, petrol filler cap lock, bonnet lock and spare wheel lock, internal and external mirrors, mud flaps, link mats front and rear, mudshield for front and rear brakes, rubber pads for clutch and brake pedals, interior sun visors, gearbox covers, tow rope, towing hooks front and rear, laminated windscreen, wire mesh guards for side, tail, stop and flasher lamps and covers for universal joints. The vehicle shall be less than 3 years old and less than 100,000 km driven.	From the Starting Date, for 32 Vehicle Weeks

1.10 All vehicles shall bear "Highway Maintenance" signs at the rear. These shall be demountable for Type A vehicles and for Type B vehicles;

1.11 Each vehicle shall be provided with a demountable 12V magnetic rotating amber warning beacon complete with a 12 foot coil extension cord which shall be capable of connecting to the vehicle cigarette lighter plug. Magnetic rotating amber warning beacons shall conform to the Road Traffic (Lighting of Vehicles) Regulations 1963 to 2014;

1.12 Vehicles for the Employer's Personnel shall be provided for all sections of the Works in accordance with Table 1/2.2 of this Numbered Appendix 1/2 of the Specification included in Appendix 6 to Annex 7 to Part 2 of Schedule 4;

1.13 1.13. All vehicles shall also be fitted with a dash mount/holder for dashcam;

1.14 1.14. All vehicles shall have 24-hr breakdown assistance.

Table 1/2.2: Number of Vehicles to be provided for the Works	
Vehicle Type	**Number**
A	2

APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE

1. The extent of the Site shall be as bounded by the private property wall lines on either side of the road and can be seen in the Contract drawings.
2. Subject to the agreement of the Local Authority and approval of the Employer's Representative, the Extent of the Site shall include areas required for advance coning off and temporary traffic signing by the Contractor in compliance with Clauses NG117 and NG118 of the Specification.
3. The use of the Site is limited to the Works in the Contract and works to be carried out by Statutory Authorities and Service Providers. Storage of plant or material for other works is not permitted.
4. The locations of resurfacing works are listed in Appendix 1.13 below. Tenderers shall visit these locations so that they are fully aware of the characteristics of all sites and the hazards that may be encountered when carrying out works at those sites.

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

1. The Contractor shall employ the best practical means to minimise noise produced by his operations including plant maintenance and shall comply with the recommendations in BS 5228:1984 (Noise Control on Construction and Demolition Sites).
2. All vehicles and mechanical plant used on the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order for the duration of the Works in compliance with BS 5228. Machines in intermittent use shall be shut down in the periods between works or throttled down to a minimum. The Contractor shall remove from the Works any item of plant which in the opinion of the Employer's Representative is ineffectively silenced.
3. All compressors shall be sound reduced models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use and ancillary pneumatic percussion tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers. Pumps and mechanically static plant shall be enclosed by acoustic sheds or screens where directed by the Employer's Representative.
4. Sound levels shall be monitored by methods set out in Appendix B of BS 5228. All measurements shall be made 1mtr outside the façade of each building in question using a sound monitor level meter conforming to BS 5969 on SLOW response.
5. Any plant such as generators and pumps which is required to work outside the hours of 0700-1900 shall be surrounded by an acoustic enclosure to the approval of the Employer's Representative which shall restrict the noise levels to not less than 5db (A) below levels quoted in paragraph (viii) here under.
6. The Contractor shall organise his operations with regard to the positioning of plant and haul routes, etc., so as to minimise construction noise to adjacent properties.
7. The Contractor shall ensure that at all properties outside the site boundaries the sound levels arising from his activities do not exceed the following values:
8. (a) Monday to Friday Leq (1 Hr.) 75db (A)
   0800 – 1800 hrs. Peak 85db (A)
   (b) Saturday Leq (1 Hr.) 70db(A)

0800 – 1400 hrs. Peak 80db (A)

9. At all other times the sound level of 50db (A) Leq (1 Hr.) and a maximum noise level of 55db (A) shall not be exceeded unless the existing ambient noise levels are higher. In such cases the ambient noise levels may be exceeded by 5db (A).

Vibration

1. The Contractor shall select and utilise methods of working and items of plant so that the maximum measured ground vibrations do not exceed a peak particle velocity of 5 mm per second at any building and 10mm per second at any other property structure.
2. The Contractor shall monitor ground vibrations at selected locations to the approval of the Employer's Representative during the progress of the Works. Each vibrograph shall be certified as being in proper working order and shall unless otherwise approved, record vibrations in three directions simultaneously with a print-out showing the amplitude and frequency of the vibrations.
3. Vibration measurements shall be taken at the base of buildings, on the side facing the source of vibration. Where feasible, the measurement shall be taken on a hard surface on the ground outside the building.
4. The Contractor shall provide for separate vibration monitoring stations as necessary.
5. In exceptional circumstances the Contractor may apply to the Employer's Representative for consent to carry out works which the Contractor considers will exceed the specified limit of ground vibration. The procedure for submitting and processing the application will be as specified for obtaining consent to exceed the specified noise levels.
6. The Contractor shall provide instrumentation suitable for monitoring vibration when required by the Employer's Representative. Such monitoring shall include locations outside the limits of the site. The Employer's Representative is to be provided with copies of all vibration recordings.

APPENDIX 1/13: PROGRAMME OF WORKS

1. The Contractor shall provide a complete resourced programme for the works, setting out the methodology he intends to employ to complete the project, the proposed phases and individual elements of work within these phases. The programme shall state the Starting Date in accordance with the Contract and also indicate the associated time for completion of these phases and elements.
2. The Contractor shall allow for having to re-visit roads where resurfacing has been completed, to raise or lower covers and gratings, to reinstate road markings and lining (either during the same or separate visits) and also to re-cut traffic signal loops. This particularly refers to the provision of Traffic and Pedestrian Management and also liaison with residents and businesses and other entities in the area affected by the works.
3. The Contractor shall provide details of the source of all materials required for his works during both normal and abnormal working hours and clearly show the works during normal and abnormal working hours in his programme.

4. The elements of work within the phases should have an associated link outlining both the classification and quantity of labour and plant required for each task.
5. This programme is to be compiled using Microsoft Project software or similar approved and contain a critical path analysis. The completed resourced programme is to be forwarded to the Employer's Representative for his approval not later than 7 days before the Starting Date.
6. The duration for completion of the Works shall be as stated in Schedule Part 1 G. It is the intention of the Project Supervisor Design Phase to allow adequate time for the Contractor to complete the Works in a safe manner.
7. Due account shall be taken in the programme for public and other holidays.
8. This Programme of Works shall be formulated so that the restrictions of the Gardaí and Cork City Council's Traffic Division will be complied with. The Programme shall be reviewed weekly and revised as necessary. The Contractor shall provide the Employer's Representative with weekly programmes, not only for resurfacing works, but also for all works that follow resurfacing – adjustment of ironwork, reinstatement of road lining and the like. It is imperative that the Employer's Representative is made aware, on a daily basis, where all sub-contractors are working. Consequently, if, for any reason, changes are made to this weekly programme, the Employer's Representative shall be informed immediately of such alterations and the resulting revisions to the weekly programme.
9. At the time of presentation of the programme, the Contractor shall also provide a Traffic Management Plan showing his intended sequence of movements, locations and capacities of anticipated plant, manpower crews and other resource input.
10. The Contractor shall notify the Employer's Representative one week before he intends to start any section of the Works. He shall also notify owners and occupiers of all properties on all affected roads and streets as per Clause AR131.3 of this Specification. The notification should be accompanied by a map highlighting the affected roads or streets, alternative routes, and other traffic management measures proposed to comply with the Contractor's obligations as defined in the Contract. Site possession shall be released to the Contractor on a phased basis. The extent of any portion of the site released to the Contractor at any time shall be agreed with the Employer's Representative and shall be deemed to be in the Contractor's possession until the Works are complete and accepted by the Employer's Representative.

Schedule of Stated Constraints:

- Working around privately or publicly owned services and supplies;
- Possession of sections of a public road and its associated relevant public consultation/liaison requirements, to the road authorities' satisfaction;
- Traffic safety and management including notice requirements and restrictions;
- Approval of the Employer's Representative of subcontractor nominations;
- High volumes of pedestrian traffic;
- Water, gas, power, communication, broadband or data cables or services – note that record drawings may not be entirely accurate and that there may be other such

services which are not recorded on the records that the Contractor shall obtain from all relevant service providers;

- Vehicular and pedestrian access to properties shall be maintained at all times;
- Vehicular and pedestrian access to businesses shall be maintained at all times;
- Rush hour traffic (morning 7.30 – 9.30am and evening 4.30 – 7.00pm) to be allowed for and kept relatively free flowing. Increases in traffic delay may curb Works progress and the Contractor shall allow for this;
- Any restrictions on working hours as stipulated by the Gardaí and as outlined below:

The working hours for each road and footpath are described on the next pages. Normal working hours are defined as between 08.00 hrs and 19.00 hrs. Abnormal working hours are defined as hours other than Normal working hours described above. Note that summertime is defined as during the months of June, July and August.

Estate Roads Resurfacing			
Location	**Working Hours**	**Comment**	**Closure**
Ballinure Cottages	SE		
Belgard Downs, Douglas	SE		
Bride Valley View	NW		
Brookfield Park	SW	Narrow lane	Yes
Church View, Ballincollig	SW	Schools nearby	
Clifton, Grange	SC		
College View	NW		
Curraheen Drive	SW		
Donnybrook Drive, Douglas	SE	Schools nearby	
East View Terrace	SC	Narrow lane	
Elm Park, Wilton	SW		
Grangeway Loop, Grange	SC		
Greenmount Avenue	SC	Narrow lane. Schools	Yes
Hawthorn Villas	SC	Narrow lane. Schools	
Hettyfield Mews	SE		
Hollyville Estate	NW		
Huggardsland	SW	Narrow Lane	
Ilen Court	SW		
Inchvale Avenue, Douglas	SE	Schools nearby	
Inchvale Park, Douglas	SE	Schools nearby	
Laurel Ridge	NW		
Laureston Crescent, Tower	NW		
Linden Avenue	SE		
Listowel Avenue	SC	Narrow lane. School.	
Maymount	SC	Narrow lane	
Murphy's Gardens	SC		
Oaklands Estate, Ballincollig	SW		
O' Connell Avenue	SC	Schools nearby	Yes
O' Donovan Rossa Road	SC	University nearby	
O' Growney Crescent	SC		
Pic du Jer Close	SE		
Presentation Place	SC	Narrow road	Yes
Primrose Hill [East Arm], Tower	NW		
Primrose Hill [West Arm], Tower	NW		
Ravenscourt Avenue, Donnybrook	SE		
Riverview Estate, Tower	NW		
Silverdale Road	SE		
St. Helen's Court	SW		
St. Mary's Avenue	NW		
Sunday School Lane	NW		

The Avenue, Classes Lake, Ballincollig	SW	Schools nearby	
Tory Top Road	SC	Schools nearby	Yes
Westgate Park	SW		
Willison Lawn, Tower	NW		
Willow Close, Donnybrook	SE		
Wilton Lawn / Green Park	SW	Narrow road	Yes

APPENDIX 1/14: MONTHLY STATEMENTS

The monthly statements submitted to the Employer's Representative in accordance with Clause 11.1 of the Conditions of Contract by the Contractor shall, whenever dealing with matters covered by the Bill of Quantities, be set out under Part and Section headings similar to those in the Bill of Quantities and shall separately identify each item and specific quantity, unit rate and value. 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 or under section headings as appropriate indicating quantity, unit rate and value. In respect of all other matters referred to in Clause 11.1 the Contractor shall separately show in the quantities, units and rates of goods and/or materials and also details of any other matters to which he considers himself entitled. The Contractor shall allow the Employer's Representative to inspect invoices for goods or materials included in the statement pursuant to Clause 11.1 as may be required.

The monthly statement shall be submitted in hard copy and electronic copy.

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

The names, addresses and telephone numbers of the authorities serving in the locality are listed below:-

Names	Address and Tel. No.	Contact
Cork City Council Water & Sanitary Services	City Hall, Cork 021 496 6222	Helena O' Riordan, Senior Engineer
Cork City Council Roads Design & Construction	City Hall, Cork 021 492 4166	John Stapleton, Senior Engineer
E.S.B. Networks Operations	Wilton, Cork 021 484 4369 / 087 6502919 (Martin) / 021 484 4345 / 087 6813717 (Denis)	Martin Conroy or Denis O' Brien
Cork City Council Transportation Department	City Hall, Cork 021 496 6222	Ken Oliver A/General Foreman
Cork City Council Traffic Signals & Public Lighting	Albert House, Albert Quay, Cork 021 496 6222	Aidan Mahony or Mick Finnegan
Cork City Council Roads Asset Management & Maintenance	City Hall, Cork 021 496 6222	Fergus Gleeson
Eircom	Churchfield, Cork 021 427 7444	Michael McDonnell Planner

	/085 174 2538	
Bord Gais Eireann	Gasworks Road, Cork 021 453 4105	Liam P. O' Riordan

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT
Traffic Safety and Management Requirements

(i) The working hours for each road are described above in Appendix 1/13;

(ii) Traffic flow on all affected roads shall be dealt with on a road by road basis and unless alternative arrangements have been agreed with the Gardaí and Cork City Council's Transportation Division, traffic flow in both directions will be maintained at all times;

(iii) All traffic movements at junctions will be maintained unless otherwise agreed;

(iv) All statutory traffic diversion signs shall be set up and removed by Cork City Council. The Contractor will be responsible for the maintenance in place of all such signs and shall programme / coordinate with Cork City Council's Transportation Division regarding these closures giving a minimum of 24 hours notice to Cork City Council's Transportation Division for the removal of traffic diversions;

(v) The Contractor shall be responsible for the provision of, erection, maintenance, moving as the work location changes, and removal off site of all signs, cones etc. required to warn, inform and direct pedestrians, cyclists and vehicular traffic safely past the works. These temporary traffic signs etc. shall conform to *Chapter 8 of Traffic Signs Manual* published by the Department of Transport December 2008 together with amendments dated November, 2010 or any more recent amendments;

(vi) All cones to be used on the works shall be, as a minimum, 900mm high, heavy duty type and with high reflectivity type sleeves;

(vii) At the time of presentation of the programme, the Contractor shall also provide a Traffic Management Plan showing his intended sequence of movements, locations and capacities of anticipated plant, manpower crews and other resource input;

(viii) All Traffic Management which will affect the normal flow subject to the requirements/instructions/stipulations of the Gardaí;

(ix) Before any works are undertaken, the appropriate Road Opening Licence shall be obtained from Roads Control Division of Cork City Council. The Contractor shall familiarize themselves with the licence application process so that Licences are

received in a timely manner in advance of the relevant works. The procedure for Licence Application is described in the Directions for the Management and Control of Roadworks in Cork City which is available on Cork City Council's website;

(x) The Contractor shall restrict pedestrians, cyclists and vehicular traffic from entering the works area and direct them safely past or around the works area as required;

(xi) The Contractor shall apply for and pay for all road closures that are required to complete the works. Applications are to be made to the Transportation Division of Cork City Council.

(xii) Where newspaper advertisements are required to publicise road closures or diversions, the Contractor shall pay for those. The text and format of such advertisements shall be approved by Cork City Council.

Traffic Safety Measures

The Contractor shall note that Traffic Safety measures are required at all locations where the Works affect public roads.

Access to Private Property

Access to private property shall be maintained at all times. However, where it becomes necessary to interrupt such access, the Contractor shall have the means of providing emergency access for vehicles or pedestrians immediately if required.

APPENDIX 1/18: TEMPORARY DIVERSIONS FOR TRAFFIC

The Contractor shall submit to the Employer's Representative proposals for diversions of traffic if they deem them necessary to carry out the Works in a safe manner, having first satisfied himself that such proposals are acceptable to the Gardaí and Cork City Council's Transportation Division.

The Employer's Representative is entitled to insist on the use of Flagmen or other appropriate measures for the maintenance of traffic flow. The cost of this shall be allowed for by the Contractor in his rates for Traffic Safety & Management.

The Contractor shall provide, erect and maintain such traffic signs as the Employer's Representative may consider necessary and such signs shall comply with Department of the Environment regulations.

The Contractor shall give a minimum of two weeks advance notice to the Gardaí and Cork City Council's Transportation Division in respect of requests for traffic diversions or road closures. The Contractor shall conform to any requirements of either the City Council or the Garda Authorities in respect of Traffic Management.

APPENDIX 1/22: PROGRESS PHOTOGRAPHS

Condition and Progress Photographs

PRIOR to commencement of construction work the Contractor shall have photographs to record the condition of all adjacent buildings, facades, boundary walls, roads, footpaths or any other feature which could be affected by the works, taken by an approved professional photographer. The dates and locations of each photograph shall be clearly identified and recorded by the Contractor. One set of prints and an electronic copy shall be delivered to the Employers Representative with an electronic copy retained by the photographer for production at a later date.

Progress Photographs

The Contractor shall be required to have progress and record photographs taken by a professional photographer for each section of the works, prior, during and after each section of the works. The Contractor shall supply a set of colour prints and an electronic copy of each photograph to the Employers Representative.

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

Description	Location	Delivered to	Requirements
Limestone kerbs and flags and cobbles/setts		Half Moon Lane, South Douglas Rd.	To be delivered between 8.00 a.m. and 4.00 p.m. on weekdays. The Contractor will be responsible for the unloading of the limestone kerbs and flags and cobbles/setts at the Depot and shall liaise with CCC representatives to establish a suitable delivery time.

APPENDIX 5/1: DRAINAGE REQUIREMENTS

(i) **Joints** shall be watertight.

(ii) **Bedding and Haunching to Pipes**

Unless otherwise stated, bedding types suitable for typical ground conditions shall be as shown in RCD/500/2 type G but with ST2 concrete backfill.

(iii) **Connecting to Existing Sewers, Drains and Manholes**

Connections of new 150 mm pipe lines to existing sewers shall be made by means of 150 mm splay saddle specials neatly fitted on tappings made in the upper part of the existing sewers, set to discharge in the direction of flow in the sewers and packed around with ST2 concrete. The maximum angle of any bend shall be 45^{0}.

(iv) **Backfilling of Trenches**

In carriageways, the Contractor shall use ST2 concrete. Where pipes are laid in pedestrian areas, Clause 808 granular material shall be used for backfilling. Elsewhere, selected fill material shall be used for backfilling. Selected fill shall be free from stones greater than 40mm in size, building rubbish, tree roots, vegetable matter and lumps of clay greater than 75mm in size.

Clause 808 granular material shall be laid in compacted layers not exceeding 100mm in depth. Selected fill shall be laid in compacted layers not exceeding 300mm in depth.

(v) **Manholes Covers and Frames**

Manhole covers and frames and all other ironwork on the roadway shall comply with EN124 D400. The minimum opening dimensions shall be 600 mm x 600 rectangular or, if circular, 600 mm diameter. Prior approval of the type being used will be necessary.

Covers and frames installed in roads shall be ductile iron to Class EN124 D400, Noroc or similar approved. Overall dimensions 760 x 760 x 100mm. Frames shall have a 600 x 600mm opening. Cover shall consist of wedged seating for non-rock performance. A third party test report showing compliance with the full requirements of EN124 must be provided.

Where manhole covers and frames or storm drain covers and frames are to be replaced in the course of resurfacing works, Cork City Council will mark these in advance of the works.

High strength engineering brick shall be used to make up the manhole walls directly under the frame and be bedded on mortar which complies with Clause 507 of the Specification. Standard concrete blocks or bricks will not be allowed. The engineering bricks shall comply with British Standard 3921: 1974. Manhole frames shall be bedded and surrounded in accordance with Clause 507 of the Specification.

For road resurfacing works, the Contractor shall comply with Sub-clause (vi) below.

Covers and frames for manholes, hydrants, meters, air valves and stopcocks in footpaths shall be Class B 125 in accordance with IS EN 124 - *Gully tops and Manhole tops for vehicular and pedestrian areas*, IS 261 or BS 5834 as appropriate.

(vi) **Raising or Lowering of Existing Covers or Gratings**

Existing manhole/chamber covers and frames and all other ironwork on the roadway shall be raised or lowered **AFTER** completion of the wearing course with a level tolerance of +5mm, -0mm to finished road level, except for gully covers that shall be 10-15mm below the adjacent road surface, as described below. Allowance shall be made for all Traffic Management required for this work to be carried out **AFTER** resurfacing works are completed. Raising or lowering of existing covers or gratings shall be carried out within 3 working days of the completion of final surfacing layer.

All covers and frames which are in public roadways and which are to be set to new levels, shall be fully bedded on mortar that complies with Clause 507 of the Specification and shall be surrounded with mastic asphalt to BS1447:1988 which has a minimum width of 200mm and a minimum depth of 150mm.

Where the level to which a chamber cover and frame has to be altered exceeds 30 mm, a course of brickwork shall be removed and the required level obtained by either rebuilding in Class A engineering brickwork or by using 40N compressive strength planks, in both cases, using mortar that complies with Clause 507 of the Specification . Upon taking up an existing cover and frame which is to be re-set, if any weak or defective masonry is discovered it shall be reconstructed as per above using mortar that complies with Clause 507 of the Specification. The underside of the frame shall be fully bedded to the required level over its entire surface. Having

set the frame to the required level, it shall be surrounded with mastic asphalt to BS1447:1988 which has a minimum width of 200mm and a minimum depth of 150mm.

All covers and frames proud of the temporary road surface shall be adequately ramped with delay set macadam and this shall be removed immediately prior to final surfacing.

(vii) Gullies

Materials:-

(a) Gratings and frame shall be ductile iron and shall comply with EN124 D400
(b) Gully gratings shall have a minimum clear waterway area of 740 cm2.
(c) Gratings and frames shall be locked with an M16 stainless steel locking bolt and nut. Provision shall be made to allow for the replacement of the bolt and nut in the event of damage. Tapping of frame to lock will not be permitted.
(d) Frames shall be 3-sided, i.e. not flanged on one side, to enable grating to be as near as possible to the kerb
(e) Hinges shall be located so that grating is never open directly against direction of traffic
(f) The minimum grating frame depth shall be 100mm
(g) The minimum clear opening dimensions shall be 360mm X 310mm
(h) Gratings shall incorporate a raised non-slip pattern
(i) Gratings shall be hinged, coated black and rust free
(j) Road gullies shall be trapped so that the water seal depth is not less than 50mm
(k) Chambers shall have minimum internal dimensions of 360mm x 300mm x 370 deep (excluding grating and frame) complete with nominal 150mm internal diameter trapped outlet and rodding eye
(l) Where the bars of an existing gully grating run parallel to the direction of traffic, the grating shall either be rotated so that the bars are perpendicular to the direction of traffic flow or replaced. If rotating the gully cover and frame results in the frame being inadequately supported (i.e. on all sides) the gully pot shall be relocated and/or replaced so that the cover and frame receive all round support.

Installation:-

(a) Gully grating frames shall be bedded on 10-20mm mortar complying with Clause 507.17 of the NRA Specification for Roadworks. For carriageways, the Contractor shall comply with Sub-clause (vi) above.
(b) **Grating levels shall be 10 - 15mm below the finished road level and the wearing course shall be dished locally into the frame**

(c) The backfill around gullies shall comply with Clause 508.6 of the NRA Specification for Roadworks. Chambers shall be bedded on and surrounded by 150mm thick ST2 concrete

(d) Cork City Council (CCC) will mark on site the position of new gullies

(e) On road sections where the falls are minimal, the Contractor shall take care to ensure that gully covers are located at localised low points. The Contractor shall ensure that the profile of the finished bituminous surface is adjusted as required to create falls towards the gullies in that area. Any ponding that occurs on a newly resurfaced road (done under these works) shall be rectified by the Contractor at his sole expense.

(viii) Testing and Cleaning

As completed, each section of sewer and drain shall be left clean and free from obstruction and, at the time of completion of all works covered by the Contract, the Contractor shall ensure, to the satisfaction of the Employer's Representative, that all sewers and drains in the area covered by the Contract are clean and completely free from obstructions such as mortar, mixer washings, grout and clay deposits, etc. If any such deposits are found to have formed in the pipelines, manholes and gully catchpits, the Contractor shall, at his own expense, open up and relay affected work.

APPENDIX 5/2: SERVICE DUCT REQUIREMENTS

(i) General

Ducts shall be laid so that the upper surface is 600mm below ground level in carriageway and 450mm below ground in footway and with a warning tape at 300mm below ground level. A minimum bed and surround of 150mm shall be provided. Bedding material shall be to Table 5/3. All ducts shall be cleared of debris and obstructions and be proven by pulling through them a solid cylindrical mandrel whose diameter is not less than 15mm smaller than the pipe diameter and is a minimum 150mm in length. All ducts to be roped with 10mm diameter polypropylene rope and plugged. For road resurfacing works, the Contractor shall backfill with ST2 concrete in carriageways.

(ii) Public Lighting and Traffic Ducting

Public Lighting and Traffic Ducting shall comply with BS 3506 Class B as a minimum. Twin wall ducting shall be 107mm external diameter manufactured from uPVC material and with a minimum wall thickness of 5 mm. Public lighting ducting shall be Orange Coloured marked as Public Lighting ducting. Entry and exit from the duct to individual column foundation blocks shall be by way of a preformed "Swept Tee" or Access Chamber as required. Clearances from other services shall be as per ESB Networks Electrical Services Guidebook.

(iii) ESB Ducts

ESB ducts shall be approved Red Electric Cable and comply with the requirements of ESB Electrical Services Guidebook.

(iv) Other Ducts

Other ducts shall be single wall black to BS3506 Class B.

APPENDIX 5/3: SURFACE WATER CHANNELS AND DRAINAGE CHANNEL BLOCKS

All surface water drainage channels shall comply with BS EN 124, Class C.

APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY AND TESTING ETC. OF WORKS MATERIALS

Planed materials shall either be disposed of by the Contractor to a licensed tip in accordance with this Specification or delivered to a location to be specified by Cork City Council for re-use.

All excavated materials with a bituminous content shall be deemed to be Unacceptable Class U2 and shall be disposed of in licensed landfill facility provided by the Contractor.

All other excavated material shall be deemed to be Unacceptable Class U1 shall be disposed of in licenced landfill facility provided by the Contractor.

The Contractor shall produce a Waste Management Plan (WMP) to be included in the Works Proposals stating how all waste arising from the Works shall be dealt with. The WMP shall be submitted in advance of such works and subject to written agreement from the Employer's Representative.

All waste, including, Class U1, U2 and any other material arising from the Works shall only be collected and transported by the holder of a valid Waste Collection Permit and may only be disposed of in a facility authorised for such purpose by the relevant Local Authority or the Environmental Protection Agency. Details of proposed permitted waste collectors and proposed waste facilities, including copies of relevant permits/licences are to be included in the Waste Management Plan. Written approval shall be obtained from the Employer's Representative prior to use of any waste collector or waste facility.

The Contractor shall complete and submit a Waste Record Sheet and shall attach copies of all waste receipts from the relevant permitted/licensed waste facility which accepted the waste with his monthly statement. The Contractor shall account for each and every load of waste generated during the Works on the Waste Record Sheet and shall include as a minimum all details and proofs as per the format of the Waste Record Sheet template below. Please note that in the case of waste receipts and associated proofs, submission of waste transfer dockets shall not suffice and only receipts from waste facilities which accepted the particular load of waste shall be accepted.

The template Waste Record Sheet to be used is shown below:-

Project Name: _____
Project Location: _____
Works Start & End Date: _____
Contractor Company Name, Address & Contact Details:_____
Project Manager (Contractor) – Name, Company, Address, Tel & Email: _____

Date Waste Collected/ Transported	Description of Waste Load (waste types/ EWC codes)	Waste Quantity (tonnes)	Name of Carrier / Permitted Waste Collector	Waste Collection Permit Ref. No.	Destination of Waste	Waste Facility Permit / Licence Ref. Number	Waste Facility Receipt No.

Sampling and Testing

(1) Checking of workmanship shall be carried out by either Cork City Council, a body nominated by the National Roads Authority or another approved agency, as directed by the Employer's Representative.

(2) Sampling of materials shall be carried out by the Contractor, as per their standard testing procedures, or by a body nominated by Cork City Council. The Contractor shall provide the Employer's Representative with copies of all test results for materials used on this Contract.

(3) The Contractor shall supply free of charge samples for testing, or allow such samples to be taken when requested by the Employer's Representative.

(4) The Contractor, at their own expense, when requested by the Employer's Representative, shall supply a test certificate from an approved laboratory indicating that the material being supplied is in compliance with the relevant Specifications.

(5) The Employer's Representative shall be free at all times to visit the source (plant or factory) of material being supplied.

(6) If the quality of material or workmanship is not as required by the relevant Specification, Cork City Council shall make no payment for sub-standard work.

(7) If the quality of material or workmanship is not as required by the relevant Specification, the Contractor will be required at his own expense to:-
(a) Remove the sub-standard material from site

(b) Pay for the costs of carrying out all tests with respect to the sub-standard material

(c) Reinstate the item/s in question so that they do comply with the Specification

(d) Pay for any resultant extra costs incurred due to the sub-standard material and/or workmanship

Delivery Dockets and Material Record Sheets

Copies of all delivery dockets for bituminous and concrete materials that are used in the course of the works are to be given at weekly intervals by the Contractor to Employer's Representative.

APPENDIX 7/1: PERMITTED PAVEMENT OPTIONS

Calibration samples of all bituminous products shall be supplied by the Contractor to the Employer for testing purposes, within 3 working days of acceptance of his Tender.

Pavement Construction Type A - Carriageway- For Locations See List A

Pavement	Series 900 Clause	Material	Grade of Binder	Compacted Thickness (mm)	Special Requirements
Surface Course	5.1.13	Polymer Modified Stone Mastic Asphalt Surface Course	65/105 pen	40	Nominal Aggregate size 14mm
Binder Course	3.1.5	Dense Base and Binder Course Asphaltic Concrete with Geogrid Reinforcement	70/100 pen	60	Nominal Aggregate size 20mm
Regulating	5.1.10	Dense Base and Binder Course Asphalt Concrete or Close Graded Asphalt Concrete Surface Course Asphalt Concrete	65/105 pen	As required	Material type as directed by Employers Representative

Pavement Construction Type B - Carriageway- For Locations See List B

Pavement	Series 900 Clause	Material	Grade of Binder	Compacted Thickness (mm)	Special Requirements
Surface Course	3.1.7	Asphalt Concrete Surface Course	70/100 Pen & Fibres des psv 60 close	50	Nominal Aggregate size 10 to 14mm
Regulating	5.1.10	Dense Base and Binder Course Asphalt Concrete or Close Graded Asphalt Concrete Surface Course Asphalt Concrete	65/105 pen	As required	Material type as directed by Employers Representative

Pavement Construction Type C - Carriageway- For Locations See List C

Pavement	Series 900 Clause	Material	Grade of Binder	Compacted Thickness (mm)	Special Requirements
Surface Course	5.1.9	Polymer Modified Stone Mastic Asphalt Surface Course	70/100 Pen & Fibres des	50	Nominal Aggregate size 14mm
Regulating	5.1.10	Dense Base and Binder Course Asphalt Concrete or Close Graded Asphalt Concrete Surface Course Asphalt Concrete	65/105 pen	As required	Material type as directed by Employers Representative

Pavement Type – Locations

Type A

O' Connell Avenue	SC

Type B

Ballinure Cottages	SE
Belgard Downs, Douglas	SE
Bride Valley View	NW
Brookfield Park	SW
Church View, Ballincollig	SW
Clifton, Grange	SC
College View	NW
Curraheen Drive	SW
Donnybrook Drive, Douglas	SE
East View Terrace	SC
Elm Park, Wilton	SW
Grangeway Loop, Grange	SC
Greenmount Avenue	SC
Hawthorn Villas	SC
Hettyfield Mews	SE
Hollyville Estate	NW
Huggardsland	SW
Ilen Court	SW
Inchvale Avenue, Douglas	SE
Inchvale Park, Douglas	SE
Laurel Ridge	NW
Laureston Crescent, Tower	NW
Linden Avenue	SE

Listowel Avenue	SC
Maymount	SC
Murphy's Gardens	SC
Oaklands Estate, Ballincollig	SW
O' Donovan Rossa Road	SC
O' Growney Crescent	SC
Pic du Jer Close	SE
Presentation Place	SC
Primrose Hill [East Arm], Tower	NW
Primrose Hill [West Arm], Tower	NW
Ravenscourt Avenue, Donnybrook	SE
Riverview Estate, Tower	NW
Silverdale Road	SE
St. Helen's Court	SW
St. Mary's Avenue	NW
Sunday School Lane	NW
Tory Top Road	SC
Westgate Park	SW
Willison Lawn, Tower	NW
Willow Close, Donnybrook	SE
Wilton Lawn / Green Park	SW

Type C

The Avenue, Classes Lake, Ballincollig	SW

APPENDIX 7/2: EXCAVATION AND REINSTATEMENT OF EXISTING SURFACES

All work on existing public roads or any unavoidable excavation and reinstatement work on newly formed surfaces shall be carried out in accordance with Section 6 of *'Directions for the Management and Control of Roadworks in Cork City'* issued by Cork City Council.

APPENDIX 7/4: BITUMINOUS SPRAYS

Location:	Bituminous sprays are to be applied on all new or existing bound substrate, planed or otherwise, immediately before overlaying with Regulating or Binder Course and on Binder Course before overlaying with Surface Course.
Type of binder:	As per recommendations in Series 900 of Specification
Rate of spread:	Target 0.45 litres per square metre but Contractor shall follow the recommendations in Series 900 of Specification.

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 Employer's Representative. Any areas where the bituminous spray has been inadvertently removed (by traffic or other means) shall be re-sprayed and allowed to break as described above.

APPENDIX 11/1: KERBS, FOOTWAYS AND PAVED AREAS

Footways and Paved Areas - General

1. The crossfall of all footways, unless otherwise directed or described in the Contract, shall be 1 in 40.

2. Footways shall be finished neatly around stopcock features and chamber covers, all of which shall be firmly and securely bedded on their chambers and set carefully in proper position to the finished surface level of the footpath.

3. The standard kerb height over the finished carriageway surface shall be 150mm unless otherwise directed, except where vehicle access is to be provided and at pedestrian crossings. The kerb height where vehicle access is provided shall be 25mm unless existing road and driveway levels require otherwise.

4. At pedestrian crossings with tactile paving, the kerb shall be between 0mm and 6mm above the adjacent carriageway.

5. Lengths of footway with two different kerb heights can be joined by transition sections of footway with varying kerb heights. The longitudinal gradient of these transition sections shall not be greater than 8%.

6. Tactile paving shall comply with '*Guidance on the Use of Tactile Paving Surfaces*', published by the Scottish Office and U.K. Department of the Environment, Transport & the Regions.

7. Tactile concrete flags shall be Type "F 65", 400mm x 400mm x 63mm in locations as indicated.

8. The start and end points of footpath works will be marked on site by CCC as will the location of tactile paving and final footpath levels.

Footways and Paved Areas (In-Situ Concrete)

1. In-situ concrete footways shall, unless otherwise directed, be 150 mm thick except in the case of vehicular entrances or driveways where the thickness shall be 225mm, reinforced with steel mesh as directed by the Employer's Representative.

2. The footways shall be constructed of concrete Grade C30 laid in a single layer on the compacted granular sub-base.

3. Where in-situ concrete is cast as a kerb to form part of a cast in-situ concrete footway, it shall be scribed with a line parallel to the face at a distance of 100 mm from the face and the 100mm width shall be steel floated. The arris on all kerbs shall be bullnosed to 20 mm radius.

4. The finished vertical kerb surface shall be formed with a shutter to ensure a neat clean face free from surface defects, fins, discolouration, honey-combing etc. The kerbline shall be accurately formed to the line of the carriageway and free from undulations and waves. The kerb edge between the vertical and horizontal surfaces shall be bullnosed with a 20mm radius.

5. The kerb edge of in-situ concrete footways adjacent to the carriageway edge shall be strengthened by forming a thickened band of concrete, 300mm wide by 125mm deep (275mm total depth). The underside of concrete at the road edge shall be a minimum of 125mm below finished road level.

6. Where existing footways are to be broken out and removed, that shall be done using either a compressor and jack hammer or a mini-excavator to a maximum size of 1Tonne, to Cork City Council's direction. The Contractor shall take whatever precautions necessary to avoid damaging adjacent property or infrastructure during footway works and if damage does occur as a result of the Contractor's works, he will be obliged to make good same at his own expense to the Employer's satisfaction.

7. Testing of the compressive strength of concrete shall be carried out at intervals to the Employer's Representative requirements. The Contractor shall also carry out on site slump testing of concrete as required by the Employer's Representative.

Footways and Paved Areas (Precast Concrete Flags)

1. Precast concrete flags shall be laid in accordance with BS 7533: Part 4: 1998.

2. The flags shall be 600 mm x 600 mm x 63 mm or 900 mm x 600 mm x 63 mm but generally a combination of both and laid to an approved pattern - generally a form of stretcher bond.

3. Flags shall be laid on a 10mm-40mm thick bed of 4:1 semi-dry sand : cement mortar with 0.9 kg per m3 of polypropylene fibres. The sand shall comply with Type M or F Table 8 of IS 5, Part 1. Any mortar which has been mixed for more than two hours should be discarded unless a suitable retarder has been added.

4. The mortar shall be applied to a 100 mm thick 30N concrete base.

5. The flags shall be laid on the mortar bed true to line and level using a paviour's maul. The Contractor shall check that the flags do not rock after bedding down, lifting and re-bedding any as necessary. Any unit deviating more than 3 mm in 1 m from level shall be made good by lifting and relaying. Notwithstanding the above, the difference in level between any two adjoining flags at the joints shall not exceed 3 mm.

6. The joints shall be evenly spaced to a 10 mm nominal width and shall be thoroughly grouted over the full depth of the slab and finished flush with 3 : 1 sand : cement mortar (sand Type F, Table 8, IS 5, Part 1). Brush in mortar and top up joints several times after the initial filling as required to achieve grout over the full depth of the slab.

Footways and Paved Areas (Clay Pavers and Precast Concrete Paving Blocks)

1. Clay pavers shall comply with the requirements of BS 6677 : 1986 "Clay Calcium Silicate Pavers for Flexible Pavements" Part 1, Type PB with chamfers. The shape and dimension of clay pavers shall be as described in the Contract (usually 200 mm x 100 mm x 50 mm).

2. Precast concrete paving blocks (bricks & setts) shall comply with BS 6717 : Part 1. The shape and dimension of concrete paving blocks shall be as described in the Contract.

3. Clay pavers shall be laid in accordance with BS 7533 : Part 3 : 1997.

4. Precast concrete paving blocks shall be laid in accordance with BS 7533: Part 3: 1997.

5. Laying course sand shall be from naturally occurring sources. Crushed rockfines or other materials shall only be used for Category IV applications, as defined in Table

D1, BS 7533 : Part 3 : 1997. the grading of laying course sand shall comply with Table D2 according to the application as defined in Table D1, BS 7533 : Part 3 : 1997.

6. In some locations, e.g. adjacent to road gullies, where a degree of rigidity may be considered an advantage, incorporate 5 - 7% by weight of ordinary Portland cement.

7. Laying course sand should be delivered at least one day before it is used and stored so that water can drain out and it can reach a uniform moisture content. It should be protected from rain.

8. Laying course thickness shall be as specified in the contract drawings.

9. The precise amount of surcharge required should be determined by trial and error before the start of the work, but will be in the order of 9 - 14 mm when compacted to 30 mm thickness and 15 - 20 mm when compacted to 50 mm thickness.

10. The pattern of pavers and details at edges, manholes, gullies and other openings shall be agreed with the Employer's Representative prior to laying.

11. The laying pattern may include herringbone bond, stretcher bond and basket weave. The herringbone bond should be used in areas receiving regular vehicular traffic.

12. The clay pavers and concrete paving blocks shall be laid by hand in the specified bond pattern with joint widths 2 mm to 5 mm.

13. The grading of jointing sand shall comply with Table D3, BS 7533 : Part 3 : 1997.

14. Pavers/blocks should not be vacuumed for at least three months after laying in order to reduce the risk of jointing sand being lost.

Footways and Paved Areas (Limestone Kerbs)

1. New limestone kerbs shall be provided in random lengths varying from 600 mm to 1000 mm. The depth shall be 250 mm. The width shall vary to match existing. They 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 +2 mm. The top and front faces shall be bush hammered. The arris shall be bullnosed to 20 mm radius. For radius of 12 m or less kerbs of radius as described in the Contract shall be used - top front and top back edges shall be concentric and the units cut radially.

2. New limestone kerbs with smooth underside shall be laid on an ST2 concrete foundation which shall be a minimum of 200 mm deep by 250 mm wide.

3. Where limestone kerbs are to be located onto the existing carriageway, the surfacing shall be saw-cut prior to excavation. Where the resulting gap between the saw cut and the kerbing as laid is less than 25 mm, the gap shall be filled to within 25

mm of the finished level with a dry mortar mix consisting of 3 : 1 sand/cement. The remaining 25 mm depth shall be cleaned out and neatly filled with a hot poured sealant. Where the resulting gap exceeds 25 mm, the kerbing and the surfacing shall be primed and the gap filled with mastic asphalt.

4. Where, in addition to kerbing, new channelling is being provided, the surfacing shall be saw cut at the outer edge of the channel only.

5. Kerbs shall be laid on the foundation and bedded them down to line and level along the top and front faces using a paviour's maul. Check that the kerbs do not rock after bedding down. Lift and re-bed any as necessary.

6. Bedding and jointing are to be carried out as a single operation. Additional mortar, if required, shall be carefully placed in the joints by trowel, the surplus quickly removed and a tooled joint profile formed using an appropriate tool.

7. Kerb joints shall be thoroughly filled with compacted 1 : 3 cement sand mortar (proportions by volume), finished slightly depressed (average 1 mm). The sand for the mortar shall comply with gradings M or F of Table 8 of IS 5, Part 1.

8. Any movement joints in the carriageway should be continued through the unit and its bed and backing.

9. Lay the kerbs such that:
   (a) their surface level does not differ from the design level by more than ± 6 mm or for kerbs abutting drainage channels and/or fittings + 3 mm, - 0 mm;
   (b) the difference in level between two adjacent kerbs does not exceed 2 mm average with 3 mm maximum;
   (c) the kerbs shall be laid true to line and level and any unit deviating more than 3 mm in 3m from level shall be made good by lifting and relaying.

10. New limestone kerbs shall be constructed to the dimensions shown on the drawings. The standard height of the kerbs over the edge of the carriageway or channel shall be 175 mm but not less than 75 mm where there are other constaints. Where pedestrian crossings are to be provided, kerbs shall have a height of 10mm above the carriageway or channel level. At vehicular accesses and the like the kerb shall have a height of 25 mm above the channel level. There shall be a 1m long transitional length of kerb between kerbs of standard height and lower kerbs.

11. Where two pedestrian crossings, vehicular accesses and the like are separated by a distance of 3 m or less, the reduced height of kerb shall be maintained across the intervening width.

12. Clean the limestone kerbs of mortar stains and droppings immediately as they occur.

13. Where existing limestone kerbs are to be reused the Contractor shall provide for inverting and relaying as described in the foregoing specification.

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

1. General

Allowance shall be made for all required Traffic Management required for the replacing of all existing road lining and other features such as red resin to cycle lanes and bus stops **AFTER** resurfacing works are completed.

The quality of the material and the workmanship shall comply with the requirements of all relevant European Standards including EN 1436, EN 1423, EN 1424 and EN 1871. Any aspect of the work and materials not covered by a European Standard shall comply with the Specification and Conditions of Contract as set out below.

The following properties of the markings are required to be covered by the guarantee:

- Durability
- Reflectivity
- Luminance Factor
- Chromaticity
- Skid Resistance

The Contractor shall provide a guarantee that all markings laid will perform to standard for a minimum period of 2 years and shall make good any deficiencies which arise in that period at his/her own expense.

Notwithstanding the performance requirements of this specification the minimum thickness of markings laid shall be 2.5mm. This is a minimum value only and does not relieve the Contractor of his/her overall requirement to guarantee performance of the markings in all respects.

On application and during the period of guarantee, the properties of Durability, Retroreflectivity, Luminance, Chromaticity and Skid Resistance when measured in situ in an approved manner, shall not be less than the value stated below.

For the purpose of control, the thickness shall be measured by using a suitable micrometer gauge, or callipers, on samples of markings laid on steel plates placed beneath the application machine during the laying operations. The thickness laid on the plate shall be representative of the thickness of material laid on the road.

Unless otherwise requested by the Employer's Representative, all markings shall be reflectorized by the application of glass beads to the surface of the marking material.

In the case of reflectorised thermoplastic markings, solid glass beads, 400 g/m sq. to 500 g/m sq. from the machine, shall be applied by pressure concurrently with the laying of the line with sufficient velocity to ensure retention in the surface of the line. The solid glass beads so sprayed shall give uniform cover and immediate reflectivity over the whole surface of the marking. (On screed applied markings where pressure application is not practicable, gravity application will be permitted).

The Tenderer shall note that the above mentioned solid glass beads which are to be applied to the surface of the markings are **in addition** to the minimum solid glass bead content specified for incorporation within the body of the mix for reflectorised markings.

The Contractor shall not carry out any work when the weather conditions or the road conditions (e.g. dampness, dust, cold) are such that the quality of the work might be adversely affected. In particular, application of markings shall not be carried out when the road temperature is less than 5ºC. Where the Employer's Representative is of the opinion that such adverse conditions exist, he/she may instruct the Contractor to suspend the work, but this shall not relieve the Contractor of the obligation to suspend the work in the first place where such adverse weather conditions or road conditions exist.

The Contractor shall ensure that the horizontal alignment of the applied marking is to the satisfaction of the Employer's Representative in respect of straightness of line and smoothness of curvature.

2. Maintenance Period:

(1) The conditions laid down with regard to the guarantee shall apply. The period of guarantee shall commence on the date of completion of the contract as agreed with the Employer's Representative.

(2) Any remedial work required during this maintenance period due to inferior quality of materials or workmanship shall be carried out at the Contractor's own expense.

3. Manufacture and Materials

(1) Where items to an Irish Standard Specification, a British Standard Specification or any other Standard Specification of a member state of the European Union are called for, this requirement shall be read as including items to a relevant European Standard or the relevant National Standard of any Member State of the European Union which provides an equivalent guarantee of safety and suitability.

(2) Where items certified by the National Standards Authority of Ireland as complying with an Irish Standard are called for, the requirement shall be read as either certified by the National Standards Authority of Ireland as complying with the relevant European Standard or as complying with the relevant National Standard of another Member State of the European Union which provides an equivalent guarantee of safety and suitability. Manufacturers or suppliers certificates of compliance with the Standard shall be provided when requested by the Employer's Representative.

4. Sampling and Testing

(1) Sampling and testing of materials and checking of workmanship shall be carried out by either Cork City Council, a body nominated by the National Roads Authority or another approved agency, as directed by the Employer's Representative.

(2) The Contractor shall supply free of charge samples for testing, or allow such samples to be taken when requested by the Employer's Representative.

(3) The Contractor, at his own expense, when requested by the Employer's Representative, shall supply a test certificate from an approved laboratory indicating that the material being supplied is in compliance with the relevant Specifications.

(4) The Employer's Representative shall be free at all times to visit the source (plant or factory) of material being supplied.

(5) If the quality of material or workmanship is not as required by the relevant Specification, Cork City Council shall make no payment for the inferior work.

(6) If the quality of material or workmanship is not as required by the relevant Specification, the Contractor will be required at his own expense to:-

(a) Remove the inferior material from site.

(b) Pay for the costs of carrying out all tests with respect to the inferior material.

(c) Reinstate the item/s in question so that they do comply with the Specification.

(d) Pay for any resultant extra costs incurred due to the inferior materials and/or workmanship.

(7) In the case of a dispute arising in relation to standards pertaining to thickness, reflectivity, Chromaticity or skid resistance of work carried out under specifications (a) or (b) both the client and the Contractor shall agree to testing being carried out by an independent laboratory specifically accredited for the tests involved. In the event of a dispute arising in relation to the particular laboratory or accreditation scheme applicable to same then the matter shall be referred to the President of Engineers Ireland for adjudication and his/her decision shall be binding on both parties.

(8) Notwithstanding the above, the Contractor shall be obliged to comply with all sampling and testing requirements detailed in specifications (a) and (b).

5. Measurement/Testing Frequency

Measurement/testing shall be carried out on representative sections as requested by the Employer's Representative. On short sections (i.e. discreet sections of work of overall length less than 2 kms.) at least three locations should be tested at random intervals. At each location five luminance and five reflectivity measurements shall be taken. Furthermore,

where skid resistance is being tested, three measurements should be taken at different spots over a twenty metre length of either broken or continuous line. On long sections (i.e. sections greater than 2 kms.) testing frequency may be extended to one location per kilometre. The frequency may be reduced further if in the opinion of the Employer's Representative the work is visually perceived to be up to standard. If the measured values are not to specification or there is a wide variability in test results the frequency of testing should be increased to three locations per kilometre. The average test results per three locations should be reported. The Contractor shall be required to replace the whole or part of any section which fails to comply at the discretion of the Employer's Representative.

6. Quality of Work and Specification

(1) The quality of materials and workmanship shall be as described in the relevant specifications.

(2) The Contractor should be aware that the City Council demands strict adherence to all details of the attached Specifications.

(3) In these documents, the abbreviation EN with a number after it shall mean the European Standard of that number issued by CEN.

(4) In these documents, the abbreviation BS with a number after it shall mean the British Standard Specification of that number issued by the British Standards Institution.

(5) Where such standard specifications are specified in these documents, they shall be deemed to include all amendments and revisions to such standard specifications whether or not such amendments or revisions are stated in these documents.

7. Performance Classes

Thermoplastic road markings shall, as a minimum, retain the following classes of performance for the functional life as required by Cork City Council.

(i) Luminance:

White material….B4: $\beta \geq 50$
(Texture depth < 2mm.)
White material….B3: $\beta \geq 40$
(Texture depth ≥ 2mm.)
Yellow material…B2: $\beta \geq 30$

On very coarse surfaces such as on a freshly surface dressed road where the chippings have not yet formed a tight mosaic and where the premeasured texture depth exceeds 4.5mm, the Luminance requirements above may be difficult to measure. In such circumstances it shall be at the discretion of the Employer's Representative to specify B0 (no requirement). In this case the Contractor shall be required to carry out a plate test during the line laying operation. This shall be done by laying a sample length of material on a clean 16 SWG galvanised steel plate (1.0 metre x 0.2 metre) placed in the

path of the laying apparatus and the luminance of the sample when tested in the laboratory shall be greater than 65 for white material and 45 for yellow material. The frequency of such testing shall be three samples per kilometre of laid material unless otherwise agreed with the Employer's Representative.

(ii) Retroreflectivity:

White material….R2: $R_L \geq 100$

Yellow material…R1: $R_L \geq 80$

(iii) Skid Resistance

White material…S2: SRT ≥ 50

Yellow material..S2: SRT ≥ 50

(iv) Durability

In any 100 metres length of road marking, continuous or broken line, at least 90 per cent of the marked areas shall contain a uniform coating of marking material through which the underlying surface has not penetrated. Discontinuities over the full width of line, due to wear, shall not be accepted in continuous lines. At least 75 per cent of each marked segment of a broken line shall remain intact.

(v) Chromaticity:

The colour of White material shall fall within the boundaries of the four sided figure as defined by the 'x' & 'y' coordinates of four corner points on the Chromaticity chart as set out below. The colour of Yellow material shall fall within the boundaries of the figure as defined by the 'x' & 'y' coordinates of the points on the Chromaticity chart as set out below.

The corner points of Chromaticity regions on the CIE Chromaticity diagram for white and yellow road markings shall be as set out below:

		1	2	3	4
White	**X**	0.355	0.305	0.285	0.335
	Y	0.355	0.305	0.325	0.375
Yellow	**X**	0.443	0.545	0.465	0.389
	Y	0.399	0.455	0.535	0.431

8. Line Dimension Tolerance

(1) Line Width: Specified width +10% to –5%

(2) Line Thickness: Minimum 2.5mm for guaranteed lines (maximum thickness shall not exceed 5mm in any case).

(3) Line Length: (Segments up to 4m long). The average of any 10 consecutive segments shall be between ± 50mm of the specified length and no one segment within that 10 shall be less than the specified length by more than 75mm. Quantities for payment will make no allowance for any extra lengths. Where lengths fall short of the specified length removal of the markings will be required.

(4) On newly constructed roads being marked for the first time, the lateral placing of the markings shall be within tolerances of ± 10mm of the design position.

Note 1: Notwithstanding the requirements and tolerances in the specification for line dimensions, the phenomenon of an excess flow or 'fishtailing' of material at the point where lines, particularly extruded lines, commence or terminate is undesirable. (This is more likely to occur in the laying of broken yellow or white lines). Where such phenomenon is identified, particularly where repetitive it shall be deemed not to comply and it shall be open to the Employer's Representative to reject such work. Excess spray drift particularly where repetitive shall be treated similarly.

Note 2: The lines shall be laid in a smooth flowing alignment. Visible interruptions shall not be accepted. Lines shall be clearly defined.

Unless otherwise instructed, replace all markings as existing.

APPENDIX 12/4: REINSTATEMENT OF TRAFFIC SIGNAL LOOPS.

All MOVA in-Loops and Stop-Line Loops should be cut as SCOOT Loops. Details of the shape and location of loops to be reinstated shall be agreed with Cork City Council's Transportation Division in advance of that work being carried out.

Loop cable shall comprise 1.5 sq. mm copper conductors (30/0.25) insulated with an inner layer of ethylene propylene rubber (EPR) with 0.8mm radial thickness and an outer sheath of polychloroprene (PCP - sometimes referred to as Neoprene) with a radial thickness of 1.4mm or equivalent. Overall thickness to be between 5.8mm and 7.2mm.

Joints:

A Scotchcast 91 or 92 series, resin heat shrink joint or similar approved shall be used to rejoin the loop or loops to the feeder cable.

Loop Cutting :

Slots or chases in the road surface to accommodate loop cables shall be cut so that they are at least 1 metre from any areas of damaged road surface or from any ferrous objects (such as manhole covers, etc.).

The inductive loop should be located 1.5m from the Vehicle Stop Line. The inductive loop should also be 0.7m from white centre lines. Right turn loops may be located in advance of stop line in which case the exact location shall be agreed on site.

Slots or chases in the road surface to accommodate loop cables are to be 10mm wide and not less than 50mm deep.