

APPENDIX 1

Most Recent Planning Permissions

Application in Respect of Part X of Local Government (Planning & Development) Regulations 1994:
Remedial Works at Derrinnumera Landfill Site.

Application in Respect of Part VIII of Local Government (Planning & Development) Regulations, 2001:
Development of Borrow Pit adjacent to existing Site.

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Mayo County Council

Remedial Works at Derrinnumera Landfill Site

Application in Respect of Part X of
Local Government (Planning & Development) Regulations 1994

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MAYO COUNTY COUNCIL

REMEDIAL WORKS AT DERRINUMERA LANDFILL SITE

Part X Planning Notice

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Remedial Works at Derrinnumera Landfill Site

Part X - Planning Notice

SECTION ONE

1. INTRODUCTION

1.1 GENERAL DESCRIPTION OF WORKS

The landfill site at Derrinnumera is an existing facility having been in operation since 1974.

The proposed Remedial Works are an initial phase of a larger programme of works intended to bring the landfill operation into line with strictest Environmental standards and will consist of:

1. Leachate Treatment Plant including Rising mains, Temporary Pumping Plant, (Treated Effluent Outfall), Flow Measurement and Sampling
2. Control Building, Sorting Shed and Garage
3. Fencing, Site Development and Earthworks
4. Civic Amenity Area
5. Contaminated Sewage Works Sump & Pumping Plant
6. Weighbridge
7. Security Barriers and C.C.T.V.
8. Water Supply System, Holding Tank and Water Pipelines
9. Wheel Wash
10. Fuel Storage Area

These will be supplemented in a later Phase of the works by:

- Lined Waste Cells
- Cut off Walls
- Landfill Cell Liner
- Gas Drains and Flare Stack

1. Leachate Treatment Works

Two sequential batch reactor tanks will be used to treat the leachate from the Landfill.

SBR Tanks

Number	2
Volume per Tank	270 m ³
Material	Concrete
Total Height	5.25 metres
Water Depth	4.5 metres
Length	7.75 metres
Width	7.75 metres

The tanks in operation will include Aerators and a P.H. Control System.

2. Civic Amenity Area

A Civic Amenity Area shall be constructed. The surface water run-off from the Area shall be drained to a sump as shown on the Drawings.

3. Interconnecting Pipework

The Mechanical and Electrical Plant Contractor will be required to provide all pipework to a limit of 1m outside the main Units.

The Civil Engineering Works Contractor will install the following range of interconnecting pipework.

Pipe Diameter	Source	Destination
Inlet Trench		
100 diam	Water Main from Public Mains	Control Building and Hose Points
100diam	Rising Main from Temporary Leachate Pumps	Treatment Units
100mm	Rising Main from Contaminated Surface Water Sump	Treatment Units
450 diam	Temporary treated effluent outfall pipeline from Treatment Units	Outfall in adjacent stream

1.2 GENERAL

A Specialist Mechanical & Electrical Plant Contractor will be appointed by Mayo County Council for the supply, delivery and erection of all Mechanical & Electrical Plant, including the complete electrical installation at all Buildings and Units.

The Civil Works Contractor shall be required to execute all works of a Civil and Structural Engineering nature in connection with the construction and completion of the foregoing items inclusive of the Leachate Treatment Works and temporary leachate Pumping Station all in accordance with the Drawings attached to this Specification, or to such other Drawings as may be provided by the Specialist Contractors and approved by the Engineer.

At tanks and chambers the Civil Engineering Contractor shall block out all the necessary openings and subsequent to the installation of the pipework by the Specialist Contractors he shall make good all openings. Within the Main Control Building and various Sumps and Chambers the Civil Engineering Contractor will be required to build all ducting and plinths which may be required by the Specialist Contractors and he shall also execute all necessary chases or other builders work which may be required in connection with the electrical installation. In respect of all these items of work or service, adequate provisions have been made in the Bill of Quantities to enable the General Contractor to price the work involved.

In the execution of all the works generally described in Clause 4.1 the Contractor shall supply all labour and materials plant and machinery necessary for the proper and expeditious completion of the work in accordance with the terms of this Specification, and within the time limits hereinafter defined or proposed. Proper completion of the Scheme includes the testing of the completed pipelines to sustained head appropriate to the class of pipe used in different sections, as well as the testing of the tanks in the manner hereinafter described, and the scheme will not be accepted as completed until every defect disclosed by the tests has been made good and until the whole system is absolutely sound to the completed satisfaction of the Engineer.

1.3 SITE INVESTIGATION

The Contractor's attention is drawn to the Hydrogeological Investigation Report. The Contractor shall familiarise himself with all aspects of this Report which accompanies these documents. The Contractor should note that this Investigation was not a Civil Engineering Site Investigation and that there is no guarantee that the conditions encountered are typical of those which will be encountered during the construction of the Works.

1.4 DRAWINGS

The Works hereinafter described in detail or referred to in this specification are shown on the following Drawings or on such amending Drawings as may be supplied by the Mechanical & Electrical Plant Contractor or other Specialist Contractors and on such other Working Drawings reinforcement Drawings and Sheets of Typical Details as may be supplied to Intending Contractors at the time of Tendering or to the appointed Contractor during the progress of the work.

<u>DRG. NO.</u>	<u>DRAWING TITLE</u>
***	COVER SHEET
***	INDEX SHEET
002035/11/601	OWNERSHIP PLAN SCALE 1 : 5000
002035/11/608	GENERAL ARRANGEMENT OF CIVIC AMENITY AREA WEIGHBRIDGE & CONTROL HOUSE
002035/11/609	GENERAL ARRANGEMENT OF TREATMENT WORKS LAYOUT
002035/11/610	GENERAL ARRANGEMENT OF CELL NO. 1
002035/11/611	GENERAL ARRANGEMENT OF CELL NO. 2
002035/11/612	GENERAL ARRANGEMENT OF SITE AREA
002035/11/626	LAYOUT PLAN SHOWING CONTROL HOUSE, WEIGHBRIDGE & CIVIC AMENITY AREA
002035/11/627	PLAN, ELEVATION & SECTION OF PROPOSED CONTROL HOUSE
002035/11/628	PLAN AND SECTIONS OF PROPOSED CIVIC AMENITY SITE
002035/11/629	PLAN , SECTION AND DETAILS OF PROPOSED WEIGHBRIDGE
002035/11/630	PLAN , SECTION AND DETAILS OF PROPOSED SORTING SHED
002035/11/631	PLAN & SECTION OF PROPOSED WHEELWASH
002035/11/632	LAYOUT PLAN SHOWING FOULED SURFACE AREA DRAINAGE SYSTEM
002035/11/633	LAYOUT PLAN SHOWING PROPOSED TREATMENT WORKS
002035/11/634	PLAN, SECTION AND DETAILS OF PROPOSED SBR TANKS
002035/11/645	FUEL STORAGE, LAYOUT PLAN AND DETAILS
002035/11/649	DETAILS OF PROPOSED PALISADE FENCING TYPE 1
002035/11/650	DETAILS OF PROPOSED SITE FENCING TYPE 2 & 3
002035/11/653	DETAILS OF WASHWATER STORAGE TANK

Mayo County Council

Remedial Works at Derrinumbera Landfill Site

Part X - Planning Notice

SECTION TWO

2. LANDFILL REMEDIAL WORKS AT DERRINUMERA

2.1. WORKS

The Works which shall be constructed on the Site in the location and to the layout shown on the Drawings shall consist of:

- a) Leachate Treatment Plant
- b) Civic Amenity Area & Surface Water Pump Sump.
- c) Control House and Septic Tank, Sorting Shed, Garage & Fuel Storage Area
- d) Weighbridge
- e) Security Barriers
- f) C.C.T.V.
- g) Fencing and Entrance Gates

Within the site of the Works, the ground shall be excavated or filled where necessary with approved over site filling to give finished ground levels as shown and shall be fenced in with palisade type fencing.

The General Contractor shall be responsible for all of the Civil Engineering Works but the installations of plant and machinery and the electrical installation will form part of a separate Contract with a Specialist Mechanical and Electrical Plant Contractor. The General Contractor will be required to construct plinths or any blocking out in accordance with the Bill of Quantities where appropriate items have been entered to cover such work.

The Contractor shall construct the various units to the exact levels and dimensions shown on the Drawings or on any amending Drawings provided by the Engineer or Specialist Mechanical and Electrical Plant Contractor. He shall accurately fix all required steel reinforcement in accordance with the Working Drawings and supplied

Schedules. All necessary collecting manholes and all outfall and collecting pipework shall likewise be properly constructed to design dimensions and falls. The work of site development, including paths and margins and whatever planting may be required shall be properly executed to the satisfaction of the Engineer.

2.2 SITE PREPARATION

The site of the Leachate Treatment Works, the Civic Amenity Area and the site of the access road are to be securely fenced as shown on the Drawings before any other works commence on site. **The fencing used will be permanent and will comply with the requirements set out in section 2.12 of this specification.**

Existing ground levels on the site are generally rising from 70mO.D. at the northern boundary to 90mO.D. at the South Western boundary of the site.

Excavated rock may be used after first obtaining the permission of the Engineer for backfilling trenches provided that such material is at a minimum 300mm above the crown of the pipes and there are no stones having a dimension greater than 150mm. On site, screening will be necessary so that this Clause is strictly adhered to.

Before any excavations or earthworks are carried out the contractor will submit a detailed description of his proposed method of excavation and earthworks and proposals for controlling groundwater and waste deposition operations during construction must be outlined.

The following attendances and facilities shall be provided and maintained at all times by the Contractor (including additional working hours if necessary) for the duration of the Works.

1. **Notices.** Giving all notices and obtaining all necessary approvals, licences and sanctions, including but not limited to any wayleaves, easements, possessions, rights of way or access.
2. **Rates and Fees.** Payment of any rates or fees which may become payable due to the Works.
3. **Protection.** Protection of the works where taken over by other trades or contractors.

4. **Watching.** Provision of security to safeguard the plant, equipment, materials on the site, having regard to the status of the Site as a functioning landfill.
5. **Fencing, Hoardings, etc.** Hoardings, fences, noise and splash barriers, statutory warnings, flagmen or the like as necessary to protect the works, plant, materials, personnel, third party property and the general public. This shall include protection from exhaust, oil, grease, etc.
6. **Clearance.** The provision of adequate clearance around working positions for the including protection to adjacent works and third party property.
7. **Access and Hardstandings.** Full and free access onto the site(s), including adequate means of access from hard road to firm dry level all-weather working surfaces, with adequate working space including staging/protective mats where necessary, prepared and maintained in a manner suitable for the safe movement onto and off the site(s) and to and between working areas, storage areas, for mobile plant and equipment and wheeled transport including articulated and ready mixed concrete lorries, Ramps, including access ramps to ready mix storage areas where required, to a gradient not steeper than 1 in 10.
8. **Surface Water and Groundwater.** Any pumping or drainage required to keep the site free of surface water or any water arising from the operations, including contaminated leachate.
9. **Accommodation and Storage** Provision and subsequent removal if required of adequate, firm, dry, reasonably level working areas prepared and maintained in a manner suitable for the safe operation and erection of plant and equipment. Conveniently situated areas on site for storage of plant, equipment and materials for offices and sheds.
10. **Flammable Stores.** Provision for storage of petroleum, other fuels and flammable materials as may be required and arranging for the requisite licence, having regard to potentially explosive atmospheres.
11. **Telephone Facilities** Provision of site telephone facilities.

12. **Health and Safety** Welfare and safety facilities to comply with statutory regulations or rules, orders or regulations of any authority having powers related to the Works.
13. **Temporary Lighting** Suitable background and task lighting to working areas to allow safe working and safe access and egress to facilitate execution of the Works.
14. **Water Supply** The laying of a 100mm HDPE watermain for all potable and process water uses on site.
15. **Electricity** Within the working, storage and preparatory operation areas, suitable power take-off points and power.
16. **Traffic.** Control or diversion of road, rail or water borne traffic.
17. **Existing Services.** Clear and substantive setting out, marking or exposing on site the exact location of existing underground / overhead works and services and providing a drawing on which their positions in line and level are accurately plotted relative to the Works. Adequate protection, diversion or removal of such works or services to prevent damage from the Contractors operations. The location and plugging off of all disused pipes or ducts in order to prevent the entry of pile concrete or drilling fluids during construction.
18. **Shoring / Underpinning.** Shoring and underpinning as necessary.
19. **Setting Out.** Clear and substantive setting out and maintenance of individual pile / panel positions as necessary throughout the contract and the provision of permanent datum points, base lines and structural grid lines.
20. **Checking.** Checking the positions and cut-off levels of all structures, during the progress of the work, on completion of the work (where practicable) and before the submission of As Built Drawings.
21. **Removal of Material.** Removal, stockpiling and if necessary disposal of excavated or displaced material including mud, slurry and excess concrete from around the Works in sufficient time to prevent the formation of spoil heaps impeding the operations.

22. **Wheel and Road Cleaning.** Manned wheel-cleaning facilities and/or road-cleaning as necessary.
23. **Trimming/Building Up.** Cutting back or making up of work or finishes to achieve specified levels, finishes to achieve specified levels, finishes including any preparation work for testing.

2.3 LEACHATE COLLECTION AND TREATMENT

2.3.1 *Temporary Leachate Sump*

The Civil Engineering Contractor shall construct a bund adjacent to the existing Leachate pond. This will form a temporary sump for pumping the Leachate to the Treatment Units. The Civil Engineering Contractor shall also construct a reinforced concrete valve chamber adjacent to the bund. The Mechanical and Electrical Contractor shall provide two submersible pumps and all pipes, valves and fittings to a point one metre downstream of the valve chamber.

The temporary sump will be lined with a geotextile liner. The Contractor shall excavate three trenches in the existing bund to allow draw off of Leachate to the new sump at different levels.

2.3.2 *Leachate Rising Main*

A Leachate Rising Main shall be constructed from the temporary pump sump to the Treatment Units. The Rising Main shall be 100mm diameter HDPE pipe.

2.3.3 *Sequential Batch Reactor Tanks*

The arrangement as shown on the Drawings for the 2 No. Aeration Basins is tentative only and may be subject to variation in size to suit the appointed Specialist Treatment Plant Contractor's details. As shown, the Two Tanks will be constructed as one Unit with an internal dividing wall. The overall structure shall be 16000mm by 7750mm internally on plan and with an overall depth of 5150mm. The Mechanical & Electrical Contractor will be requested to price the provision and erection of glass

lined steel tanks as an alternative. In the event this is accepted, the Civil Works Contractor will be required to construct the bases and inlet / outlet chambers only.

The excavation for the Sequential Batch Reactor Tanks shall be taken to such depth and dimensions as will permit the structures to be completed to the exact level and dimensions as shown on the Drawings. When the excavation has been satisfactorily completed, the formation level exposed shall be covered with a 100mm layer of Grade 35 concrete to such levels that the concrete surface shall exactly conform with the bottom of the tank floor. Prior to the construction of the floor slab, the screeding layers of concrete shall be covered with heavy-weight Polythene Sheeting weighing not less than 9.6kg per 100 square metres. The Tanks shall then be constructed with Grade 35/40 Concrete for the base slab and main walls of the basins and with Grade 35/20 Concrete for the floors and walls of the Outlet Chambers all to the dimensions shown on the Drawings or to such amended dimensions as may be decided and reinforced in the manner shown on the appropriate reinforcement Working Drawings.

During the construction of the Tanks, the greatest care shall be exercised to ensure that no upward pressure of water shall be permitted on the concrete before the Tanks are completed and if the Engineer permits, water may be admitted to the Tanks to balance water pressure. In any circumstances, the Contractor will be solely responsible for protecting the structure from the danger of uplift, and if any uplifting does occur the Contractor will be held responsible and will be required by whatever means seem practicable to induce the structure to return to the proper level, failing which he will be compelled to demolish the work constructed and to reconstruct the Tanks in their entirety to proper level and without any additional charge on the Contract. When pouring of concrete has started, it shall proceed expeditiously towards completion and an orderly continuity of work shall be organised on site.

The floor of the unit shall be laid in continuous pours between extremities and expansion or construction joints as the case may be. The concrete shall be levelled and screeded to produce a uniform plain surface and shall then be wood floated under light pressure to eliminate surface irregularities. When the moisture film has disappeared and the concrete has hardened sufficiently to prevent laitence from

being worked to the surface, the surface to the wood float finish shall be steel trowelled under firm pressure to produce a dense, smooth, uniform surface, free from travel marks.

Details of construction and expansion joints are shown on the appropriate Drawings. The reinforced concrete detail drawings will show the steel reinforcement arrangement at expansion joints and contraction joints. Waterstops as specified hereunder, or similar as approved by the Engineer, shall be incorporated in all expansion and contraction joints. A 10 x 150mm servi-tite CJ type waterstop shall be incorporated in all horizontal construction joints in the walls of the tank. Vertical construction joints in walls shall incorporate a 10 x 230mm servi-tite CJ type waterstop. A 240mm wide Groutite Serviseal heavy duty type waterstop shall be incorporated in all expansion joints in walls and a 240mm expansion servi-seal A240 type waterstop shall be incorporated in all expansion joints in the base slab. Expansion joints shall be formed by casting in Kork-Pak joint filler of required width, which shall be pre-incised to enable it to be raked out to a suitable depth to provide a chase for sealing. Vertigard type sealant shall be applied to both vertical and horizontal expansion joints in accordance with the manufacturer's instructions, Vertigard primer first being applied to the joint.

The surface of any concrete against which new concrete is to be cast shall be free from laitance and shall be roughened to the extent that the large aggregate is exposed but not disturbed. The joint surface shall be cleaned immediately before the fresh concrete is placed against it. Where practicable such preparation of horizontal and vertical joints faces shall be carried out when the concrete has set but not hardened.

All junctions in waterstops shall be formed using factory made junction and transition pieces as appropriate. Butt jointing shall be carried out on site between similar sections only and using the special tools required and in accordance with the Manufacturer's instructions.

The expansion joints shall be located in accordance with the reinforced concrete detail drawings. The Contractor shall submit to the Engineer prior to commencement of the construction of the tank, details of his proposed arrangement of construction joints for the approval of the Engineer. Items have been provided in the Bill of

Quantities to enable the Contractor to price for the provision of construction and expansion joints. Construction joints shall be formed in accordance with the requirements of Part Two of this Specification.

All the internal formed surfaces and exposed external formed surfaces shall be finished with Class F3 finish and unformed slab surfaces shall be finished with Class U2 finish, all as specified in Part Two of the Specification.

Sharp arrises are to be avoided in the exposed surfaces of the walls on top, and a 25mm chamfer shall be constructed on the tops of the walls inside and outside.

Pipework shall be cased into the walls, as required, under this contract with such a standard of workmanship as to ensure that there will be no leakage through the walls. The pipes between the Flow Splitting Chamber and the Aeration Basins shall be supplied and fixed by the General Contractor. Outlet chambers shall have 300mm thick walls and floors and shall be reinforced in the manner as detailed on the appropriate drawings. The Chambers shall be properly benched. Walls externally shall be finished with Class F3 Finish where exposed over ground level.

Airtight Covers shall be supplied and fitted over the Outlet Chambers by the Specialist Mechanical and Electrical Plant Contractor.

The central access bridges across the two Aeration Basins shall have guard rails 1.2 metres high in the position shown on the Drawings. These shall be composed of two rails 70mm diameter, handrails with standards at either end, and at intervals of not more than 1.80 metres along the run of the walls. Aluminium railing synthapulvin coated shall be used throughout. The Mechanical & Electrical Plant Contractor shall provide the flooring, access ladders and guardrailing. He shall also provide weirs and fittings in Outlet Chambers. The Civil Contractor shall form rebates for seatings as necessary.

2.4 CIVIC AMENITY AREA

A Civic Amenity Area shall be constructed to the lines and levels shown in the Drawings. Reinforced Concrete Hardstands shall be constructed in the manner previously described for the sequential batch reactor tanks in Clause 5.3. concrete shall be grade 35/20 with A252 reinforcing mesh. The concrete shall be 200mm thick. Surface water drainage will be installed as shown in the Drawings. This will drain to a pump sump to be constructed under a future contract.

2.5 WEIGHBRIDGE BASE

The weighbridge which will be supplied and installed by the Specialist Mechanical and Electrical Plant Contractor shall be located in the position shown on the Drawings. The Contractor shall construct the reinforced concrete base slabs to the levels and dimensions shown on the Drawings in the manner previously described for the Sequential Batch Reactor Tanks in Clause 2.3.

The Contractor will also be required to construct bases for 3 No. CCTV cameras and 2 No. Control Panel Kiosks.

2.6 TREATED EFFLUENT OUTFALL PIPELINE

The final effluent from the Leachate Treatment Works will ultimately discharge to an outfall pipeline which will be constructed in future in 450/600mm diameter pipework. A longitudinal section of the outfall pipe is shown on the Drawings. It is envisaged that a temporary outfall pipe will be required to discharge to the stream adjacent to the site until the existing leachate lagoon is drained and the remainder of the outfall can be safely constructed.

2.7 CONTROL BUILDING

The Control Building shall be constructed in the location and to the levels and dimensions shown on the accompanying Drawings and other detail drawings as may be provided during the course of the Contract. The building shall be single storey and shall consist of the following:

Room	Main Dimensions
(Internal Dimensions)	
a) Hall (Including Lobby)	- 3,000mm x 3,655mm
b) Office (Including Lobby)	- 6,570mm x 3,600mm
c) Ladies Toilet & Shower	- 3,000mm x 2,200mm
d) Gents Toilet & Shower	- 3,000mm x 2,600mm

- e) Canteen - 3,000mm x 2,600mm
- f) Spare Parts Store - 3,000mm x 1,550mm

2.7.1 Raft Foundation

The raft foundation to the profile shown and reinforced in the manner to be detailed on the Working Drawings shall be laid over the concrete levelling course above specified and shall be constructed with Class 35/20 Concrete. The slab shall be covered with Visqueen Sheet 1000 gauge and the floor shall finally be finished with 65mm thick sand cement unbonded screed for tiling at a later stage.

2.7.2 Roof

The roof of the Administration and Control Building shall be formed with patent timber roof trusses at 25 Degree Pitch in accordance with the Drawings.

The roof shall generally be formed with Timber Trussed Rafters at 600mm centres to I.S. 193. The Trussed Rafter Roof System shall be adequate to support concrete roof tiles and a 450 litre capacity water tank and shall take account of Wind Loading for the Area.

The roof trusses shall be fixed to 100mm x 75mm wallplates which shall be fixed to the blockwork of the inner leaf and shall be bolted thereto with rawbolts at 1200mm centres or with patent galvanised fixings approved by the Engineer all in accordance with the details provided on the appropriate Working Drawings. The timber trussed rafter shall be tied at the apex continuously with 100mm x 25mm timber ties.

Longitudinal ties 100mm x 25mm shall be provided and fixed transversely to the ceiling ties (or bottom of members of the trusses).

Diagonal braces 100mm x 25mm shall be provided to all slopes of roof trusses. All the work shall be carried out strictly in accordance with Irish Standard Specification 193 and in accordance with detail Drawings.

Projections of roof at eaves and verges shall be 400mm measured horizontally from ends of rafters to external face of wall. Closed soffits shall be provided to all roof projections.

Timber shall be softwood pressure treated with organic based preservative to B.S. 5268 Part 5 1977 (Preservative Treatments for Constructional Timber). Maximum water content permissible at time of erection is 22% in accordance with I.S. 96/1976 (Moisture Content of Timber for Building).

On top of the rafters, untearable roofing felt to B.S. 747/1977 shall be secured with 50mm x 38mm counter battens for reception of roof tiles. The battens are to conform to the requirements of I.S. 96/1976 (Moisture Content of Timber for Buildings). The roofing felt shall be lapped 150mm horizontally and 150mm vertically.

The roof tiles shall be Asbestos Cement Slates conforming with the requirements of B.S. 690/I.S.7". The colour of the tiles shall be Blue-Black. They shall be laid with a lap of 100mm and fixed to battens at 250mm centres. All slates at the roof perimeter together with each slate in every alternate course shall be clipped in accordance with the manufacturer's instructions. A.C. Ridge Cappings shall be laid on the ridge and hips, fixed with stainless steel screws and washers. The Manufacturer's instructions shall be followed in the placing and fixing of the slates.

Slates shall be stored on a dry level surface in open stacks under cover to protect them from dampness which may cause efflorescence staining on the face of the slates from rear of adjoining slates.

Slates shall be laid in uniform size and with perpendics vertically in line. They shall not be butted too closely against the shank of the copper rivet which passes between the edges of the two under slates, clinched as aforesaid through the hole of the slate with cramps turned down.

The arrangement of slates at the eaves shall include the provision of under slates and a continuous tilting fillet out of 75mm x 28mm shall be provided at the eaves all

around to ensure watertightness of bottom courses. Such eaves detail is shown on appropriate Working Drawings and bottom tiles shall be arranged to overhang the fascia board by 50mm to ensure the proper discharge of rainwater run-off into the gutter. Undercloak slates shall be arranged by cutting full slates lengths into two unequal lengths which shall be head nailed with the bed uppermost, and the longer length used in the second course. Slates in the first undercloak shall be 250mm long and in the second 350mm long.

In any event, the Contractor is solely and wholly responsible for the presentation of a finished roof obviously executed by skilled tradesmen and nothing less than the highest standard of finish will be acceptable to the Engineer.

Insulation Fibreglass Frametherm or other equal non combustible glass fibre flexible roll type insulation shall be used to fill the space between roof joists above ceiling levels as shown on the Drawings. The material shall comply with B.S.S. 3533 1981.

2.7.3 Finishes at Fascia

The fascia board 238mm x 25mm shall be firmly nailed to the feet of the rafters with two counter sunk galvanised steel nails for each rafter, the heads of the nails being filled over with an approved filler before any further treatment is given to the surface of the timber. The boarding shall be Colombian Pine or Cedar Wood having at the time of erection a moisture content not more than 18%. Bearers shall be fixed to the wall and to the ends of the rafters and strutting shall be arranged to accommodate the completion of the soffit just above the bottom of the fascia board. Previous treated softwood timber sheeting shall be fixed to the struts to which the Contractor shall fix PVC Sheeting.

Cedar sheeting may also be used to form the soffits and shall be fixed in the manner described above for the fascia board.

Openings 230mm x 76mm shall be boxed out at intervals of approximately 5 metres along the soffit renderings for ventilating purposes. These which may be of bronze or stainless steel mesh shall be framed around the timber fillets neatly mitred at

corners and sanded for later painting. Such mesh shall have an aperture size small enough to prevent the entry of birds or vermin.

2.7.4 The External Walls

The general construction is to be cavity type made up of internal and external blockwork walls with 100mm cavity in between, complete with approved form of insulation board 60mm in thickness as specified, and of overall thickness 415mm. The wall shall have an external leaf of 100mm in thickness and an internal leaf 215mm thick. The external leaf of the walls will be clad with a 225mm thick cladding of coursed, random selected local stone. Internal walls shall be constructed in fairfaced Forticrete blockwork 215mm thick as shown on the Drawings. Construction shall be in accordance with the details laid down in Part Two of this specification.

The blockwork shall be in modular blocks which shall be in accordance with I.S.20:1974 for Concrete Building Blocks.

An approved type 3 ply bituminous damp proof course shall be laid on the inner and outer leaves of blockwork at least 150mm above the finished external level. For the outer leaf, the damp proof course shall be 100mm wide lapped 150mm at joints and sealed with an approved mastic sealant. The inside damp proof course shall be 250mm wide similarly lapped and sealed and turned down on the inside.

The walls shall be constructed with concrete blocks laid broken jointed in mortar and the two leaves shall be bonded together with stainless steel ties of the vertical type 200mm long conforming with B.S.S. No. 1243/1978. Ties shall be spaced 900mm apart horizontally and 225mm apart vertically, equally staggered in alternate courses, so that alternate rows of ties will be directly in line and so that the nett horizontal distances, between adjacent vertical lines of ties will be 450mm. Extra ties shall be provided at reveals and openings and all ties shall be laid so that if moisture should condense upon them it will naturally fall towards the outer leaf. It is imperative that the cavity shall be kept clear of mortar droppings and lifting screeds or other suitable means shall be provided to reduce such droppings to a minimum. As an additional precaution, openings shall be left in the base at all corners so that the cavity may be cleaned by rodding and the bottom of the cavity shall be rodded out each evening during the erection of the blockwork while any mortar which may

have fallen is still loose. Such openings as are left in the outer and inner leaves for cleaning purposes shall be filled up with special blocks, properly grouted in when the cavity has been finally closed.

The cavity shall be closed at roof level with a reinforced concrete band beam. The blockwork shall be fixed to the structural steel frame by means of anchor slots fixed to the columns at the locations shown on the structural detail drawings.

The Contractor shall also form construction joints at the locations shown and in accordance with the details shown on the Drawings. The construction joints shall be 10mm wide and shall be formed by placing a 10mm flexible filler in the joint, which shall be pre-incised to enable it to be raked out to a suitable depth to provide a chase for sealing. An approved mastic sealant shall be applied on the completion of the blockwork.

All blockwork in external walls inner and outer leaves and in internal walls shall be reinforced with approved stainless steel bed joint reinforcing all as elsewhere specified.

2.7.5 Sand for Plastering and Rendering

Plastering Sand

Where required sand for external rendering shall be in accordance with B.S.S. No. 1199 or any subsequent amendments thereof, for Natural Sands for External Rendering. All of it shall pass a 5mm (3/16" B.S.) Test Sieve, and its grading shall be within the limits of Sieve Analysis set out in the quoted specification for Rendering Sand as follows.

Rendering Sand	
B.S. Sieve	Percentage Passing
3/16" (5mm)	100
No. 7	90-100
No. 14	70-100
No. 25	40-100
No. 52	5-40
No. 100	0-10

All sand both for internal plastering and external rendering shall be naturally occurring sand or shall consist of crushed rock or gravel or combined thereof with naturally occurring sand. It shall be hard clean and free from adherent coatings and shall not contain harmful material in sufficient quantity adversely to affect the hardening, strength, durability or appearance of the finished screeding, plastering or rendering. The terms of the appropriate specification in regard to coats of tests shall apply to all sand submitted and the Contractor shall also provide the specified particulars of physical properties and these are subject to the Engineer's approval before sand is finally ratified. It is specially required that all sand for plastering and rendering shall be washed before incorporation in the works.

2.7.6 Gutters and Down Pipes

Rainwater goods of zinc to match the selected roofing materials to B.S.S. 2997/1980 shall be used. Eaves Gutters shall be of rectangular or patterned section of samples supplied to and selected by the Engineer. They shall be the product of an approved manufacturer and jointing methods shall be in accordance with the B.S.S. Matching downpipes shall be provided draining into metal gullies which in turn are to be arranged to discharge into the rainwater system for the whole complex. The appropriate Bill of Quantities contains a P.C. Sum to cover the supply and fitting of Gutters and Downpipes.

2.7.7 Ceilings

(i) Plaster Board Ceiling

The ceilings to the Entrance Hall, Canteen and Shower / Toilet areas and Spare Parts Store shall be suspended ceilings with plasterboard finish as follows:

Timber ceiling joists 35mm x 175mm, Strength Class C, spaced at 400mm centres will be built into the walls using galvanised mild steel "BAT" or equivalent joist hangers at the required height. The underside of the joists shall be battened with 50mm x 25mm battens at 400mm centres and sheeted with 12.7mm approved plasterboard with foil backing. The ends of gyplath shall be properly supported throughout. An 80mm thick layer of Gypglas 1000 glass wool or similar approved noise insulation material shall be laid between the joists.

Gyplath shall be nailed to the battens with 30mm x 12 s.w.g. clout headed galvanised nails. Four nails shall be used across the width of the lath equally spaced and driven no closer than 12.7mm from its edge.

The end joints of laths will be staggered in successive courses. Each joint shall be over a support. The cut edges of the laths will be butted and a small gap of not more than 3mm shall be left between rounded edges. Because of the need to provide noise insulation great care will be needed to ensure that all gaps at the ceiling perimeter are properly sealed and no air gaps of any kind are left in the ceiling.

The plastering shall then be carried out in two coat. The floating coat shall consist of gyplath bonding coat first worked into the rounded edges of laths, then laid onto an approximate thickness of 7.9mm ruled to an even surface and lightly scratched to form a key. The finishing coat shall consist of gyplite finish plaster 1.6mm to give a total coverage of 9.5mm. The ceiling shall next be suitably primed and last painted with two coats of acceptable finishing paint to selected shades.

The ceilings shall be constructed in such a way that the plasterboard surface is not connected to the walls of the building. The Contractor shall include for a suitable skirting arrangement at the perimeter of the ceilings. This shall comprise a flat teak soffit board 75mm x 25mm nailed to the joists adjacent to the walls with a 75mm x 25mm teak pelmet fixed vertically at the intersection between the soffit board and the pelmet.

The suspended ceiling in the area above the toilets, canteen and rear hallway shall incorporate a suitable timber support structure for the water tanks associated with the domestic plumbing. The Contractor shall provide combined access ladder/hatch arrangement in the attic space in this area. This shall be similar to the "Stira" type attic access ladders or equivalent.

The Contractor shall include plywood flooring in the walkway area up to and surrounding the water storage tank, and shall in all include an area of 30m² of such flooring within the attic space.

2.7.8 Preparation for Doors and Windows

Concrete lintels shall be formed for the full thickness of the walls at each window and door opening. In all cases, lintels shall be constructed with Grade 25 concrete

having a maximum size of aggregate of 20mm. The lintels shall be at least 225mm deep and they shall project a minimum distance of 225mm beyond the jambs on either side of the opes.

Lintels for general window openings shall be reinforced with 3 No. 20mm diameter mild steel bars, placed with a cover of 40mm over the soffits of the opes, bent up, and hooked at the ends. Where split concrete blockwork is specified for external finish special "Catnic" or equivalent steel lintels to the details shown on the Drawing shall be used.

The lintel for the Main Entrance Door, shall be reinforced with 4 No. 20mm diameter mild steel bars placed and hooked in the manner already described with again the provision related to the use of a steel lintel as an alternative.

All lintels other than those specified for in situ construction may be precast in boxes, suitable markings being used to indicate the positions of steel in each lintel so as to ensure that when the lintels are placed in position, the steel will occupy the proper place in the bottom of the several beams. At jambs of windows and door openings, a special arrangement of blocks, incorporating vertical damp proof courses, shall be used at the opes to ensure a watertight form of construction.

Window cills shall be precast in accordance with the appropriate details and shall be constructed with Grade 20 Concrete having a maximum size of aggregate of 20mm. They shall be throated on the underside and shall have weathered faces twice rebated with raised stepped seatings having grooves for galvanised iron water bars where the concrete and timber cills come into contact, and raised stoolings at the jambs under the position of the window frames. Each window cill shall be reinforced with 3 No. 20mm diameter mild steel bars and damp proof courses the full width of the openings and the full thickness of the walls are to be provided under each window cill.

2.7.9 Windows

Windows will be Rilsan coated aluminium (to a RAL colour which will be specified by the Engineer) thermal barrier, double glazed of the various sizes and dimensions shown on detail Drawings. The glass shall be wired and tinted spectrafloat each pane 4mm in thickness and with a cavity of 12mm between the panes. In the detail Drawings, a provisional arrangement is shown for fixing windows into teak frames

and a price extra over that for straight fixing into walls shall be quoted for the inclusion of hardwood frames which if used would be out of 100mm x 76mm and suitably rebated. Sections of windows above easy reach from the ground shall be sealed permanently, but where opening sashes are used, a conventional key operated locking handle or socket key captive handle shall be used.

An internal condensation channel shall be included in the design of these window units which must be of the best available quality samples approved by the Engineer before the goods are put on order. Any glazing broken during the construction period must be replaced by the Contractor at his own expense.

The windows shall be sized as follows:

7 No. 800mm x 900mm

4 No. 575mm x 900mm

As an alternative to the foregoing specification, PVC windows may be used.

In forming opes at windows and doors, the Contractor shall incorporate special closing blocks as shown on the detail Drawings. He shall ensure that at all opes, damp proof courses are properly located at the heads, sides and cills. He shall cast into the joints of the internal leaf of the blockwork suitable fixings to secure the windows. The Contractor shall forward to the Engineer, details of the sections of the aluminium and PVC windows proposed. When the windows are in place, the Contractor shall seal the perimeter of the windows with an approved silicon sealer of a colour which will match the colour of the windows. The appropriate Bill of Quantities contains a P.C. Sum to cover the supply and fitting of Windows.

2.7.10 External Doors

The main entrance door assembly consisting of double doors in aluminium or PVC with thermal barrier double glazing complete with suitable frames shall be suitable for an overall size of ope of 1800mm wide by 2300mm high. The appropriate Bill of Quantities contains a P.C. Sum to cover the supply and installation of the assembly. In the case of aluminium, the assembly shall be finished on the inside with a white protective PVC arrangement.

A single solid door 900mm wide by 2100mm high will be provided to the rear lobby in the location shown.

Double Solid doors 1500mm wide x 2000mm high shall be fitted at the store.

2.7.11 Internal Doors

There will be seven internal, single doors to fit in opes 2100mm high and 900mm wide. One set of glazed double doors shall be provided to the Hall. The doors to the Hall shall fit an ope 1800mm wide and 2300mm high.

Internal doors shall be 50mm thick flush panelled doors, skeleton framed with 80mm x 10mm top and bottom rails tenoned to the stiles and having lock blocks incorporated for the insertion of mortice locks. When the specified framing has been glued and cramped it shall be covered on both sides with a single sheet of formica veneer in a colour to be selected by the Engineer, glued on all around. The doors may be in their standard sizes where the same are suitable for the particular locations. The doors shall in all instances carry a 30 minute fire rating.

Each of the doors shall be hung on 100mm x 75mm rebated teak frames with one and a half pairs of 100mm x 40mm brass butt hinges and rust proof screws. The frames shall be rigidly secured by wedging to the jambs and heads of the openings. The appropriate Bill of Quantities contains a P.C. Sum to cover the supply and fitting of all ironmongery.

All door frames throughout the building shall be treated with 3 coats of polyurethane varnish.

2.7.12 Floor Finishes

Floor finishes shall generally be as follows:

Entrance Hall	- 100mm x 100mm x 12mm ceramic floor tiles
Corridor	- 100mm x 100mm x 12mm ceramic floor tiles
Canteen	- 100mm x 100mm x 12mm ceramic floor tiles
Toilets & Shower Room	- 100mm x 100mm x 12mm ceramic floor tiles
Office	- Gerflex or similar profiled rubber flooring 3.5mm thick

Entrance Hall, Corridor, Canteen, Toilets and Shower Room

Where floor tiling is required the tiles will be 100mm x 100mm x 12mm ceramic floor tiles laid in accordance with CP 202 : 1972. A P.C. Sum is included in the Bill of Quantities to cover all tiling in the Control Building. When the concrete floors are dry they shall be covered with an unbonded screeding layer of 75mm thickness and composed of 1:3 cement mortar on top of the damp proofing membrane. While the screeding course is still green tiles previously soaked in clean water shall be laid straight on to a bed 6mm in thickness and composed of 1:3 cement mortar and levelled with a wooden beater. The joints shall be grouted with a slurry of 1:1 acid resistant mortar grout and then cleaned off with fine wet sand or wet sawdust. Water shall finally be spread over the surface of the tiles with a mop or squeegee and then cleaned off.

Subsequently, after the pointing has set the surface shall be protected with wet sawdust for such a period as may be determined by the Engineer. Floor tiling shall be executed by tradesmen skilled in their calling and on completion the joints between the lines of the tiles shall be neat and clean and straight in line from one end of the room to the other. The Specification does not include for any door saddles and the works of tiling shall be carried through the rooms in continuous lines or shall meet other types of floor surfaces in a level meeting. The surface shall be even throughout and if any tiles are found to project beyond the general surface the Engineer shall have the power to order the removal and re-setting of such tiles.

Tiling shall also be carried out to exit doors where necessary and steps shall be finished at the edges with Ferrodo nosings ; single or double width as the Engineer selects.

Office

The Office shall also have a self finished concrete floor as described above for later receipt of Gerflex or similar approved profiled rubber flooring. The screed in this area shall be set slightly above the screed levels in adjacent tiled areas so as to compensate for the difference between the thickness of the ceramic floor tiles and profiled rubber flooring.

A P.C. Sum is included in the Bill of Quantities to cater for the tiling and floor finishes to the building.

2.7.13 Wall Tiling

The walls in the Shower Rooms are to be tiled for their full height with glazed ceramic tiles. The tiles shall be 150mm x 150mm x 10mm glazed tiles to colours to be selected at the appropriate time all conforming in respect of dimensions, pattern and workmanship with B.S.S. No. 1281 / 1974. In the preparation for wall tiling the surface of the walls shall first be scudded and scratched and the tiles shall be affixed to the scratched course with cement mortar gauge 2:1. Upon completion the tiling shall be finished with a pointing of neat white cement. External and internal angles shall be of rounded angle tiles of radius laid down in the quoted standard, and the angle tiles shall be bonded true to straight tiling on either side. Wall tiling shall be neatly finished against the coved floor tiles previously specified with vertical joints in the continuous line. The greatest care shall be taken in the finishing at cills, reveals and window heads and at the heads and reveals of door openings.

A Schedule of Colours and Patterns for each area will be supplied to the Contractor during the course of the work.

A P.C. Sum is included in the Bill of Quantities to cater for the wall tiling in the shower rooms.

2.7.14 Internal Wall Finishes

Internal walls are to be generally fairfaced forticrete blockwork with a "Portaflek" or equivalent painted finish. The window and door reveals and a 200mm wide strip surrounding each window and door ope shall be finished smooth internally in three coat work. The surface of the area to be plastered shall first be scudded with a spatter dash 1:2 cement mortar sharply thrown against the surface of the blockwork in such a way as to provide a key for rendering the surface having previously been thoroughly wetted so as to prevent undue suction.

The rendering coat 9mm thick shall be composed of 1 part of cement to 2.5 parts of specified sand. The finishing coat 6mm thick shall be composed of 1.5 parts of white cement to 1 part of lime to 6 parts of specified white sand. All the sizes for rendering shall be gauged by volume and an approved proprietary waterproofer shall be added

to the rendering and floating coats in proportions recommended by the manufacturers of the particular waterproofer used. Each of the undercoats shall be keyed at the time of application and thoroughly wetted before the succeeding coat is applied.

Sand for internal plastering shall be in accordance with B.S.S. 1198 or any subsequent amendments thereof for Natural Sand for plastering. All of it shall pass a 5mm (3/16" B.S.) Test Sieve, and its grading shall be within the limits of sieve analysis set out in the quoted specification for Plastering Sand as follows :

Plastering Sand	
B.S. Sieve	Percentage Passing
No. 7	90 - 100 for undercoats
No. 7	100 for finishing coats
No. 14	70 - 100 for undercoats
No. 14	90 - 100 for finishing coats
No. 25	40 - 100 for undercoats
No. 25	55 - 100 for finishing coats
No. 52	5 - 50
No. 100	0 - 10

Two coats of McPhersons Portaflek or similar finished with two coats of HD Glaze shall be applied to all wall surfaces. The paint shall be from a manufacturer approved by the Engineer and a Schedule of colours will be provided to the Contractor during the course of the work.

2.7.15 Skirting and Architraves

The Contractor shall include for teak skirting board and architraves throughout the main Administration Buildings. Skirting boards shall have a minimum height of 150mm and shall have a moulded profile with a bullnose edge. Architraves shall have a minimum width of 100mm and shall have a moulded pattern to match the skirting board design. On completion of erection, the skirting boards and architraves shall have all nails punched and nail holes filled, followed by varnishing with three coats of polyurethane varnish.

2.8 FITTINGS IN CONTROL BUILDING

The following provisions as to the internal equipment of Control Building shall apply:

a) Shower and Wash Up Facilities

In the Toilet the Contractor shall provide and fix a W.C and Wash Hand Basin.. A shower unit complete with Santon Elf MK IV or other approved Instantaneous Shower Heating Unit shall be provided and fixed in the Shower Room by the Mechanical and Electrical Contractor.

The W.C. pan shall be the product of an approved manufacturer made from vitreous china and in accordance with B.S.S. 5503/1977. It shall have a low level ware flushing cistern of 9.00 litres capacity to B.S.S. 1125/1973.

The wash-hand basin shall be of vitreous china complying with B.S.S. No. 1188/1974 for Ceramic Lavatory Basins and it shall be of minimum size 560mm x 405mm.

The Contractor shall supply and fix a 75mm diameter soil pipe to connect to the Sanitary Fittings. This pipe shall be complete with Swan Neck Vent finishing above the roof level and shall connect to the foul drainage pipe system all as shown on the drawings.

In connection with the sanitary ware, towel rails and toilet paper holders shall also be provided.

Hot water to the wash hand basin shall be provided from a 4.50 litre pressure storage unit under the Mechanical and Electrical Contract.

Cold water supply shall be taken by means of a 25mm diameter cold water supply from a tapping on the 100mm diameter water main serving the Site. A 12mm diameter connection shall be taken from this pipe to a 450 litre capacity PVC Water Tank which shall be provided by the contractor and which shall be covered and located on the roof space of the Control Building. The Contractor shall supply and fix

this tank on suitable supports and shall carry out the necessary plumbing work including fittings of ball cock, 19mm diameter overflow and feed pipe for the sanitary fittings in the Shower and Toilet.

He shall also provide and erect connections in 12mm diameter pipe to supply hot and cold water to the sink in the Canteen.

All internal pipework shall be in copper.

Waste water connection again in 100mm diameter pipework shall be constructed to connect to the foul drainage system from the Canteen.

b) Writing Bench

The Contractor shall supply and install a suitable writing bench together with drawers and presses in a suitable place in the Office. The bench shall be a compact unit of overall length 1,800mm, depth 750mm and height 750mm and shall incorporate a press with a floor at skirting level and fronted with blackboard doors and knee space and 3 drawers.

c) High Level Shelving

A range of high level shelving 225mm deep in three lines shall be arranged in a suitable position in the Office. This line of shelving is to be arranged in the form of a cupboard having sliding front panels which shall be of timber. Finishing to timber cupboard and press fronts shall include knotting, stopping, priming, undercoating and finally painting with two coats of paint.

d) Fittings in the Canteen

A P.C. Sum has been included in the Bill of Quantities to cover the supply and installation of various items in the Canteen such as Fridge, Wash Up Facilities, , Cupboards and all necessary furniture, etc.

e) **Miscellaneous Fittings**

The Contractor shall supply 4 No. strong kitchen chairs. An additional provision shall be made by the Contractor for the hanging of coats on suitably placed coat hangers. 6 No. hangers altogether being required fixed on the wall or on the backs of doors. In the Shower Room and Toilet, coat hangers shall also be provided.

f) **General**

All of the foregoing fittings and fixtures listed above inclusive have been taken provisionally in the Bill of Quantities and at the appropriate time the Engineer shall decide the extent to which these items shall be used in the Works and Control Building.

2.9 MECHANICAL AND ELECTRICAL INSTALLATION

The supply and installation of all Mechanical and Electrical Plant in connection with the Works shall be the subject of a separate Contract (Contract No. 2) which Mayo County Council intends entering into with a Specialist Mechanical & Electrical Contractor.

The General Contractor shall be required to liaise with the Mechanical & Electrical Contractor with regard to the programming of the two separate Contractors having regard for the fact that the Specialist Mechanical & Electrical Contractor cannot commence his installation work until such time as the various units and structures are substantially complete and also having regard for the fact that the Civil Works Contractor cannot complete his final finishes until such time as the Mechanical & Electrical Plant installation is complete. He shall have regard for the above in drawing up his programme.

The General Contractor will, however, be required to provide hard standing for the Mechanical & Electrical Plant Contractor's containers and storage yard, as well as a concrete post and chainlink fence around the storage yard. The Contractor shall include for the erection and removal on completion of 200m of chainlink fencing

complete with double entrance gates, and shall also block out and finally seal up openings in the walls, shall prepare all necessary chases in the floors and walls, construct external underground ducts for cables and shall generally execute all builders work in connection with the Mechanical Plant or the electrical installation. He shall also prepare all necessary plinths for pumps and motors to details supplied, and shall supply all other services ordinarily associated with an installation of this kind, even though the same may not be specifically referred to herein.

The appropriate Bill of Quantities contains items in respect of such work and services as the General Contractor may be required to execute or give in accordance with the requirements of this Sub-Clause and if the actual work and services are in accordance with the descriptions in the several items, the rates entered by the Contractor against the items shall be used to determine the amount of money finally payable to the Contractor under this heading.

If on the other hand the Engineer, upon receipt of final plans from the Mechanical & Electrical Plant Contractor, finds it necessary to vary or modify the constructional work, then in such circumstances the Contractor shall execute the varied work in accordance with the instructions of the Engineer, and he will be paid for the measured quantity of the completed work under this sub-clause at the rates and prices entered by him against appropriate items in the Bill of Quantities if the nature of the work actually executed or of the services rendered is similar to that for which the Contractor entered prices. If the Bill of Quantities does not contain rates fairly applicable to the varied or modified work, then reasonable rates shall be fixed by the Engineer.

2.10 FOUNDATIONS GENERALLY

The Contractor shall take due account of the information contained in the hydrogeological investigation reports on the subsoil conditions at the Site, and on the effects these conditions may have on the construction of foundations, on the stability of sides of excavations and on the problems associated with ingress of water.

Where peat or soft ground is encountered, the foundations are to be taken to solid ground or to rock. Where rock is encountered in any part of the foundations of a structure, then the entire foundation is to be carried to rock.

Generally all of the excavated material shall be disposed of off site but if ground and weather conditions permit and if the material is deemed suitable by the Engineer, the Contractor shall be permitted utilise excavated material as Site Fill.

The Contractor shall take all steps necessary to protect the trench formations and the formations for the various structures at the Site from deterioration from any cause including ingress of water from any source.

It shall be the Contractor's responsibility having visited and inspected the site; having studied all the information being made available relating to water levels and having made any additional enquiries on water levels directly himself; having studied the site investigation reports, and the various comments in the Reports relating to the ingress of water; having carried out any further trial excavations himself to deal with ingress of any water in such a manner as to protect all formations.

In this regard, the Contractor shall have regard to Clauses 38 and 39 of the General Conditions of Contract as they apply to the various elements of the Works.

The Contractor shall include in his rates or in his Method Related Charges for complying with the above and shall confirm this in his Method Statement with clarification of where in fact he has included in his Tender for so complying.

2.11 PIPEWORK

In general, the Civil Contractor shall be responsible for the supply, laying, jointing and testing and including excavation and backfilling of all the pipework and fittings at the Landfill Site excluding the pipework and fittings within the various tanks and

buildings which are to be the responsibility of the Specialist Mechanical & Electrical Contractor.

The excavation and backfilling and the laying, jointing and testing of pipelines shall be carried out in accordance with the requirements of Part II of this Specification and such other requirements as are included in this Section of the Specification.

The Civil Works Contractor shall form opes for all pipework passing through the walls of the Units and shall grout in the pipework after installation.

In certain situations as in the case of the pipework passing through the walls of the SBR, the Contractor shall cast in the pipework.

In all cases, where pipes pass through structures, a flexible joint shall be located within 500mm of the external face of the structure.

All pipework passing through the walls of water retaining structures shall be fitted with puddle collars. The Civil Works Contractor shall not backfill or build in pipework, as the case may be, at the interconnections with the pipework supplied and fitted under the Treatment Plant Contract, until the Specialist Treatment Plant Contractor has first examined the line and level of the pipework so as to ensure proper interface between the pipework installed under the two Contracts. In general, as there will be limited scope to alter the arrangement of the pipework and fittings within the various tanks and buildings, the Civil Works Contractor shall arrange his pipework so as to suit that provided under the Treatment Plant Contract.

c) Cable Ducts

The Contractor shall be responsible for the supply, laying, jointing and testing of PVC Cable Ducts for electrical cables between the various Tanks, the Weighbridge and the Control Building. The layout of the ducts may be varied to suit the electrical

installation to be executed by the Specialist Mechanical & Electrical Plant Contractor. The ducts will be in sizes 100 and 150mm diameter and with one to four pipes per trench. The cable ducts shall be Class B uPVC pipes.

Trenches for cable ducts shall be taken to such depths as to ensure a final cover on the duct pipes of 750mm.

Marker tape as already specified shall be placed along the line of each duct pipe and at the top of the granular surround to the duct. Draw lines of nylon rope shall be incorporated in all duct pipes so as to allow the cables to be pulled through at a later stage. Draw cord for duct threading shall be 8mm diameter, 3 strand hawser laid polypropylene rope complying with B.S. 4928. The Civil Contractor shall provide all unskilled labour to assist the Specialist Mechanical and Electrical Contractor in pulling the cables through the ducts.

Light weight covers shall be used where ducts are laid in fields but where they are laid in roadways, heavy duty covers shall be incorporated.

d) Watermain

The Contract shall include for supply, laying, jointing and testing of a watermain system to serve the buildings on the site and for washing down purposes at the various units of the Works.

A 100mm diameter watermain will commence at a connection to the local water supply. The watermain shall be Class C High Density Polyethylene pipe.

The sluice valves shall comply with B.S.S. 5163 and with subsequent amendments thereof.

The Fire Hydrants shall comply with B.S.S. 750/1984 for Underground Fire Hydrants, and with subsequent amendments thereof.

The walls of the Sluice Valve and Hydrant Chambers shall be of brick 112mm thick or of Grade 20 concrete 150mm thick and shall be so arranged as to straddle the pipe and not bear on it. The walls of the Sluice Valve Chamber shall be corbelled in at the top, or a precast cover of Grade 20/20mm concrete, 100mm in thickness, having an opening of the same size as the inside of the base of the surface box shall be provided. Surface boxes shall be accurately set to conform to the surface of the adjoining ground, and shall be surrounded by Grade 20/20mm concrete, 150mm in thickness cast in a rectangular mould 300mm longer than and 300mm wider than the top of the frame.

Surface boxes shall be of cast iron and shall comply in respect of materials and workmanship with I.S. 261:1984 for Cast Iron Road Furniture and shall be coated with a tar based coating. Sluice valve surface boxes shall be not less than 187mm deep and shall have flanged base and a clear opening at the top of not less than 87mm in diameter. The cover shall be bayonet jointed. Hydrant surface boxes shall be not less than 150mm deep and shall have a flanged base and a clear opening not less than 375mm x 225mm.

For the water supply extension, the minimum depth of the trench shall be such that the cover on the pipes measured from the finished ground surface to the top of the pipe barrel shall be not less than 1 metre. The trench shall be prepared to provide a uniform bearing for the pipe and the greatest care shall be taken to ensure that the bed of the trench is, prior to pipelaying, completely free from points of rock, stones or other hard objects. Suitable holes shall be excavated at each joint. Where gravel or solid rock is met with, the excavation shall be carried down 100mm below the level ordinarily necessary and this extra depth shall be filled with fine sand and well rammed before the pipes are laid. Measurement of rock excavation and of extra excavation below the minimum depth will be based on the minimum width of trench. The bottom of the trenches shall be so graded that each pipe shall slope upwards in

the direction of the air valve serving the section of the line in which it is laid, so that no air pockets may be formed.

Pipes shall be laid on a bed of fine sand and surrounded with same all as hereinafter specified.

All necessary pipes, bends, collars, channels, branches, tees, valves, etc., shall be brought onto the ground, and deposited along the site at the Contractor's risk and with the minimum inconvenience to the public. Pipes shall be laid with the least possible delay and the trenches shall be re-filled at the earliest time following the Engineer's inspection and approval of the workmanship and suitability of the pipelines. In the case of gateways and crossings, the Contractor shall not open the trenches until he is ready to undertake the pipelaying and shall refill the trenches immediately after the pipes are laid.

Before the trench is filled (excepting at crossings, where filling will be permitted) the pipelines shall be tested under hydraulic pressure in convenient sections. The contractor shall supply all necessary water and equipment for the purpose and shall make good any defects discovered by the test. Pipes at crossings shall be subject to test as if covering had not been permitted. The test pressure shall be maintained for at least twenty minutes, and the amount of water required to maintain the pressure during that period shall be accurately determined. This amount shall be deemed to be the leakage from the pipeline during the period of test. Leakage up to the maximum values specified in the Table below will be allowed, but a leakage of less than the maximum allowable amount will not absolve the Contractor from his liability to remove and replace any cracked pipes or fittings or seriously defective joints discovered under test. The test pressure shall be in accordance with the Table as follows:

Class of Main	Test Pressure	Max. Allowable Leakage Per 25mm Diameter per 915m per 20 Minutes
B.S. Class 15	90 metres	2.9 litres
B.S. Class 20	135 metres	3.28 litres
B.S.S. Class 25	180 metres	3.78 litres

When the water mains have been laid and jointed and proved to be watertight in strict accordance with the several foregoing clauses of this Specification, the trenches shall be backfilled. The greatest care shall be taken in refilling to ensure that no damage will be done to the pipes. The first layer of backfilling immediately over and around each pipe shall consist of 150mm to 225mm of fine sand well rammed down on either side. The greatest care shall be exercised to ensure that no stones or hard objects are dropped on the pipe in the trench.

Where pipes are connected to fittings or are otherwise rigidly held in position, the backfill under and around the pipes shall be carefully rammed to consolidation so as to ensure that the pipes are fully supported and are not subject to any loading due to settlement of the fittings or the backfilling over the pipes.

After the first layer of selected material has been placed in position, the remainder of the filling material shall be placed in layers not exceeding 150mm in depth, each layer being rammed to thorough consolidation before the next succeeding layer is placed. At the discretion of the Contractor, water may be used in addition to aid the consolidation of the trenches.

25mm service connections are to be provided to service the site buildings. 19mm connections shall be taken to serve outside taps and hose connections erected in convenient positions for hosing down of the various units.

Connections complete with stop cocks with screwed outlets shall be provided at each of the washing points.

2.12 SITE DEVELOPMENT AT LANDFILL SITE

Site excavation and filing is to be carried out as already specified herein and finished ground levels over the area being developed are to be brought to those shown on the drawings.

As part of the overall site development, the Contractor shall excavate over site for relatively large areas in the vicinity of Structures and down to solid formation as previously specified.

Site filling as specified will then be required to bring this site back to proposed finished ground level which in some cases will be to levels higher than existing levels.

Provided it is deemed suitable, use may be made of surplus excavated material taken from excavation on site and all necessary further fill shall be imported. The site shall first be stripped of all top soil to a minimum depth of 150mm and this top soil shall be piled in a corner of the site for re-use at an appropriate time.

The greatest care shall be taken to ensure proper compaction of filling which shall be laid and compacted in 225mm layers - approved, imported and selected hardcore being specified particularly where filling is required under any of the structures.

Over the whole of the site, except in areas finished with paving concrete slabs or the paved road sections, the site shall be finished off with approved top soil which shall

be spread to the required levels. If there is a deficiency of top soil for this purpose suitable approved top soil shall be imported.

The development of the site of the Landfill shall include the following:

- a) Construction of a surface water drainage pipework system in the working area of the current Contract No. 1.
- b) Construction of concrete footpaths and steps.
- c) Construction of access road and parking areas.
- d) Erection of entrance palisade gates, fencing around the perimeter of the site.

A General Layout of the works to be executed by the Civil Contractor under this Clause can be seen on reference to the Drawings.

a) **Surface Water Drainage System**

The Contract shall include for the construction of a surface water drainage system to cater for surface water runoff from the roads, paved areas and roof areas of the Site Civil Amenity Area. The layout of the surface water drainage pipework system is shown on the Drawings and will consist of 300mm and 225mm diameter Class N concrete S & S pipes.

Road Gullies to the requirements as stated in Part Two of the Specification shall be constructed in the locations as shown on the Drawings and with 150mm diameter connections to the surface water drainage pipework system.

Manholes shall be type K1 manholes. Pipe trenches and Pipe beddings will be in accordance with the details as shown on the Drawings. The surface water drainage pipework system shall be laid, jointed and tested in accordance with the requirements as set out in Part Two of this Specification.

b) **Construction of Footpaths**

Footpaths of pre-cast concrete paving slabs placed in the manner specified in Part Two of this specification will be constructed in the locations and to the widths shown on the Drawings.

c) Construction of Access Roadway Passing Areas

The access roadway from the existing Road to the Landfill Site shall be provided with passing areas in the location and to the details shown on the Drawings.

d) Entrance Gates and Fencing

The Landfill site shall be fenced with uPVC. coated palisade fencing 2.4 meters in overall height above ground level and shall be dark green in colour. This fence shall have Triad Tyoe Head detail on the railing posts. The line of the fence shall be stepped slightly inwards from the acquisition line to facilitate screening of the fence.

The Security fence around the Landfill Site and entrance area shall be built before the commencement of the works on the site.

In the circumstances, temporary, secure fencing, adequate to allow the contractor to comply with Safety Legislation and to the same height as the permanent fencing shall be provided and there shall be a requirement that the site is secure when work finished each evening. Temporary fencing provided at the treatment works site or along a wayleave shall be maintained to a good stockproof standard suitable for cattle or sheep during the duration of the works.

Two sets of gates shall be provided as follows:

- (i) Double gate and single and pedestrian gate unclimbable type at site entrance as detailed on the Drawings.

- (ii) Double gates inclimbable type at Glenisland side of Landfill.

Entrance gates shall be provided and erected in the manner specified and in accordance with the Drawings, with the provision that the Contractor shall submit details of the gates to the Engineer before an order is placed and the Engineer's approval is required to the details supplied. After erection, the gates which shall be hot dipped galvanised shall be painted with approved paint suitable for ironwork and with approved shade. The appropriate Bill of Quantities includes a P.C. Sum for the supply and erection of the gates.

The fencing of the site shall be along such lines as the Engineer shall fix at the proper time but generally in accordance with the layout shown on the Drawings.

Palisade security type fencing shall be to B.S. 1772 - Part 12, 2.4m high above ground, consisting of main support posts 100 x 55 RSJ embedded in concrete foundations 650x650x750mm deep at centres not exceeding 2750mm. Pales 3mm thickness shall be fixed by fully welding to 2 No. 50 x 50 RSA horizontal rails. Connecting bolts from support post to panels to be hidden from view on the outer side of the fence. Material to be finished in Plas Galv finish, i.e. plastic coated to selected colour over hot dipped galvanised finish.

A continuous 300mm thick and 300mm wide concrete Grade 25 footing shall be provided beneath the fence, with joints at 2750mm centres laid on a compacted hardcore base. The fence shall be supported at 2750mm centres by Plas-Galv finished steel supports and 300x300mm R.C. Tie Beams 2250mm long with foundation pads 650x650x750mm deep at the outward end as shown in the Drawings.

Post and wire fence shall be 2240mm high above ground with straining posts 150x150mm at centres not exceeding 6000mm and intermediate posts (125x125mm at base, tapering to 90x90mm) evenly spaced between straining posts shall have

two struts 100x100mm as shown in Drawing No. 2035/11/650. Foundations of all posts shall be 600x600x450mm deep. Base of foundations of posts shall be 770mm below ground level, posts shall be embedded to a depth of 670mm below ground level. Foundations of struts shall be 450x450x225mm deep. Fence shall have 10 strands of galvanised barbed wire as detailed in the drawings.

The wind blown litter fence shall have 100mm dia. galvanised mild steel posts at 3000mm centres set in 750x750x300mm deep R.C. Pad Foundations. Plastic coated chainlink fencing shall have 50mm mesh size, 3.5mm galvanised mild steel wire at 600mm vertical centres, as shown on Drawing 2035/11/650. Chainlink Fence shall be fixed at its base to a concrete cill 100mm thick x 200mm deep with 3.55mm dia. galvanised wire staples at 750mm centres.

2.13 FINISH TO TANKS AND CHAMBERS

When the various units have been satisfactorily tested for watertightness in the manner specified in Part Two hereof, all tanks, manholes, chambers and wells shall be thoroughly cleaned and all pipes, channels and chambers shall be flushed out with clean water so as to remove any accumulated sediment. (The outsides of all the tanks and chambers which are above the level of the ground, the top surfaces of all tanks and the insides as far down as sewage or sludge level as the case may be, shall be primed and then coated with three coats of approved water cement paint.)

Items have been included in the Bill of Quantities to enable the Contractor to price for the employment of professional cleaners to thoroughly clean out the Site Buildings on the completion of the works. This shall include for cleaning and polishing of all floor tiling, wall tiling and windows and shall include for the removal of any stain marks.

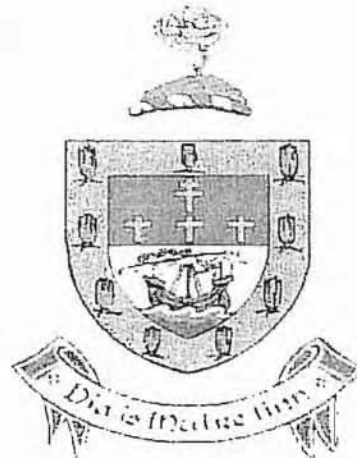
Professional Cleaners shall be engaged on two separate and distinct occasions, each occasion to thoroughly clean out all structures. A P.C. Sum is included in the appropriate Bill of Quantities to cover the cost of engaging the cleaners.

The first occasion shall be prior to the commencement of the maintenance period and the second occasion shall be three months into the maintenance period.

Furthermore, on completion of the works, the Contractor shall remove all site offices, signs, temporary works and other Builder's debris and shall sweep all paths and road surfaces.

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COMHAIRLE CHONTAE MHAIGH EO



Remedial Works at Derrinumbera Landfill site Development of Borrow Pit adjacent to existing Site

Description of Works as required in respect of Part VIII
of Local Government (Planning & Development) Regulations, 2001

Mr J Beirne BE MIE Eur.Ing C.Eng FIEI MCIWEM
County Engineer & Director of Services
Mayo County Council,
Aras An Chontae,
CASTLEBAR,
County Mayo

TOBIN Consulting Engineers

*GALWAY *CASTLEBAR
*DUNDALK *LIMERICK



APRIL 2002

**MAYO COUNTY COUNCIL
REMEDIAL WORKS AT DERRINUMERA LANDFILL SITE**

DEVELOPMENT OF BORROW PIT ADJACENT TO EXISTING SITE

**DESCRIPTION OF WORKS IN RESPECT OF PART VIII OF LOCAL
GOVERNMENT (PLANNING AND DEVELOPMENT) REGULATIONS, 2001**

GENERAL DESCRIPTION OF THE EXISTING SITE

The Landfill at Derrinnumera Landfill Site is an existing facility having been in operation since 1974 and is located off the Castlebar / Newport Road (R311) approximately 8 miles from the town of Castlebar.

The existing facility was licensed by the Environmental Protection Agency on December 21st 1999 and is currently being brought up to the strictest environmental standards in line with the terms of this licence (WL 211).

In order to achieve the terms of the EPA Licence, significant amounts of construction material are required for day cover and construction of lined cells within the confines of the licensed boundary. An existing borrow pit located within the site is now exhausted and it is proposed to extend this borrow pit into lands adjacent to the site in a manner described in Paragraph A below.

A. Description of Proposed Works

The lands forming the subject of this application lie adjacent to the existing waste facility at Derrinnumera and comprise 4.9 hectares (12.11 acres). Referring to Drawing No. 002039/VIII-16/601, the proposed borrow pit is outlined in red and existing ground levels vary from 101mOD Malin Head in the south western corner to 76.5mOD Malin Head in the north eastern corner of the site.

Proposals for the development of the borrow pit are denoted on Drawing No. 002039/VIII-16/601 and Drawing No. 002039/VIII-16/602, with final levels varying from 82mOD Malin Head in the south western corner to 73mOD Malin Head in the north western corner of the site. In all, a total volume of 258,000 cubic metres of material, comprising topsoil, subsoils and rock is proposed to be removed from the Borrow Pit.

In addition to the above quarrying activity, it is proposed to construct a 4 metre wide access road and 2.4 metre high post and chainlink fence along the western boundary of the site. It is also proposed to construct drainage infrastructure consisting of silt traps to ensure quarried material is not washed into local watercourses.

B. Drawings

The works hereinafter described or referred to in this Specification are shown in the following Drawings:-

Drawing No.	Description
002039/VIII-16/600	Site Location Map
002039/VIII-16/601	Layout Plan showing extent of proposed Borrow Pit
002039/VIII-16/602	Longitudinal and cross sections through proposed Borrow Pit

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