CERTIFICATE NO: 24966

REF.: 91A/0587

PROPOSAL: Industrial / Warehouse Building

LOCATION: Westgate Business Park, Ballymount Rd Upper

APPLICANT: Ulster Investment Bank Ltd

1	2	3	4	5	6	7
ES DWELLINGS/AREA LENGTH/STRUCT	RATE	AMT. OF FEE REQ.	AMOUNT LODGED	BALANCE DUE	BALANCE DUE	DATE/ RECEIPT NO
Dwellings	£252					
	£216					
	£50p per M² in excess of 300M² Min.£80					
metres² 4090.0m²	£21.75 per M² or £80	£ 7159.50	7159.50			
x .1 hect.	£205 per .1 hect. or £350					
x .1 hect.	£205 per .1 hect or £70					
x .1 hect.	£205 per .1 hect. or £100					
	£2100					
x metres²	£210 per M² or £80					
x1,000M²	£205 per 1,000M² or £80					
x .1 hect.	£65 per .1 hect. or £80					

Jumn 1 Certified: Signed: [signature] Grade: DIT Date: 18/4/91

Jumn 1 Endorsed: Signed: [signature] Grade: S.O Date: 18/4/91

Jumns 2,3,4,5,6 & 7 Certified Signed: _____ Grade: _____ Date: _____

Jumns 2,3,4,5,6 & 7 Endorsed. Signed: _____ Grade: _____ Date: _____

LOCATION GOVERNMENT (PLANNING AND DEVELOPMENT) ACTS, 1963 TO 1982

ASSESSMENT OF FINANCIAL CONTRIBUTION

REG. REF.: 91A/587

CONT. REG.:

SERVICES INVOLVED: WATER/FOUL SEWER/SURFACE WATER

AREA OF SITE:

FLOOR AREA OF PRESENT PROPOSAL: 44,026 Ft² F.Y. 18/4/91.

MEASURED BY:

CHECKED BY:

METHOD OF ASSESSMENT:

TOTAL ASSESSMENT

MANAGER'S ORDERED NO: P/ /
DATED

ENTERED IN CONTRIBUTIONS REGISTER:

DEVELOPMENT CONTROL ASSISTANT GRADE

SS only

Register Reference : 91A/0587 Date : 19th April 1991

Development : Single Storey Industrial/Warehouse building incorporating 2 storey office accommodation together with ancillary site development

LOCATION : Westgate Business Park, Ballymount Road Upper

Applicant : Ulster Investments Bank Ltd

App. Type : PERMISSION

Planning Officer : M.DARLEY

Date Recd. : 15th April 1991

Attached is a copy of the application for the above development .Your report would be appreciated within the next 28 days.

Yours faithfully,

DUBLIN Co. COUNCIL
SANITARY SERVICES
PRINCIPAL OFFICER
19 JUN 1991
Returned

Date received in Sanitary Services ..... 26 APR 1991

SAN SERVICES

FOUL SEWER

Available subject to the following:

(1) No work is to commence prior to the establishment of the "as constructed drainage levels, and the adjustment of the final finished floor level as required by B.B.L. department.

(2) All non domestic effluent to be the subject of a licence under the provision of the Water Pollution Act.

SURFACE WATER

Available, subject to (1) above

(2) All fuel storage tanks being bunded to meet the provision of the Water Pollution Act.

SENIOR ENGINEER,
SANITARY SERVICES DEPARTMENT,
46/49 UPPER O'CONNELL STREET,
DUBLIN 1

10.6.91

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 21.06.91
Time 9.35

11/6/91

Register Reference : 91A/0587 Date : 19th April 1991

....

ENDORSED________________________ DATE______________

WATER SUPPLY...Available for proposed use 24 hour storage to be provided. Note applicant to consult & agree possible amendments to watermain layout submitted with water Engineer

Refer to C.F.O.

10/5/91

....

10/6/91

ENDORSED________________________ DATE______________

3/6/91

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date ....21:06:91..........
Time.......9:30..............

DUBLIN COUNTY COUNCIL

REG. REF:	91A/587.
LOCATION:	Westgate Business Park, Ballymount Road Upper.
APPLICANT:	Ulster Investments Bank Ltd.
PROPOSAL:	Industrial/warehouse building.
DATE LODGED:	15.4.91.

This application is for full permission for industrial/warehouse at Ballymount.

The site is located within a standard industrial estate which is presently under construction and to be served by a 9.0m wide industrial road. At present two or more units are completed or under construction and the access to Ballymount Road is near completion. It is noted that no Roads report has been compiled on this development todate.

The applicant proposes a total of 61 car spaces which is some 62 spaces short of 123 spaces required by a development of this size.

Roads require applicant to provide the additional spaces on site.
Contribution is to be levied as per original figure per acre index linked from the date of grant of original permission to the current date. ie. a Roads levy of 3.5 acres @ the appropriate index linked rate per acre.

MA/BMcC
31.5.91.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 12.06.91
Time 12-25

SIGNED: Michael Arthurs

DATE: 31-5-91

ENDORSED: E. Madden

DATE: 4th June '91

Dublin County Council Comhairle Chontae Atha Cliath

Parks Department

Bosca 174
P. O. Box 174
5 Rae Gardiner,
5 Gardiner Row,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)727777
Fax. (01)727530

(M.D)

Mr. D. Drumgoole,
Senior Administrative Officer,
Planning Department,
Dublin County Council.

Our Ref.
Your Ref.
Date 08.05.1991

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 16.4.91
Time

RE: Application for 1 No. Industrial Unit and Ancillary Offices at Westgate Business Park, Ballymount Road Upper. Reg. Ref. 91A/587.

With regard to this application, the Parks Departments comments are;

1) The landscape plan lodged with this application is unacceptable to this Department as the proposed planting densities along the Motorway boundary are insufficient. The minimum planting density of this location is considered to be 1 plant/m^2 . Furthermore, the percentage mix of each planting group along this boundary require alteration. Overall, the planting density along this boundary needs to be increased by 30 - 40%.

2) The absence of a detailed works specification and programme of works is of concern considering the prominent locations of the proposed buildings.

In the above regard, the applicant should be requested to submit a detailed landscape plan, specification and programme of works which should include an increase in planting density of 30 - 40%. Furthermore, the applicant should be requested to submit and agree details of the above, prior to works commencing on site.

James Borrett

SENIOR PARKS SUPERINTENDENT

6) That the open space shall be fenced off during construction work and shall not be used for the purposes of storage of plant, materials, spoil, etc.

7) A specification and plan for street tree planting is to be agreed with the Parks Department, prior to the commencement of development.

James Barnett

SENIOR PARKS SUPERINTENDENT

Mary

DUBLIN COUNTY COUNCIL

REG. REF:	91A/587.
LOCATION:	Westgate Business Park, Ballymount Road Upper.
APPLICANT:	Ulster Investments Bank Ltd.
PROPOSAL:	Industrial/warehouse building.
DATE LODGED:	15.4.91.

This application is for full permission for industrial/warehouse at Ballymount.

The site is located within a standard industrial estate which is presently under construction and to be served by a 9.0m wide industrial road. At present two or more units are completed or under construction and the access to Ballymount Road is near completion. It is noted that no Roads report has been compiled on this development todate.

The applicant proposes a total of 61 car spaces which is some 62 spaces short of 123 spaces required by a development of this size.

Roads require applicant to provide the additional spaces on site.
Contribution is to be levied as per original figure per acre index linked from the date of grant of original permission to the current date ie. a Roads levy of 3.5 acres @ the appropriate index linked rate per acre.

MA/BMcC
31.5.91.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 4.06.91
Time 12.30

SIGNED: Technical Assistant

DATE: 31-5-91

ENDORSED: E Madden

DATE: 4th June 91

Dublin County Council Comhairle Chontae Atha Cliath **Parks Department**

Bosca 174
P. O. Box 174
5 Rae Gardiner,
5 Gardiner Row,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)727777
Fax. (01)727530

M.Q.

Mr. D. Drumgoole,
Senior Administrative Officer,
Planning Department.

Our Ref. P.P. 476
Your Ref. LD.17/5/91
Date 14.06.1991

RE/ Proposed Railings to front of House at 52 Strand Street, Skerries. Reg. Ref. 91B/587.

With reference to this application the Parks Department's comments are as follows:-

The applicant is applying for permission to enclose part of the public street with a 1.8m boundary wall and railing. This is totally unacceptable as it detracts considerably from the street-scape and also encloses public property. Furthermore, the applicant has not shown any proof of his legal interest in the site.

The proposal would also reduce to an unacceptable level the pedestrian area of what is the main street in Skerries. The sight line from Callaghan's Lane would also be seriously affected and a traffic hazard might be created.

Accordingly, it is strongly recommended that this application is refused.

SENIOR PARKS SUPERINTENDENT

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 18.06.91
Time 3.50

P/2604/91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Register Reference : 91A/0587 Date Received : 15th April 1991

Correspondence Name and Address : Keane Murphy Duff Architects, 4 Princes Street South, City Quay, Dublin 2.

Development : Single Storey Industrial/Warehouse building incorporating 2 storey office accommodation together with ancillary site development

CN 4211 I

CONTRIBUTION.
Standard: 96,678
Roads: 16130
S. Sers:
Open Space:
Other:
SECURITY:
Bond / C.I.F.:
Cash:

Location : Westgate Business Park, Ballymount Road Upper

Applicant : Ulster Investments Bank Ltd

App. Type : Permission

Zoning : E

(MD/BB)

Report of Dublin Planning Officer dated 4th June, 1991.

A

This application is for permission for a single storey industrial/warehouse building incorporating 2 storey office accommodation together with ancillary site development at Westgate Business Park, Ballymount Road Upper for Ulster Investments Bank Ltd.

The site area is stated to be 14,257 sq. metres. The floor area of the proposed development is 4,090 sq. metres.

This site incorporates 2 sites of a development granted permission by Decision Order P/3776/90, Reg. Ref. 90A/970 for 7 light industrial/warehouse units including 2 storey offices at Ballymount Road Upper.
2 of these units have been constructed. These units combine glass, brick, cladding and plastisol profiled sheeting in shades of brown.

Proposed unit which is stated to be for Mitsubishi Electric is located centrally on the site. It breaks the building line of the existing office and warehouse units which were permitted by Reg. Ref. 90A/970. These revised building lines have been agreed prior to the submission of the application. The proposal fronts on the Western Parkway with access from the ~~side~~ access road within the business park.

The proposed finishes are white stone chipping dry dash on white render with pressed aluminium sheeting. Aluminium sheeting in white is proposed to the gables and the roof finish is to be mineral grit felt coloured grey or white. White plaster finish is proposed on the office unit with a grey ceramic tile plinth. These proposals are of very high quality finish for an industrial unit and they are acceptable.

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0587

Page No: 0002

Location: Westgate Business Park, Ballymount Road Upper

60 car spaces are proposed. This is below the development plan standards for the unit proposed. However, the applicant has space on site which at present is given to landscaping and which in the future if necessary could be allocated to car parking.

The landscaping along the boundary of the western parkway motorway has been agreed with the Parks Department. It mirrors the proposal which was lodged with Ref. Ref. 90A/970. Suitable landscaping is proposed for the remainder of the site. I note the revised landscaping proposal submitted 21st May 1991.

The site coverage is 37.08%, this is an acceptable site coverage.

The Sanitary Services Departmemt has not reported to date on this proposal. The Roads Department has not reported to date on this proposal.

I recommend that a decision to GRANT PERMISSION be made under the Local Government (Planning and Development) Acts, 1963-1990 subject to the following (15) conditions:-

C O N D I T I O N S / R E A S O N S

01 The development to be carried out in its entirety in accordance with the plans, particulars and specifications lodged with the application save as may be required by the other conditions attached hereto.
REASON:To ensure that the development shall be in accordance with the permission and that effective control be maintained.

02 That before development commences, approval under the Building Bye- Laws be obtained and all conditions of that approval be observed in the development.
REASON:In order to comply with the Sanitary Services Acts, 1878-1964.

03 That the requirements of the Supervising Environmental Health Officer be ascertained and strictly adhered to in the development.
REASON: In the interest of health.

04 That the requirements of the Chief Fire Officer be ascertained and strictly adhered to in the development.
REASON: In the interest of safety and the avoidance of fire hazard.

05 That the use of the unit shall be for light industrial/warehousing and

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0587

Page No: 0003

Location: Westgate Business Park, Ballymount Road Upper

ancillary offices and any change of use from that shall be subject to the approval of the Planning Authority or An Bord Pleanala on appeal.

05 REASON: In the interest of the proper planning and development of the area.

06 That all watermain tappings, branch connections, swabbing and chlorination be carried out by the County Council, Sanitary Services Department and that the cost thereof be paid to the County Council before any development commences.
REASON: To comply with public health requirements and to ensure adequate standards of workmanship. As the provision of these services by the County Council will facilitate the proposed development it is considered reasonable that the Council should recoup the cost.

07 That no industrial effluent be permitted without prior approval from Planning Authority.
REASON: In the interest of health.

08 That the area which is shown landscaped and is located to the north west of the building on the site plan no. 9012201A dated 15th April, 1991, shall be reserved for future car parking ~~The landscaped area which is the Dublin County Council consider that there is a shortfall in the carparking provided in the future~~ and it shall be laid out as car parking to the requirements of the county council, if/when required by the Planning Authority.

R. Comins

08 REASON: ~~In the interest of the proper planning and development of the area.~~ To ensure that there will be no future shortfall of carparking on the site.

09 That the arrangements made with regard to the payment of the financial contribution in the sum of £96,678. as required by condition no. 5 of planning permission granted under Register Reference 90A/970 be strictly adhered to in respect of this proposal.

09 REASON: In the interest of the proper planning and development of the area.

10 That the arrangements made with regard to the payment of the financial contribution in the sum of £161,130. as required by condition no. 14 of planning permission granted under Register Reference 90A/970 be strictly adhered to in respect of this proposal.

10 REASON: In the interest of the proper planning and development of the area.

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0587

Page No: 0004

Location: Westgate Business Park, Ballymount Road Upper

Endorsed:-.....
for Principal Officer

Richard Cremins SEP.
for Dublin Planning officer 10.6.91

Order: A decision pursuant to Section 26(1) of the Local Government (Planning and Development) Acts, 1963-1990 to GRANT PERMISSION for the above proposal subject to the (10) conditions set out above is hereby made.

Dated : 12 June 1991. .....
~~ASSISTANT CITY AND COUNTY MANAGER~~ APPROVED OFFICER

to whom the appropriate powers have been delegated by order of the Dublin City and County Manager dated ~~26th April~~ 12th June, 1991.

M. DARLEY 30/5/91

Reg Ref. 91A/0587
Westgate Business Park
Ballymount Rd. upper.

Area of Building behind building Lined — 3641 sq M²

Area of site behind building lines — 9818.25 M²

SITE COVERAGE $\frac{3641 \times 100}{9818.25} =$ 37.08%

Dublin County Council Comhairle Chontae Atha Cliath **Planning Department**

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

NOTIFICATION OF DECISION TO GRANT PERMISSION
LOCAL GOVERNMENT (PLANNING AND DEVELOPMENT)ACTS 1963-1990.

Decision Order Number : P/ 2604 /91 Date of Decision : 12th June 1991

Register Reference : 91A/0587 Date Received : 15th April 1991

Applicant : Ulster Investments Bank Ltd

Development : Single Storey Industrial/Warehouse building incorporating 2 storey office accommodation together with ancillary site development

Location : Westgate Business Park, Ballymount Road Upper

Time Extension(s) up to and including :

Additional Information Requested/Received : //

In pursuance of its functions under the above mentioned Acts,the Dublin County Council,being the Planning Authority for the County Health District of Dublin, did by Order dated as above make a decision to GRANT PERMISSION in respect of the above proposal.

Subject to the Conditions on the attached Numbered Pages.

NUMBER OF CONDITIONS:- ..10....ATTACHED.

Signed on behalf of the Dublin County Council.....
for Principal Officer

Date:..15./6./.91.....

Keane Murphy Duff Architects,
4 Princes Street South,
City Quay,
Dublin 2.

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

Reg.Ref. 91A/0587
Decision Order No. P/ 2604 /91

C O N D I T I O N S / R E A S O N S

01 The development to be carried out in its entirety in accordance with the plans, particulars and specifications lodged with the application save as may be required by the other conditions attached hereto.
REASON:To ensure that the development shall be in accordance with the permission and that effective control be maintained.

02 That before development commences, approval under the Building Bye- Laws be obtained and all conditions of that approval be observed in the development.
REASON:In order to comply with the Sanitary Services Acts, 1878-1964.

03 That the requirements of the Supervising Environmental Health Officer be ascertained and strictly adhered to in the development.
REASON: In the interest of health.

04 That the requirements of the Chief Fire Officer be ascertained and strictly adhered to in the development.
REASON: In the interest of safety and the avoidance of fire hazard.

05 That the use of the unit shall be for light industrial/warehousing and ancillary offices and any change of use from that shall be subject to the approval of the Planning Authority or An Bord Pleanala on appeal.

05 REASON: In the interest of the proper planning and development of the area.

06 That all watermain tappings, branch connections, swabbing and chlorination be carried out by the County Council, Sanitary Services Department and that the cost thereof be paid to the County Council before any development commences.
REASON: To comply with public health requirements and to ensure adequate standards of workmanship. As the provision of these services by the County Council will facilitate the proposed development it is considered reasonable that the Council should recoup the cost.

07 That no industrial effluent be permitted without prior approval from Planning Authority.
REASON: In the interest of health.

08 That the area which is shown landscaped and is located to the north west of the building on the site plan no. 9012201A dated 15th April, 1991, shall be reserved for future car parking and it shall be laid out as car parking to the requirements of the County Council, if/when required by the Planning Authority.

08 REASON: In the interest of the proper planning and development of the area.

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

09 That the arrangements made with regard to the payment of the financial contribution in the sum of £96,678. as required by Condition No. 5 of planning permission granted under Reg. Ref. 90A/0970 be strictly adhered to in respect of this proposal.

09 REASON: In the interest of the proper planning and development of the area.

10 That the arrangements made with regard to the payment of the financial contribution in the sum of £161,130. as required by Condition No. 14 of planning permission granted under Reg. Ref. 90A/0970 be strictly adhered to in respect of this proposal.

10 REASON: In the interest of the proper planning and development of the area.

KEANE MURPHY DUFF
Chartered Architects, Designers & Project Managers

4 Prince's Street South, City Quay, Dublin 2. Telephone: 770077 Fax: 771186

Ref: GO'H/MQ

21st May, 1991.

91A/0587
1.12.0
Mud A.1.

The Principal Officer,
Dublin County Council,
Planning Department,
Irish Life Centre,
Lr. Abbey Street,
Dublin 1.

PLANNING REF: 91A/0587

DEVELOPMENT: Single storey Industrial / Warehouse building incorporating 2 storey office accommodation together with ancillary site development.

LOCATION: Westgate Business Park, Ballymount Road Upper.

DATE OF APPLICATION: 15th April, 1991.

RECEIVED
24 MAY 1991
91A/0587.
Reg. Sec.

Dear Sir / Madam,

Please find enclosed some further unsolicited additional information regarding the above application, which I hope will enable you to give a favourable decision regarding this application as follows;

1. A revised landscaping proposal which in design is the same, but has far greater densities of planting coupled with different ratios of plants in accordance with their size. This design is subject to a meeting with Mr. Richard Shakespeare of the Parks Department. This revised proposal according to Mr. Shakespeare will thus match the proposal already being implemented in the Business Park and the Parks Department are satisfied with it. See drawing no. 9012 210B.

2. Due to the impossibility of using a built up felt roof on the buildings it has become necessary to change our specification of the roofing material to a metal deck construction. This will take the form of a natural aluminium standing seam sheeting similar to lead roofing on the same curved roof to

Contd/....

the service / office building. On the Warehouse building the roof is proposed to be clad in a standard metal deck in a grey colour to match the natural aluminium. However while there is no visible change to the outline of the service / office building, the Warehouse roof must be laid to a minimum 4° pitch and cannot be laid to a curve. This causes us to propose a ridge design as drawings no. 9012 306, 9012 307, which slightly alters the profile of the building.

3. A question arose in our discussions with the Planning Department regarding the vehicular usage of the proposed building and the car parking provided. This building proposed is a one off tailor made building specific to its usage designed to replace existing premises, and it is therefore possible to estimate the requirements of the building unlike speculative developments.

The following is a brief description of our proposal;

The building is a storage / distribution centre for Mitsubishi Electric Ltd for Ireland. The main mass of the building is taken up with the Warehouse facility, and secondary to this is the support facilities required to run this operation.

The Warehouse is used to store t.v.'s, video and audio visual equipment coupled with industrial and electronic equipment plus air conditioning systems. Spare parts for the equipment and also standard electronic components are held in the building as proposed. In the future it is likely that other types of electronic type equipment as yet unknown will be distributed from this building. The Loading Bay and Delivery requirements are served in a separate area to the rest of the vehicular traffic.

The support facilities to the building are as follows;

All electrical supply equipment, shower and toilet facilities, computer rooms for the building as a whole, are contained within the support building. The Reception area, display and resting areas, Meeting Rooms are located on the Ground Floor.

A requirement of the building is that the Company service and repair their equipment in the Service Department on the Ground Floor. Facilities are provided for the delivery of goods to be repaired directly into the service facility. However it is stated company policy to train their trade customers to be able to repair the goods in their own premises.

The First Floor of the building has a 450m² approximate floor area which will be used for meeting areas, computer facilities, archive storage and general administration staff. There will also be some accommodation for visiting travelling sales representatives of the Company which will be approximately 8 to 10 people. The building is visited by shop owners and account holders from time to time. The total estimate of people visiting

Contd/.....

the building which are evaluated from studies of the existing building is 40 no. people in a whole day with a generous maximum of about 10 people at any one time.

The foreseeable total number of staff in the building including future expansion will be 40 people approximately coupled with 10 travelling representatives this would give us a requirement for approximately 30 - 40 no. cars. The maximum visitors requirement would be approximately 10 no. cars, giving a 20% spare capacity we estimate the car parking requirement to be adequately provided for with 60 no. car spaces.

The building sits in the middle of a 3.5 + acre site which was originally the site for two similar sized buildings. It is our objective to do an extensive landscape design for this Headquaters building which will surround all sides of the building with green cover and allow the building to sit comfortably on its site. However, if more car parking is required in the future it is possible to create many more spaces on this extensive site.

It is hoped that these above descriptions adequately describe the design parameters of this particular proposal. If you require any further clarification regarding our application please do not hesitate to contact our Office.

Yours sincerely,

P.P. Gerard Gunn

Gary O' Hare,
KEANE MURPHY DUFF.

P.S. We have photographs of a similarily finished building to the proposed Warehouse just completed by our Company and we also have finished coloured presentation drawings which I would be delighted to show to you at your convenience.

C.C. Drg. No. 9012 210B Landscaping Proposal to the Parks Department.

Encls.

KEANE MURPHY DUFF
Chartered Architects, Designers & Project Managers

4, Princes Street South, City Quay, Dublin 2. Phone: 770077. Fax: 770994.

DRAWING ISSUE

BY: POST / HAND / COLLECTION

PROJECT: MITSUBISHI ELECTRIC INDUSTRIAL WAREHOUSE. AND OFFICES

DATE OF ISSUE 23/5/91.

ISSUED BY DAMIAN HOWARD

REMARKS

ISSUED TO	DRAWING NO.	NO. OF COPIES
DUBLIN COUNTY COUNCIL	210 B	4
	306	4
	307.	4

Dublin County Council Comhairle Chontae Atha Cliath **Planning Department**

Building Control Department,
Liffey House,
Tara Street,
Dublin 1.
Telephone:773066

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

Register Reference : 91A/0587 Date : 16th April 1991

LOCAL GOVERNMENT (PLANNING AND DEVELOPMENT) ACTS, 1963 TO 1990

Dear Sir/Madam,

DEVELOPMENT : Single Storey Industrial/Warehouse building incorporating 2 storey office accommodation together with ancillary site development

LOCATION : Westgate Business Park, Ballymount Road Upper

APPLICANT : Ulster Investments Bank Ltd

APP. TYPE : PERMISSION

With reference to above, I acknowledge receipt of your application received on 15th April 1991.

Yours faithfully,

.....

PRINCIPAL OFFICER

Keane Murphy Duff Architects,
4 Princes Street South,
City Quay,
Dublin 2.

If there is any query with regard to the information contained in this newspaper notice we would be glad if you could advise us immediately to this effect.

Comhairle Chontae...

Planning Application Form/ Bye - Law Application Form

PLEASE READ INSTRUCTIONS AT BACK BEFORE COMPLETING FORM. ALL QUESTIONS MUST BE ANSWERED.

1. Application for Permission [X] ~~Outline Permission~~ [X] ~~Approval~~ [X] ~~Place / in appropriate box~~
Approval should be sought only where an outline permission was previously granted. Outline permission may not be sought for the retention of structures or continuances of uses.

2. Postal address of site or building (If none, give description sufficient to identify) Westgate Business Park, Ballymount Road Upper, Dublin 12.

3. Name of applicant (Principal not Agent) Ulster Investment Bank Ltd
Address 2 Hume Street, Dublin 2. Tel. No 613444

4. Name and address of person or firm responsible for preparation of drawings Keane Murphy Duff Architects, 4 Princes Street South, City Quay, Dublin 2. Tel. No 770077

5. Name and address to which notifications should be sent Keane Murphy Duff Archiects, 4 Princes Street South, City Quay, Dublin 2.

6. Brief description of proposed development Single Storey Industrial Warhouse Building Incorporating two storey Office Accomodation with Ancillary Site Development.

7. Method of drainage Main sewerage system 8. Source of Water Supply Connection to Local Authority Mains.

9. In the case of any building or buildings to be retained on site, please state:-
(a) Present use of each floor or use when last used. N/A
(b) Proposed use of each floor N/A

10 Does the proposal involve demolition, partial demolition or change of use of any habitable house or part thereof? No

11.(a) Area of Site 14,257m² Sq. m.
(b) Floor area of proposed development 4090m² Sq. m. 7157.50 15/4
(c) Floor area of buildings proposed to be retained within site N/A Sq. m. N 35218

Irish Press 13/4/91

12.State applicant's legal interest or estate in site (i.e. freehold, leasehold, etc.) Leasehold

13.Are you now applying also for an approval under the Building Bye Laws?
Yes [ ] No [X] Place ✓ in appropriate box.

14.Please state the extent to which the Draft Building Regulations have been taken in account in your proposal: It is the practice of this office to take account of the Draft Building Regulations as issued by the Minister for the Environment in the design of buildings, but this is not to be interpreted as a guarantee that the provisions of the Draft Building Regulations have been implemented in full or in any particular respect in this proposal.

15.List of documents enclosed with application Planning Add, Outline Specification. Drawing Nos. 200/201A/202A/203B/204B/205/206/207A/208/209/210/212/213/214/Engineering Drawings. SK. 4 April 1991/D787/C/L/3 D787/C/L/5, D787/C/L/6

CO DUBLIN Planning permission is sought for single storey industrial, Warehouse building incorporating 2 storey office accommodation together with ancillary site development at Westgate Business Park, Ballymount Road Upper, Co Dublin. For Ulster Investment Bank Ltd.

16. Gross floor space of proposed development (See back) 4090m² Sq. m.
No of dwellings proposed (if any) ——— Class(es) of Development Commercial
Fee Payable £ 7157.50 Basis of Calculation 4090m² at £1.75 / m²
If a reduced fee is tendered details of previous relevant payment should be given

Signature of Applicant (or his Agent) [signature] KMD Date 15th April, 1991

FOR OFFICE USE ONLY

Application Type P
Register Reference 91A/0587
Amount Received £ 3 72.8
Receipt No 72-1
Date

RECEIVED 15 APR 1991 REG. SEC.

LOCAL GOVERNMENT (PLANNING & DEVELOPMENT) REGULATIONS 1977 to 1984.

Outline of requirements for applications for permission or Approval under the Local Government (Planning & Development) Acts 1963 to 1983. The Planning Acts and Regulations made thereunder may be purchased from the Government Publications Sales Office, Sun Alliance House, Molesworth Street, Dublin 2.

1. Name and Address of applicant.

2. Particulars of the interest held in the land or structure, i.e. whether freehold, leasehold, etc.

3. The page of a newspaper, circulating in the area in which the land or structure is situate, containing the required statutory notice. The newspaper advertisement should state after the heading Co. Dublin.

   (a) The address of the structure or the location of the land.
   (b) The nature and extent of the development proposed. If retention of development is involved, the notice should be worded accordingly. Any demolition of habitable accommodation should be indicated.
   (c) The name of the applicant.

   NB. Applications must be received within 2 weeks from date of publication of the notice.

4. Four (4) sets of drawings to a stated scale must be submitted. Each set to include a layout or block plan, proposed and existing services to be shown on this drawing, location map, and drawings of relevant floor plans, elevations, sections, details of type and location of septic tank (if applicable) and such other particulars as are necessary to identify the land and to describe the works or structure to which the application relates (new work to be coloured or otherwise distinguished from any retained structures). Buildings, roads, boundaries and other features bounding the structure or other land to which the application relates shall be shown on site plans or layout plans. The location map should be of scale not less than 1: 2500 and should indicate the north point. The site of the proposed development must be outlined in red. Plans and drawings should indicate the name and address of the person by whom they were prepared. Any adjoining lands in which the applicant has an interest must be outlined in blue.

5. In the case of a proposed change of use of any structure or land, requirements in addition to 1, 2, & 3 are:
   (a) a statement of the existing use and the proposed use, or, where appropriate, the former use and the use proposed.

   (b) (i) Four (4) sets of the drawings to a stated scale must be submitted. Each set to consist of a plan or location map (marked or coloured in red so as to identify the structure or land to which the application relates) to a scale of not less than 1:2500 and to indicate the North point. Any adjoining lands in which the application has an interest must be outlined in blue.

   (ii) A layout and a survey plan of each floor of any structure to which the application relates.

   (c) Plans and drawings should indicate the name and address of the person by whom they were prepared.

6. Applications should be addressed to: Dublin County Council, Planning Department, Irish Life Centre, Lr. Abbey Street, Dublin 1, Tel. 724755.

SEPTIC TANK DRAINAGE: Where drainage by means of a septic tank is proposed, before a planning application is considered, the applicant may be required to arrange for a trial hole to be inspected and declared suitable for the satisfactory percolation of septic tank effluent. The trial hole to be dug seven feet deep at or about the site of the septic tank. Septic tanks are to be in accordence with I.I.R.S. S.R. 6:75.

INDUSTRIAL DEVELOPMENT:
The proposed use of an industrial premises should, where possible, be stated together with the estimated number of employees, (male and female). Details of trade effluents, if any, should be submitted.

Applicants to comply in full with the requirements of the Local Government (Water Pollution) Act,1977 in particular the licencing provisions of Sections 4 and 16.

PLANNING APPLICATIONS

CLASS NO.	DESCRIPTION	FEE
1.	Provision of dwelling — House/Flat.	£32.00 each
2.	Domestic extensions/other improvements.	£16.00
3.	Provision of agricultural buildings (See Regs.)	£40.00 minimum
4.	Other buildings (i.e. offices, commercial, etc.)	£1.75 per sq. metre (Min. £40.00)
5.	Use of land (Mining, deposit or waste)	£25.00 per 0.1 ha (Min £250.00)
6.	Use of land (Camping, parking, storage)	£25.00 per 0.1 ha (Min. £40.00)
7.	Provision of plant/machinery/tank or other structure for storage purposes.	£25.00 per 0.1 ha (Min. £100.00)
8.	Petrol Filling Station.	£100.00
9.	Advertising Structures.	£10.00 per m^2 (min £40.00)
10.	Electricity transmission lines.	£25.00 per 1,000m (Min. £40.00)
11.	Any other development.	£5.00 per 0.1 ha (Min. £40.00)

BUILDING BYE-LAW APPLICATIONS

CLASS NO.	DESCRIPTION	FEE
A	Dwelling (House/Flat)	£55.00 each
B	Domestic Extension (improvement/alteration)	£30.00 each
C	Building — Office/ Commercial Purposes	£3.50 per m^2 (min. £70.00)
D	Agricultural Buildings/Structures	£1.00 per m^2 in excess of 300 sq. metres (min. - £70.00) (Max. - £300.00)
E	Petrol Filling Station	£200.00
F	Development or Proposals not coming within any of the foregoing classes.	£9.00 per 0.1 ha (£70.00 min.)
		Min. Fee £30.00
		Max. Fee £20,000

Cheques etc. should be made payable to: Dublin County Council.

Gross Floor space is to be taken as the total floor space on each floor measured from the inside of the external walls.

For full details of Fees and Exemptions see Local Government (Planning and Development) (Fees) Regulations 1984.

COMHAIRLE CHONTAE ÁTHA CLIATH

RECEIPT CODE

DUBLIN COUNTY COUNCIL
46/49 UPPER O'CONNELL STREET,
DUBLIN 1.

PAID BY
CASH
CHEQUE
M.O.
B.L.
I.T.

Issue of this receipt is not an acknowledgement that the fee tendered is the prescribed application fee.

Nº 35218

£7157.50

Received this 15th day of April 1991
from Ulster Investment Bank Ltd,
2 Home St.
D.1
the sum of seven thousand one hundred fifty seven Pounds
fifty Pence, being for fee
planning application at Ballymount Rd. Upper
Noeleen Deane Cashier

S. CAREY
Principal Officer

KEANE MURPHY DUFF
Chartered Architects, Designers & Project Managers

4 Prince's Street South, City Quay, Dublin 2. Telephone: 770077 Fax: 771186

Ref: EFD/MQ

12th April, 1991.

Planning Officer,
Dublin County Council,
Irish Life Centre,
Lr. Abbey Street,
Dublin 1.

Re: Planning Application For Two Storey Offices With Single Storey Warehouse At Westgate Business Park, Ballymount Road, Dublin 12.

Dear Sir/Madam,

We enclose for your attention documents relating to our planning submission for an Office / Warehouse development at Westgate Business Park, Ballymount Road Upper.

The site of this proposed scheme forms part of a larger development formerly lodged by Dublin City Properties and Grant of Permission Reg. Ref. No. 90A/970, Decision Order No. P/3776/90. In that application the applicant proposed 7 no. light industrial / warehousing units, including two storey offices, and our site occupies the area held by two of the former sites facing the motorway.

You will find enclosed with the application the page from the Irish Press carrying the planning advertisement, a drawing schedule, an outline specification and the relevant drawings as indicated on the drawing schedule, specification for drainage, roads and water supply.

We also enclose a cheque for £7,157.50 which we calculate as the correct planning fee for this job.

If you have any queries relating to any of the documentation submitted, we would appreciate if you would contact us direct.

Thanking you for your co-operation.

Yours sincerely,

Eugene F. Dunne,
KEANE MURPHY DUFF.

Encls.

DUBLIN COUNTY COUNCIL
Planning Dept. Registry Section
APPLICATION RECEIVED
15 APR 1991
REG No. 91A/0587
APPLICATION TYPE O/P/A/RBL
No. L D S.

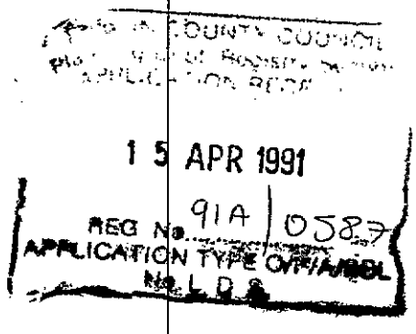
MITSUBISHI ELECTRIC

JOB NO: 9012

Drawing No's.
Series - 200

RE: DRAWING PROGRAMME FOR PLANNING PERMISSION SUBMISSION

Drawing No.	Drawings	Scale
200	Location Map	1:1000/1:20000
201A	Site Plan	1:500
202A	Overall Plans	1:200
203B	Office Plan G.F.	1:100
204B	Office Plan F.F.	1:100
205	Elevations	1:100
206	Elevations	1:100
207A	Office Roof Plan & Plant.	1:100
208	Roof Plans	1:200
209	Typical Sections	1:100
210	Landscaping Proposals	1:500
212	Typical Office Bay Detail.	1:50
213	Typical Warehouse Bay Details.	1:50
214	Site sections	1:500



MITSUBISHI ELECTRIC

JOB NO: 9012

RE: DRAWING PROGRAMME FOR PLANNING PERMISSION SUBMISSION

Ove Arup & Partners Drawing nos.

SK. 4th April, 1991.

D787/C/L/3

D787/C/L/5

D787/C/L/6

MITSUBISHI ELECTRIC

OUTLINE SPECIFICATION

for

2 Storey Office Building

and Single Storey Industrial Warehouse

at

Westgate Business Park,
Ballymount Road Upper,
Ballymount.

KEANE MURPHY DUFF

4, Princes Street South,
City Quay,
Dublin 2.

Job No. - 9012

April 1991

INTRODUCTION:

The building shall consist of a large Warehouse and Mezzanine for storage and distribution of Mitsubishi Electric products to the Irish market.

Attached to the Warehouse at Ground Floor Level there is an intergrated Service Department with Offices for receiving and repairing Mitsubishi Electric products. The remainder of the Ground Floor area consists of Public Reception Area and Staff facilities.

At First Floor Level there are Offices for Mitsubishi Electric staff who process orders and control the distribution of the Warehouse products nationwide.

1.0 OFFICE BUILDING:

1.1 The structure of the office building shall consist of reinforced concrete columns and slabs with a membrane roof on lightweight steel lattice girders.

1.2 Selected walls in the core area i.e stair well will be of in situ reinforced concrete for lateral stability.

1.3 All concrete and steelwork shall be to Engineers Details.

2.0 WALL AND ROOF FINISH:

2.1 The office building at first floor level shall have a full height double glazed screen 3 metres in height of natural finish hardwood or syntha pulvin coloured white aluminium. The fascia at first floor level to be a white cladding material with a recessed grid at 1500mm CTR's to match the mullion grid. The fascia to The roof to be syntha pulvin coloured white aluminium. the soffit at first floor level and at roof level to be natural finish hardwood T & G sheeting.

The walls at ground floor level to be a white render on 100mm blockwork with 100mm cavity 50mm insulation and 215 inner leaf. The roof finish throughout the scheme to be a grey/white mineral grit on felt to curve with the profile of the roof.

All windows shall be double glazed and of a good quality natural finish hardwood or a white syntha pulvin colour white aluminium. At the glazed entrance doors the glazed windows to the sides of the doors will be of glass block.

2.2 The external columns to the facades of the office building to be smooth white-cement in situ concrete on ground & first floor. The rainwater pipes to be 100mm and cast into the columns.

2.3 The building sits on a plinth of grey ceramic or concrete tiles on a concrete base.

2.4 There will be a single truncated pyramid (3 sided) type rooflight over the central accommodation stairs. Steel frame structure and syntha pulvin white mullions.

WAREHOUSE BUILDING

3.0 STRUCTURE:

3.1 The warehouse structure will be a 660mm wide diaphragm wall with a 100mm inner and outer leaf and 215 web in blockwork, with a 500mm approx. depth rc. ringbeam at height of 7.5m above finished floor level. A steel truss spans half the long dimension of the warehouse, rests on a spine girder on steel columns at 11.7m ctr's, to support the roof.

3.2 The stair core and boiler room will be a 215mm block wall with concrete slab floors. The mezzanine will be a timber floor on timber joists on a main steel structure.

4.0 WALL/ROOF FINISH:

4.1 The walls of the warehouse building will be finished externally with a stone chipping dry dash on white cement render with 20/30mm recessed joints horizontally and vertically.

There is a 400mm approx. height brick plinth around the perimeter of the building, except for the loading bay area which will be a natural insitu concrete finish. The brick plinth will be an engineering purple brick with a bull nose brick coping.

The fascia and soffit of the warehouse will be a profiled aluminium syntha pulvin colour white to conceal a galvanised steel gutter.

The roof of the warehouse will be mineral grit colour grey/white on felt on a profiled metal deck laid to fall.

4.2 The window to the warehouse will be syntha pulvin colour white aluminium double glazed.

4.3 The vents at high level in the wall of the warehouse from the plant will be syntha pulvin colour grey aluminium.

5.0 SERVICES:

5.1 Foul and surface water services from offices, warehouse and site shall be detailed by the services engineers (see enclosed drawing no's SK4 April '91, D787/C/L/3, D787/C/L/5, D787/C/L/6,) and connected to Local Authority sewers to their details and specification.

5.2 Electrical services shall be detailed by services engineer to the ESB requirements and specification.

5.3 Gas supply services shall be detailed by services engineer to the specification and requirements of An Bord Gas.

5.4 The office building will have a supply / return air system ducted from the plant area at high level in the warehouse. The office building will be heated by perimeter low level radiators, and the boiler will be enclosed in a separate plant room above the fire escape stairs at high level in the warehouse.

There will be a mechanical ventilation system for the wc. areas installed in accordance with services engineers instructions.

5.5 Water shall be obtained from the Local Authority mains and connected to water tanks at high level in the warehouse in accordance with engineers instructions.

6.0 SITE WORKS:

6.1 The building is placed in the centre of the site over 20 metres from the boundary with the new Western Parkway Road.

There are two vehicle access roads spuring from one entrance to the site. These roads will be black tarmacadam with precast concrete kerbs. There are also two "Grass-crete" type concrete porous paved areas to allow Fire Brigade access in accordance with the proposed building regulations. There are two low brick walls at perimeter of the loading bay area, these will be of purple engineering brick with a bullnose brick coping to match the plinth of the warehouse.

6.2 Landscaping

The site boundaries to the adjoining buildings and the Western Parkway will be bermed up and densly planted to form screening to the site. There will be areas within the site which will be planted with selected shrubs and trees as indicated on the landscaping drawings. The open areas of site will be grassed. The landscaping has been designed to co-ordinate with the approved landscaping scheme for the remainder of the Industrial Park.

SPECIFICATION

FOR

DRAINAGE, ROADS AND WATER SUPPLY

FOR

MITSUBISHI ELECTRIC
OFFICES AND WAREHOUSE

AT

WESTGATE BUSINESS PARK
BALLMOUNT NAAS ROAD
CO. DUBLIN

D 787

APRIL 1991

OVE ARUP & PARTNERS IRELAND
10 Wellington Road
DUBLIN 4

SPECIFICATION FOR DRAINAGE, ROADS AND WATER SUPPLY

GENERAL OBLIGATIONS

1.1 Execution of Works

The whole of the Works shall be executed in the manner specified and to the dimensions and in accordance with the particulars shown on the drawings or given in the Bill of Quantities. The Contractor shall be paid only for the work executed to the satisfaction of the Engineer. The Works shall be executed and maintained in the most approved and workmanlike manner, by workmen skilled in the various trades and callings required for carrying out and maintaining the Works. All materials which are used in connection with the Works shall be of the best quality of their respective kinds. All plant employed on the Works shall be to the approval of the Engineer.

1.2 Provision of Labour, Materials, etc

The Contractor shall at all times provide sufficient and adequate numbers of skilled men and labourers to carry out and maintain each and every part of the Works in a proper and expeditious manner, and shall provide all materials, tools, equipment, plant and everything necessary for the proper execution, completion and maintenance of the Works.

1.3 Contractor's Offices

The Contractor shall provide and maintain all such general and foreman's offices and huts as are necessary for the execution of the Works, and the siting of all such offices and huts shall be subject to the approval of the Engineer.

1.4 Sheds, Stores and Shelters

The Contractor shall provide and maintain all such sheds, stores and proper sanitary accommodation as are necessary for execution of the Works, and their siting shall be subject to the approval of the Engineer. The Contractor shall also provide and maintain approved portable shelters near all working points for the protection of his workmen.

1.7 Protection of Existing Services

The Contractor shall be entirely responsible for locating the positions of all services, including mains, cables, pipes, sewers and drains, and shall allow in his rates for excavation for carrying out excavation in roads, and elsewhere where services are encountered, by hand digging so as to ensure that no damage is caused to services.

The Contractor shall make good, at his own expense any damage whatsoever to existing services to the complete satisfaction of and in accordance with the instructions of the Statutory Authority concerned, and shall keep the Employer indemnified at all times from claims in connection with the damage. All services which are encountered in the course of excavation shall be adequately supported and protected from injury to the satisfaction of the Statutory Authority or person in whom they may be vested. Allowance must be made in the excavation rates for the cost of providing such support and protection. Existing sewers and drains shall not be used for the discharging of ground water without the written consent of the Engineer. No drain or pipe of any description shall be disturbed until it has been inspected by the Engineer.

1.8 Protection of Works

The Contractor shall carefully cover up or otherwise protect all work liable to injury from the weather, stormwater, or any other cause during construction.

The Contractor shall allow for any contingencies or extra temporary works which may be necessitated by adverse site conditions or which may be required by the Engineer for the protection of the Works.

1.10 Working Area and Access to Site

The Contractor shall obtain the Engineer's prior written consent to the use of any land for a central mixing plant for concrete. On completion of the Contract, or before if required by the Engineer, the plant shall be removed and all damage to the land made good, including provision of topsoil if necessary, at the Contractor's expense. The Contractor will not be allowed to use adjacent hard surfaces, whether new or existing, for the repair and maintenance of vehicles and plant. If required proper facilities must be provided for this by the provision of a concrete area within the Contractor's compound with a concrete access drive to the nearest hard road. The Contractor shall, after carrying out the Works, reinstate all land defined as the 'Working Area' to the satisfaction of the Engineer. This Clause shall include any necessary soiling and seeding of the working area.

1.13 Temporary Works

The Contractor shall provide and maintain temporary traffic ramps, bridges, roadways, sleeper tracks, stagings, etc, which may be required but which are not itemised specifically in the Bill of Quantities.

1.14 Statutory Undertakers

The Contractor shall grant facilities during the currency of the Contract to Statutory Undertakers for the purpose of laying new mains and services or adjusting existing equipment. The Contractor must ensure himself that all Statutory Authorities have completed their work before any permanent surfacing material is laid.

1.15 Soiling of Highways

The Contractor shall remove and cart away any mud, debris or spoil deposited on the highways immediately adjacent to or approaching the Works.

1.16 Suppression of Noise

The Contractor shall have due regard at all times for the need to reduce the noise level of plant to a minimum. This is particularly necessary where work is carried out in close proximity to hospitals, schools, housing and office development. Compressors and all other plant which is likely to constitute a nuisance or cause distress must be fitted with efficient silencing devices.

1.17 Order of Works

The Contractor shall, within two weeks of the date of the official order to commence the Works, submit to the Engineer, for his approval, a detailed programme setting out the stages and order in which he proposes to carry out and complete the Works within the prescribed time for completion, and phased in accordance with the requirements of the Employer.

1.18 Payment for Works

All items which are included in the 'General Obligations' section of this Specification and not specifically mentioned for payment in the Bill of Quantities shall be deemed to have been allowed for by the Contractor in his rates in the Bills of Quantities.

MATERIALS

This Section must be read in conjunction with relevant Civil Drawings where additional information relevant to the forms of construction to be used under this Contract is given.

2.1 Irish and British Standard Quality

All materials used in the Contract shall be in accordance with the latest relevant Irish Standard. Where no Irish Standard exists, the latest relevant edition of the British Standard should be used. Whenever possible materials shall be obtained from manufacturers licensed to use the Irish Standards Mark.

2.2. Submission of Samples

As soon as possible after the official order to commence the Contract has been received the Contractor shall submit to the Engineer a list of the suppliers from whom he proposes to purchase the materials necessary for the execution of the Works. Each supplier must be willing to admit the Engineer or his representative to his premises during ordinary working hours for the purpose of obtaining samples of the materials in question. Alternatively if desired by the Engineer, the Contractor shall deliver to the Engineer's Site Office, without charge, and at least ten days in advance of use, samples of the materials. Aggregate samples shall be taken and tested in accordance with the provisions of BS 812. No source of supply shall be changed without the written authority of the Engineer.

2.4 Cast Iron/Spun Iron Pipes and Fittings

All pipes and fittings shall comply with the latest Irish and British Standard as follows :

Grey Iron and Ductile Iron Pipe Fittings, I.S. 262. Part 1 and Part 2
Ductile Iron Pipes and Fittings to BS 4772.
Iron Spigot and Sockets Pipes and Fittings to BS 78 : Part 2.
Fugally Cast (Spun) Iron Pressure Pipes to BS 1211.
Iron Spigot and Socket Drain Pipes to BS 437.
For use with Drain Pipes to BS 437 and 6087.
Cast Iron Flanged Pipes and Fittings to BS 2035.
Spigot and Socket Pipes to BS 78 and BS 1211 shall be supplied with an approved type of flexible joint.

2.5 Concrete Pipes and Specials

Concrete pipes shall be spun and of approved manufacture and design conforming to the requirements of IS 6, IS 166 or BS 5911. The cement used in their manufacture shall be ordinary or rapid- hardening Portland Cement. Samples of the aggregate used in the manufacture and certificates of the date of manufacture shall be submitted to the Engineer when so required.

Where ordered or contained in the Bill of Quantities concrete pipes shall be spigot and socket with flexible joints of make and type approved by the Engineer.

2.6 Vitrified Clay Pipes and Fittings

Vitrified clay pipes and fittings shall comply with IS 106 or BS 65 and shall bear the marks detailed in the standard for the appropriate type and class of article. Unless otherwise stated in the Bill of Quantities or elsewhere, testing of pipes shall only be that laid down in the British Standard to cover the manufacturer's normal responsibilities. For work in foul sewers or elsewhere if required, ten per cent of the articles supplied shall be subject to a Hydraulic Proof Test as laid down in the British Standard.

Where Extra Strength pipes are required they shall comply with Table 3 and Table 4 for the appropriate size of pipe. In every case where Extra Strength pipes and fittings are required, the testing arrangements laid down shall be carried out. All pipes and fittings shall be of the spigot and socket or sleeve type, with flexible joints of a type approved by the Engineer and shall be made and jointed in accordance with the manufacturer's instructions.

2.9 Block Manholes

Blocks shall be solid building blocks to IS 20 : 1964 with average compressive strength of 700 lbs/in^2.

Blockwork shall be laid 225 thick in stretching bond with all joints filled solidly in (1 : 3) cement mortar and neatly flush pointed internally as the work proceeds. Joints shall not exceed 10 mm in thickness and no liquid grouting of the joints will be permitted. The whole of the blockwork shall be set level, straight and carefully plumbed.

Pipes up to and including 150 diameter to be arched over in blockwork. Pipes over 150 diameter to be protected by a reinforced concrete lintel extending the full length of the wall in which the pipe occurs. Lintels to be reinforced with 4 No. 12 MS bars and 6 MS links at 225 c/c. Foul manholes should be rendered internally and externally in (1 : 3) cement mortar 25 thick and finished with a steel trowel. Surface Water manholes should be rendered externally only.

2.10 Manhole Covers and Frames

Manhole covers and frames shall be Ductile Iron and shall comply with the requirements of IS 261, 1984 or BS 497 1976.

Covers to be sited in and adjacent to roadways to be Grade A and in all other locations Grade B.

2.11 Ladder Rungs

Ladder rungs shall be 25 mm mild steel, heavily galvanised after manufacture and shall be to the dimensions set out on the drainage detail drawing.

2.12 Road Gullies

Precast concrete gullies shall comply with the requirements of BS 556, trapped with capped rodding eye, 375 mm diameter and 750 mm deep. Gullies shall be set on a 150 mm bed and surrounded with a minimum of 150 mm Grade 20 Concrete. All gulley pots to have 150 diameter concrete spigot pipe outlets.

Gulley frames shall be set on at least one course of brickwork to finish with the top of the slope at not more than 5 mm below finished road surface. No brick packing shall extend in height for more than three brick courses.

Gulley cover and frame shall be a heavy duty straight bar gully grating in cast iron and with a cast iron frame to IS 261 : 1984 or BS 497.

2.13 Inspection Chambers, Gulley Traps etc.

Armstrong Junctions, raising pieces, gully traps etc. shall be in clayware to BS 65. Covers and frames, gratings etc. to be cast iron coated in bitumastic paint or galvanised mild steel subject to Engineers approval. All gulley traps to have screwed down hinged gratings/frames.

2.15 Granular Bed and Surround for Sewers

Unless otherwise specified, the material for granular bedding shall be coarse graded aggregate between 5mm and 20mm size complying with BS 882 and obtained from an approved source.

2.16 Cement

Ordinary Portland and Rapid Hardening Portland cement shall comply with the requirements of IS 1 or BS 12. Sulphate Resisting cement shall comply with BS 4027. Except where otherwise ordered by the Engineer, ordinary Portland cement shall be used. Cement delivered to the site in bags shall be in consignments of not less than one tonne, in sound and properly secured original sealed bags of the manufacturer. It shall be stored in dry weatherproof sheds having raised wooded floors and free from condensation. Cement delivered to the site in bulk shall be stored in approved bins which shall be weather-proof, free from condensation and any other defects likely to cause air-setting or other forms of deterioration.

Cement shall be delivered in quantities sufficient to ensure that there is no suspension or interruption of the work of concreting and each consignment shall be kept separate and distinct. Any cement that shall have become injuriously affected by damp or other cause shall be removed from the site by the Contractor and replaced.

2.17 Hydrated Lime

Hydrated lime shall comply with the requirements of I.S. 8 or BS 890.

2.18 Cement Mortar

Cement mortar shall consist of Portland Cement and natural sand. The constituent materials shall be accurately gauged and mixed in an approved manner in proportion by volume as follows:-

For brickwork and pipe joints	1:3 cement/sand
For rendering	1:3 cement/sand

2.19 Cement/Lime Mortar

Cement-lime mortar shall consist of Portland cement, hydrated lime and natural sand in the proportion of 1:1:6 by volume.

2.21 Sand for Mortar

Sand used for mortar shall comply with the requirements of BS 1200 and the grading shall be to Table 1.

2.22 Aggregates for Concrete

Aggregates for concrete shall consist of natural sand and rounded natural gravel and shall comply with the requirements of I.S. 5 or BS 882. Coarse and fine aggregates shall comply with Tables 4 and 5 and all-in aggregates with Table 6. Tests for the determination of impurities in the sand shall be made when required by the Engineer.

All aggregates shall be kept free from contact with deleterious matter and shall have been deposited on site not less than 24 hours before batching. Aggregates of different sizes shall be stored in separate stacks or hoppers clearly marked with the size contained therein. All aggregates shall be stored in such manner as will ensure effective and thorough drainage of each grade of aggregate. Aggregates shall not be deposited nearer than 6m to any carriageway. When granite is required as the coarse aggregate for concrete it shall comply with I.S.5 or BS 882 and shall consist of crushed granite graded in accordance with Table 4 of the Standard.

2.23 Water

Only fresh, clean water supplied by a Public Utility Company shall be used for the mixing of concrete, mortar or grout. Under no circumstances shall water from rivers, streams, sumps, ditches, etc, be utilised for this purpose. The Contractor shall provide all fittings, pipe lines, water carts, and equipment necessary for supplying water to the Works.

2.24 Ready-Mixed Concrete

Ready-mixed concrete shall not be used on the Works except with the prior permission of the Engineer. Application for such permission, must include the following information :-

a) Name and address of supplier and location of mixing plant.
b) Details of plant and facilities.
c) Details of method of delivery.
d) Source of aggregates.
e) Distance of mixing plant from site.

Ready-mixed concrete shall generally be in accordance with I.S. 194 or BS 5328.

The normal clauses and requirements of this Specification shall apply to ready-mixed concrete just as to concrete mixed on the Site.

If permission to use ready-mixed concrete is granted, the Contractor shall arrange :-

a) with the supplier for samples of aggregates and sample loads of each mix to be delivered to the site for examination and testing
b) for inspections, checks and tests by the Engineer at the mixing plant or on the site at any time during the period of the Contract
c) for meeting all costs, including transport, provision of apparatus, etc., in connection with the inspections, checks or tests.

With every load of concrete brought to the site there shall be a delivery note containing the following information :-

a) Date.
b) Time of loading concrete into vehicle.
c) Time of leaving mixing plant.
d) Mix of concrete.
e) Quantity of water added.
f) Time of adding water if different from (b).

The Contractor shall cause to be added by his representative receiving the deliver :-

a) Time of delivery.
b) Time load is finally placed in position.
c) Position placed.

The delivery notes shall be handed to the Engineer for his retention at the end of each day's work.

2.25 Hardcore

Hardcore shall consist only of broken bricks, hard stone or concrete, free from dust, loam, wood, rubbish or organic materials. All pieces shall be greater than 75mm and less than 225mm in any one direction.

Hardcore having a polished or rounded form or containing laminated or soft stone is not approved.

2.26 Clause 803, Type A Granular Material

This material shall comprise those permitted for Type B material with the addition of natural sands and gravels and shall be within the following grading limits :-

BS Sieve Size	%age by wt passing
75mm	100
38mm	85 - 100
10mm	45 - 100
5mm	25 - 85
600 micron	8 - 45
75 micron	0 - 10

All other requirements shall be as for Type B material.

2.27 Clause 804, Type B Granular Material

This material shall comprise crushed rock, crushed slag, crushed concrete or well-burnt non-plastic shale within the following grading limits:-

BS Sieve Size	%age by wt passing
75mm	100
38mm	85 - 100
10mm	40 - 70
5mm	25 - 45
600 micron	8 - 22
75 micron	0 - 10

Testing shall be in accordance with the requirements of BS 1377 Test 7A except for shale when Test 7B will be acceptable, and all material used within 450mm of the surface of the road shall be frost resistant as defined by the Standard Test specified in Transport and Road Research Laboratory Report No.LR90.

2.28 Waterproof Underlay

Underlay shall be waterproof building paper with fibrous reinforcement conforming to the general requirements for building paper and the particular requirements for Class B1F paper for temporary purposes laid down in BS 1521.

Alternatively approved 500 Grade impermeable plastic sheeting may be used.

2.29 Side Forms for Concrete Slabs

Side forms shall be of steel construction. Curved or flexible forms shall be used for all curves of 60m radius or less. Flange braces shall extend out and on the base not less than two thirds the height of the form. All forms used shall be free from warps, twists and kinks and shall be true to line and level within a tolerance of 3mm in 3m and shall be so maintained throughout the work.

2.30 Steel Reinforcement for Road Slabs

Reinforcement for concrete road slabs shall be hard drawn steel wire welded mesh complying with BS 4483. All steel reinforcement shall be free from loose rust, mill scale or other substances which might prevent proper adhesion to the concrete.

2.31 Dowel Bars and Tie Bars

Mild steel dowel bars and tie bars shall comply with the requirements of BS 4449 and shall be free from oil, paint, dirt, loose rust and scale.

Dowel bars for transverse expansion and contraction joints shall be straight, and free from burred edges or other irregularities which might restrict the free movement of the steel in the concrete.

2.32 Preformed Joint Filler

The joint filling material shall be premoulded, 25mm thick and of width equal to the thickness of the concrete slab plus 13mm. It shall be non-extruding and capable of adjusting itself to the changing width of the joints.

2.33 Joint Sealing Compound

Joints shall be sealed with a hot-poured, ductile, rubber/bitumen material which shall adhere readily to the concrete and to the preformed filler. It shall not be excessively soft or tacky at a temperature of 50C nor brittle at a temperature of 0C, and shall comply generally with the requirements of BS 2499 using Grades A1 or A2 as appropriate in accordance with the recommendations contained therein. Sealing compound shall be 'Expandite' high duty sealing compound fixed in accordance with the manufacturer's instructions.

2.35 Flexible Surfacing (Carriageways)

The specification for the flexible surfacing to be used in the Contract is detailed in Drawings. Generally the materials used and the method of laying shall conform to the requirements of the relevant BS as follows:-

Rolled Asphalt	BS 594
Dense Tarmacadam)	
Medium Textured Tarmacadam)	
Dense Bitumen Macadam)	BS 4987
Open Textured Bitumen Macadam)	
Cold Asphalt)	

2.37 Precast. Concrete Kerbs, Quadrants, Channels and Edging

The units shall be hydraulically pressed and the aggregate used shall comply with the requirements of IS 146 or BS 340. Purpose-made radius kerbs and channels shall be used for all radii of 12m or less. When kerb lines are required to be laid to radii of between 12 and 30m straight kerbs each 0.6m long shall be used. Proper ramped and crossing kerbs are to be used at vehicular crossings.

2.47 Unplasticised PVC Pipes

Unplasticised PVC pipes complying with the "Provisional Specification for Soil pipes, Drains, Sewers and Fittings made of unplasticised PVC", issued by the Department of the Environment or complying with BS 4660 and BS 5481 and BS 5955. Recommendations for the handling and installation of uPVC Drains and Sewers to SR 7 1981.

2.48 In-Situ Concrete Manholes

Manholes shall be constructed in Grade 30 concrete in accordance with the details and to the positions shown on the drawings or as directed by the engineer.

WORKMANSHIP

SETTING OUT AND SITE CLEARANCE

3.1 Setting Out

The Contractor shall set out the whole of the Works and shall be responsible for establishing and maintaining them correctly in accordance with the Contract Drawings or with such further drawings as may be supplied or directions that may be received from the Engineer.

Any work carried out incorrectly shall be taken out and replaced to the satisfaction of the Engineer and at the Contractor's expense.

3.2 Clearing Site

The Contractor shall remove buildings, walls, gates, fences, advertisements and other structures and obstructions, grub up and remove hedges, bushes and shrubs and clear the site of the Works at such time and only to the extent required by the Engineer. The material so obtained shall, so far as suitable be reserved and stacked for further use; all rubbish and material unsuitable for use, in the opinion of the Engineer, shall be removed from the site by the Contractor.

ROADWORKS

3.5 Extent of Excavation

Excavation for roads and drains shall be carried out to such length and area as may be considered desirable by the Engineer. Any ground which is excavated to a greater depth than is required due to an error on the part of the Contractor shall be filled with approved material to the correct level. If, in the opinion of the Engineer, the bottom of the excavation does not provide a satisfactory bearing the Contractor shall excavate to such extra depth and fill with such material as the Engineer may order to the required levels.

3.6 Excavation for Road Structures

Excavation to formation for carriageways, verges and pavings, shall be to the lines, levels and contours shown on the Drawings, and shall be to such depth below finished road or paving level as is required according to the specified thickness of the road structures. All excavated material shall be removed and deposited in embankments or otherwise as directed and any surplus taken to tip. When completed the formation shall be at the required level and parallel to the required finished surface of the road.

3.7 Filling to Road Structures

Material for use as filling under roads, footways, verges and in hollows shall consist of selected excavated or imported material approved by the Engineer. It shall be deposited and compacted in layers not exceeding 300mm deep in the loose and the moisture content of each layer shall be adjusted to the satisfaction of the Engineer either by watering through a rose or allowing to dry out as the case may be. Each separate layer shall be thoroughly compacted by continuous rolling with a smooth wheel roller of eight to ten tonnes weight. Where the material consists of hard dry clay, a towed smooth pneumatic rubber-tyred roller exceeding ten tons in weight shall be used with a minimum of eight passes. The wheels of the rubber-tyred roller must be able to move with the vertical profile of the ground. Where the clay is wet a smooth wheeled roller of the former type is to be used. Inaccessible areas shall be thoroughly compacted by power-operated rammers of weight and type approved by the Engineer.

3.8 Trimming of Formation of Carriageway

Immediately prior to the laying of the sub-base material, the formation of the carriageway shall be trimmed and adjusted true to the required finished levels, including rolling with one pass of an eight to ten ton smooth-wheeled roller if considered necessary by the Engineer, whose approval to the preparation work must in any case be obtained before each layer of material is placed. The true formation of the carriageway shall not be run over by works traffic, nor shall it be allowed to weather, but shall be covered with the sub-base material immediately the formation is approved. The formation of the carriageway shall when tested with a 3m straight edge have no depression greater than 25mm.

3.9 Cold Weather Working

No material in frozen condition shall be incorporated in the Works neither shall material for use in road pavements be laid on any surface which is frozen or covered with ice.

3.10 Use of Surfaces for Construction Traffic

Construction traffic used on pavements under construction shall be suitable in relation to the thickness of the courses it traverses in order that damage is not caused to the sub-grade or the material already constructed.

3.11 Sub-Base to Carriageway

The first layer to be laid on the formation will be the sub-base as shown on the Drawings. The material shall be uniformly spread and not tipped in heaps, and consolidated by a smooth wheeled roller of 8 to 10 tonnes weight to the required levels and to the specified minimum consolidated thickness. If any clay or mud work through to the surface the affected areas shall be cut out as directed by the Engineer and replaced with fresh material as specified.

The finished surface of the sub-base shall when tested with a 3m straight edge have no depression greater than 20mm.

Where any completed area of sub-base is not immediately covered with the next construction layer, it shall be protected by a membrane of 500 Grade plastic sheeting with 300mm laps set to prohibit ingress of moisture. Alternatively a bituminous emulsion may be used as specified in BS 434 : Part 2, Recommendation No.9.

3.12 Compaction

Compaction of formation and/or sub-base shall be carried out to Clause 802 table 8/1 of the Specification for Roadworks D.O.E. All soft areas which develop during compaction shall be removed and replaced with approved materials and compacted in layers not exceeding 225 mm in depth.

3.13 Concrete Mix Design

Mixes for the Classes of concrete shown in the following Table shall be designed by the Contractor:-

Concrete Grade	Maximum Aggregate Size mm	Cement Content kg/m	Min.28 day Compressive Strength	
			Prelim.Test N/mm²	Works Test N/mm²
35	20	360	45	35
30	20	290	40	30
20	40	240	30	20

The cement content in any mix shall not exceed 530 kg/m of concrete. The quantity of water used shall not exceed that required to produce a concrete with sufficient workability to be placed and compacted where required. The Contractor shall make laboratory trial mixes using the aggregate proposed for the work. The trial mixes shall be made in the presence of the Engineer or his representative and shall be repeated until the proportions necessary to produce a concrete complying in all respects with the requirements of the Specification have been determined. These proportions shall be adjusted as work proceeds if it is shown that the mix is unrepresentative of the concrete produced by the mixing machinery or if the concrete is incapable of being placed and compacted by the machinery being used.

When additives are specified or approved for concrete these shall be included in the mix for the assessment of all cube strengths.

3.15 Concrete Mixing

Concrete shall be mixed in approved machines equipped with means whereby the quantity of water added to each batch of concrete may be accurately controlled. The mixer drum shall be turned a sufficient number of times to mix the materials dry and a minimum mixing time of one minute shall be allowed after the water is added. The entire contents of the drum shall be discharged before any materials for the succeeding mix are placed therein. Only such quantities of concrete as are required for immediate use shall be mixed at any time. All concrete to be placed shall be in such a condition that it is capable of being fully compacted. Any concrete which has not been compacted into its final position within 2 hours shall be replaced by fresh concrete.

Any condemned concrete shall be removed from the site or disposed of as directed.

Concrete shall at all times be kept free from deleterious matter and shall not be placed directly on the ground before placing into its final position. Metal or timber sheeting of adequate area shall be used for this purpose and the surface shall be wetted and brushed clean of all surplus concrete once in every hour during use and at the end of each period of work.

Under no circumstances shall concrete mixers be sited on completed carriageways, nor shall any aggregates or other materials be deposited on or within the limits of the proposed highway. The discharge of cement slurry, or washings from mixers, over a completed carriageway, or into adjacent drains, sewers or gullies is forbidden.

3.16 Placing and Compaction of Concrete

No concreting shall be carried out neither shall mortar or grout be used in a descending air temperature in the shade of 3C nor shall such materials be used until the rising air temperature in the shade reaches 3C. No concrete shall be dropped into any part of the Works from a height greater than 2.0m. It shall be lowered in skips or by other means approved by the Engineer. Concrete shall be adequately compacted by ramming, tamping or vibration as may be particularly specified for each part of the Works to ensure that the finished concrete is as dense as possible and free from voids, tightly packed around reinforcement and has a close-knit surface free from laitance and froth.

3.17 Cube Tests for Grade 35 and Grade 30 Concrete

During the progress of concreting 150mm cubes shall be made, cured and tested all in accordance with BS 1881.

3.18 Testing of Grade 20 Concrete

The testing requirements for this Class of concrete shall be as for Classes 35 and 30 except that the frequency of testing shall be at the discretion of the Engineer. It is intended here that cubes shall be taken at any time according to the purpose for which this Class of concrete is being used, but in any case sufficiently frequent to ensure consistency in quality and strength with that of the trial mix.

3.23 Waterproof Underlay

Immediately before any pavement quality concrete in the carriageway is placed, waterproof building paper shall be laid on the sub-base over the entire area of the bay, care being taken that the paper is not torn or damaged when the concrete is placed thereon. The paper shall be lapped at least 300mm and any damaged paper shall be replaced immediately. Approved 500 Grade impermeable plastic sheeting may be used in lieu of waterproof paper.

3.24 Loading Bay Concrete Slabs

The concrete shall be uniformly spread and levelled and be compacted by means of an approved type of power-operated vibrating unit mounted on the tamping beam. The surface level of the concrete shall be made up to such extent as is required during the course of compaction and the vibrating beam applied for such length of time as will produce a concrete of maximum density throughout the entire area and thickness of the slab, without producing segregation of the fine and coarse ingredients of the concrete. Special care shall be taken to ensure that the edges and corners of the slab are completely compacted.

The slabs shall be laid by the 'alternate bay' method of construction. No formwork shall be struck and no tamping off newly-laid bays shall be done until the Engineer has given his approval thereto. A 75mm wide thin strip of steel shall be laid along the edge of the adjacent concrete for its protection during tamping.

The surface of the concrete shall be finished true to level and contour. A finish with a slight degree of roughness is required, but the surface must be close knit and uniform. Surface irregularities as revealed by a 3m straight edge shall not exceed 6mm.

Concrete carriageways exceeding 5m in width shall be laid with a central longitudinal joint to Clause 3.27 otherwise the slabs shall be constructed in one unit to the full width of the carriageway.

Openings 150mm larger than the overall size of the manhole including 150mm concrete surround, shall be left in the concrete slabs for manhole covers. These openings shall be concreted after the frames have been set and shall be separated from the main slab by an undowelled expansion joint. Openings of the relevant size and to the same specification shall be left for gully frames. The curing of concrete carriageway slabs shall be carried out by means of an approved proprietary brand of spray to manufacturer's instructions except in times of frost when the following procedure shall be adopted.

Immediately the compaction of the concrete has been completed a shield of approved waterproof material shall be provided mounted on a light framework so as not to touch the concrete surface. The shield shall extend for a distance sufficient to ensure that the whole of the newly laid concrete is adequately protected and shall remain in position for 24 hours.

Immediately after the removal of the protective shield a blanket of waterproof paper being a 'Sisalkraft' curing blanket or other approved material, shall be laid over the slab and remain in position for a period of at least 14 days. No traffic shall be allowed on the concrete carriageway within 14 days of its completion (or 7 days if rapid hardening cement is used) unless the Engineer should agree to reduce the period.

3.25 Reinforcement in Loading Bay Slabs

Reinforcement shall lap at least one complete mesh, and be wired at laps and shall be maintained in its correct position whilst concreting is in progress. The reinforcement shall be placed in the position equivalent to the upper third point in the slab thickness subject to a minimum cover of 60mm and terminate no more than 80mm and no less than 40mm short of the edges of the slabs.

At the time of placing reinforcement shall be free from rust or coatings of any character which would tend to destroy the bond between the steel and the concrete and shall be inspected and passed by the Engineer before it is covered with concrete.

3.26 Expansion Joint in Slabs

Expansion joints in concrete carriageways shall be vertical joints in slabs, filled with premoulded material as specified extending from the bottom of the slab to 13.0mm above the finished surface. The arrises of the concrete shall be neatly rounded to a radius of 13.0mm. Before it is placed, the premoulded filling material shall be scored along its length 38mm from the top edge and be neatly and accurately holed for dowel bars. Where the carriageway is constructed with a central butt joint, the expansion joints on each side of the central joint shall be in line.

Mild Steel dowel bars shall be provided and placed centrally in the thickness of the slab, in true alignment square with the line of the joint and parallel to the surface of the slab. Each bar shall extend equally either side of the centre line of the joint and on one side of the latter the bar shall be bonded in the concrete whilst on the other side it shall be tightly wrapped with tarred paper or painted with bitumen and provided with a suitable cap containing compressible material to permit the bar to slide in the slab.

At a later stage, when ordered by the Engineer, the top portion of the expansion joint material shall be neatly cut out to a uniform depth 25mm below the surface of the slab and the groove thus formed shall be cleaned out with a wire brush and filled with the specified sealing compound in accordance with the construction details.

3.27 Contraction Joints in Slabs

Contraction joints shall be similar to longitudinal joints in construction except that the dowel bar spacing is as specified for expansion joints. The dowel bars shall be firmly bonded to the finished slab for half their length, the remaining half length being painted with bitumen at the same time as the painting of the vertical face of the finished slab is carried out. A 20mm groove shall be formed in the surface of the concrete centrally over the contraction joint extending to a depth of 25mm. This groove shall be maintained in a clean condition free from all hard gravel or rock particles until the curing of the adjacent concrete slabs has been completed. The groove shall then be filled with bituminous sealing compound.

3.28 Longitudinal Joints in Slabs

Longitudinal joints in carriageways shall be butt joints formed vertically through the slab thickness with 13mm radius arrises. The face of the finished slab shall be painted with bitumen prior to the concreting of the adjacent slab. A 13mm groove 25mm deep shall be formed and filled with joint sealing compound. Tie bars shall be 20mm diameter and 1m long spaced at 400mm centres and their position and alignment shall be as for Expansion Joints.

3.29 Forms for Concrete Slabs

Forms shall be of steel and shall be of depth equal to or greater than the thickness of the slab. The forms shall be of approved section and construction and shall be perfectly straight or suitably curved to comply with the requirements of Clause 2.32, have a broad base and be of sufficient stiffness to withstand, without displacement or distortion, the passage of the compacting plant. They shall be provided with an efficient locking device to ensure continuity of line and level through joints with steel pins to hold them in position. The forms shall be set true to line and level and shall be supported on thoroughly compacted material for their entire length. They shall be inspected for alignment before concreting commences and forms varying by more than the specified carriageway tolerance shall be taken up and reset. Packing up forms with pieces of slate, etc, shall not be permitted. Forms for Carriageway Slabs

3.31 Laying of Flexible Surfacing to Roads and Car Parks

Work involving the use of tar or bitumen or any combination thereof shall not be continued if the temperature of the surface to be covered is at or falls below 2C. Nor shall it be resumed until the temperature of the surface to be covered is at or rising above 1C. If the surface to be covered is cleaned by the use of water the surface must be allowed to dry before any surfacing material is laid. Immediately prior to the laying of flexible surfacing the Contractor shall clean the surface of the base to remove all foreign matter and the surface must be inspected by the Engineer before proceeding with the laying of the flexible material. All gully ramps are removed at this stage. (See Clause 3.66).

The surfacing shall be spread by an approved mechanical paver and consolidated to the required thickness by a roller of not less than eight tonnes weight.

The material shall be rolled in a longitudinal direction from the sides to the centre of the carriageway, overlapping on successive passes by at least half the width of the rear roll. Rollers shall not stand on newly laid material while there is a risk that the material will be deformed thereby.

Where the laying of the wearing course is included in the same contract, it shall immediately follow the laying of the base course, but no wearing course shall be laid on any section of the road until the Engineer is satisfied that the base course is laid to his satisfaction.

In areas where, due to difficulties of access, compaction is not possible by roller such areas shall be thoroughly punned until the same degree of compaction is achieved. Where precoated chippings are to be rolled into the wearing course all drainage channels adjacent to kerbs shall be kept free of chippings for a width of 300mm. Over the remainder of the carriageway the minimum texture depth of the chippings shall be 3mm. The level of any point on the surface of each of the pavement courses shall conform to that shown on the drawings and shall when tested with a 3m straight edge have no depression greater than 10mm.

Where joints between laying widths, or transverse joints have to be made in wearing courses they shall be cut back to a vertical face which shall be coated completely with a grade of hot tar or hot bitumen suitable for the purpose immediately before the adjacent area is laid. In two stage construction where basecourse only is required as a first stage the basecourse shall be treated as a wearing course for the purposes of joint treatment. All joints shall be offset at least 300mm from parallel joints in the layer beneath.

If required by the Contract, the surface of the wearing course shall be blinded with bituminous sealing grit spread at the rate of 210m² to 250m² to the tonne and this shall be lightly rolled in. All surplus grit shall be removed on completion. The sealing grit must be applied on the same day as the wearing course is laid and, where the application of the wearing course is to be delayed for more than a week, in two-course construction, the base-course must also be sealed to the same specification.

3.32 Tolerances

The surface level of each layer of construction and of the prepared formation shall not deviate vertically at any point from the true level by more than the permitted tolerances indicated below:-

Finished Surface Concrete	± 7mm
Flexible	± 10mm
Basecourse	± 10mm
Base	± 12mm
Sub-Base	± 20mm
Formation	± 25mm

In the case of flexible surfacing, the wearing course on completion of construction is permitted to be 10mm high or low except, where the application of the latter in combination with the basecourse upper limit would result in a reduction of the specified thickness of the wearing course greater than 15%.

3.33 Kerb Foundations

The precast concrete kerbs shall be laid as the placing of the concrete foundation proceeds. The Grade 20 concrete shall be of a stiffer mix with a lower water/cement ratio. The ratio shall be at the discretion of the Engineer but shall normally be in the region of 0.35. The concrete foundation shall be placed over a minimum width of 300mm and to an initial thickness of 200mm in order that the foundation may be consolidated to the required minimum thickness of 150mm by the laying of the kerbs themselves. The actual uncompacted thickness may have to be adjusted in the light of experience as work proceeds. The kerbs must be laid on the foundation before the concrete's initial set has taken place but in any case no later than 30 minutes after the concrete has been placed. Protection from weather shall be provided by a shield of plastic sheeting, supported so as not to touch the concrete surface, until the kerbs are backed with 150mm concrete haunching as described in Clause 3.33.

3.34 Laying of Kerb

The kerb shall be laid to a true alignment vertically and horizontally and be full bedded. After the kerb line has been approved by the Engineer the kerbs shall be haunched immediately with 150mm thickness of Grade 20 concrete to within 50mm of the top of the kerb. Purpose made radius kerbs shall be used for all curves of radius 12m or less. Straight kerbs of length 600mm shall be used for curves of radius exceeding 12m and straight kerbs of length 1m for curves of radius exceeding 30m and for all straight runs. The height of the kerbs above finished road surface shall be 125mm, 150mm maximum.

The Contractor shall take precautions to prevent the dislodgement of kerbs by vehicular traffic and shall make good any damaged kerbs.

3.41 Trimming of Side Slopes

The side slopes of cuttings and embankments shall be trimmed to such inclinations as are shown on the drawings or to such other profile or slope as the Engineer may direct but not exceeding an inclination of 1 in 1½.

3.42 Soiling of Side Slopes, Berms and Verges

The soiling of embankments cuttings, etc, shall be carried out to a consolidated thickness of 150mm. Prior to placing topsoil the areas shall be cleared of all brickbats, rubbish, large stones and all extraneous matter. Where seeding or planting is to follow, the surface shall be raked and cross raked or harrowed and Cambridge rolled, and rolled and cross-rolled until a fine tilth is obtained.

DRAINAGE

3.46 Excavation for Drain Trenches and Manholes

Drain trench and manhole excavations shall be straight and true to the lines and levels shown on the Drawings. The sides shall be vertical and to the specified maximum width. The Contractor shall so arrange his excavation programme that the laying and bedding of pipes shall follow immediately.

Inverts of trenches shall be trimmed and shaped by hand to accurate lines and levels and shall be cleared of all boning pegs large stones and other hard objects. Where necessary joint holes shall be neatly cut and shall not be larger than is necessary for making the pipe joints.

Any trench which is excavated to a greater depth than is required, due to an error on the part of the Contractor, shall be filled to the correct level with lean mix concrete.

3.47 Timbering to Drain and Manhole Excavations

The sides of excavations shall be adequately supported by means of timber walings, struts and runners of sufficient number and dimensions to prevent the falling-in, movement or slipping of the ground, injury to workmen and damage to the Works or adjacent property. Steel sheeting may be used in lieu of timber runners subject to the approval of the Engineer. Where flexible type bedding is used, timbering or sheeting at or below the level of the bed shall be withdrawn immediately before the placing of the bedding material.

In the event of a slip occurring the specified maximum trench width shall be restored with lean concrete up to a height of 300mm above the crown of the pipe.

3.48 Excavations to be Kept Free of Water

The Contractor shall keep all excavations free of water during the course of the Contract.

3.49 Jointing of Pipes

Joints shall be made strictly in accordance with the manufacturer's instructions. The Contractor shall make use of the technical advisory services offered by manufacturers for instructing pipe jointers in the methods of assembling joints. Where manufacturers recommend the use of special jointing tackles, the Contractor shall use these for the assembly of all joints to pipes.

Before making any joints, all jointing surfaces shall be thoroughly cleaned and dried and maintained in such condition until the joints have been completely made or assembled.

Notwithstanding any flexibility provided in the pipe joints, pipes must be securely positioned to prevent avoidable movement during and after the making of the joint.

The space between the end of the spigot and the shoulder of the socket of flexibly jointed pipes when jointed shall be as recommended by the manufacturer or ordered by the Engineer.

Where loose collars are used to join pipes cut for closers, special tools shall be employed to keep the inside of the pipes flush and the collar concentric with the pipe while the joint is being made.

Joints in surface water drains shall be watertight where described in the Contract. Foul drains shall have watertight joints. Pipes of clay, concrete and asbestos cement shall be jointed with flexible joints according to the recommendations of the manufacturers of the pipes and joints. Clay pipes shall have joints that comply with B.S. 65 & 540 : Part 2.

3.50 Backfilling to Trenches and Manholes

Backfilling of trenches and to the sides of manholes shall be commenced immediately each length of drain trench has been tested and approved. Manholes shall be built up complete with covers for this purpose as work proceeds. The backfilling shall be undertaken immediately the specified operations preceding it have been completed. Layers not exceeding 225mm deep in the loose shall be rammed solid, each layer being separately compacted by power operated rammers of weight and type approved by the Engineer. Watering shall be carried out only at the discretion of the Engineer.

The Contractor shall be permitted to leave sheeting or timber in trenches only when the Engineer has given a written order to that effect.

3.51 Gravel Backfill to Trenches

Under carriageways and internal floors where additionally ordered trenches shall be backfilled with Clause 804 broken stone. The filling for the first 300mm shall be lowered into the trench in skips and be thoroughly hand punned. The remaining depth shall be filled with the material in 300mm layers each power rammed with a machine of an approved type to ensure maximum compaction for the full depth of the filling.

3.53 Concrete Bed, Haunching and Surround to Drains

Where shown on the Drawings or considered by the Engineer to be necessary, a Grade 20 concrete bed 150mm thick shall be provided over the full width of the trench (the timbering being withdrawn for this purpose) and, after the pipes have been jointed and tested they shall be haunched up or completely surrounded as required with concrete of the same mix. Haunching shall be carried up to the centre line of the pipes, the concrete shall completely fill the trench up to that level and shall have a minimum clear horizontal thickness of 150mm on each side of the pipe barrel. The haunching shall then be sloped up to the crown of the pipes.

Where pipes are laid with less than 1.20m cover under roads (except concrete roads) or 900mm when not under roads they shall have a concrete surround.

Pipes which are to be surrounded shall have a covering of concrete not less than 150mm thick. However the thickness of concrete may be reduced to 100mm for pipes less than 225mm diameter except where laid with less than 1.20m cover under roads or 900mm when not under roads.

Preformed joint filler shall be placed at pipe joints and shall extend through the full thickness of the concrete in contact with the pipe. Such joints shall not be more than 5m apart.

3.54 Laying of Pipes on Granular Bed

After the granular bed has been prepared the pipes shall be laid with the minimum disturbance to the bedding material. All adjustments to line and level must be made by adding or removing bedding material under the body of the pipe and not by wedging and blocking.

Flexible jointed pipes shall be used and the joints shall be well and carefully made in accordance with the manufacturer's instructions. Where the pipes are too large to be easily manhandled into position, a crane and jacking equipment must be used. During the jacking operation the pipe shall remain suspended from the crane. If necessary additional bedding material shall be used to prevent the pipe settling after the release of its weight.

3.55 Placing of Granular Bedding Material Stage 1

The trench floor shall be cleared of all loose stones, lumps of clay, etc, before the bedding is laid. The material shall be laid over the full width of the trench and shall be evenly spread and carefully compacted and the surface after compaction shall be true to the required gradient. Any clay, soil or foreign matter falling onto the granular bed from the trench sides or any other source shall be immediately removed, and in this connection the Engineer may require the bedding to be completely removed and replaced with fresh material in order to ensure the elimination of foreign matter.
Timbering or any other form of trench support shall be withdrawn as the bedding material is placed so as to avoid disturbance of the bed by later removal.

The depth of the bedding material when fully compacted shall be in accordance with the details shown on the Drawings.

3.56 Placing of Granular Bedding Material Stage 2

After jointing and, if necessary, testing the pipes, bedding material shall be carefully placed in layers of not more than 150mm thickness equally on each side of the pipes and so compacted under and alongside the pipes up to the level of the centre of the pipes and laterally up to the undisturbed soil of the trench sides as to eliminate all cavities and ensure equality of density throughout and equal to that of the material laid in Stage 1. All trench side supports shall continue to be withdrawn as filling proceeds. Walking on the pipes or the application of any other force which may disturb them will not be permitted until after the Stage 2 procedure has been completed.

3.57 Refilling Trenches with Selected Excavated Material

Except where special backfill material is specified trenches shall be refilled with approved excavated material.

The initial layer of backfill material shall be free from stones, shall not be thrown directly onto the pipes but shall be carefully placed and compacted in thin layers by hand up to 300 mm above the top of the pipe or special surround.

Backfill around pipes, including concrete or other special materials, shall be carefully packed under and around the pipes.

Filling above the initial layer shall be deposited and compacted in layers not exceeding 225 mm loose depth to a dry density not less than that of the adjoining soil.

Mechanical appliances may be used for compaction of the backfill above the initial layer, providing the appliance is suitable for the conditions and will not damage or displace the pipes.

3.58 Road Gulley Connections in Flexible Construction

All road gulley connections shall be bed and surrounded with 150mm concrete Grade 20. The length of pipe on the main drain run to which the gully is connected shall be similarly surrounded with 150mm of Grade 20 concrete which shall not extend over the joints at either end of the main drain pipe. All connections from road gulleys to be spigot and socket concrete pipes.

3.59 Testing of Drains and Connections

All jointed pipe drains shall be tested with air after being laid and jointed and before surrounding and backfilling is commenced to ensure that the jointing is satisfactory. No pipes are to be covered up until inspected by the Engineer. The air test shall be repeated after the completion of backfilling and manhole construction, the length being tested between manholes. The Engineer will also require a further test to be carried out on completion of the Contract prior to the commencement of the Maintenance Period.

The apparatus used for air testing shall be of a type approved by the Engineer and the test shall in all cases be applied in the presence, and to the satisfaction of the Engineer or his representative. Air shall be pumped into the length of pipes under test until a pressure equivalent to 100mm of water is indicated and maintained without loss exceeding 25mm for five minutes without further pumping. Concrete pipes may be damped prior to testing.

In the event of the failure of such tests, or any infiltration occurring, the Contractor will be required to locate the defect and make good by providing and laying new pipes or otherwise repairing the leak as directed.

3.60 Trench Widths

Calculations for pipe loadings have been based on maximum widths of trenches. The Contractor must allow for carrying out the Works within these widths, which are measured soil face to soil face and include the thickness of timbering or sheeting. The maximum permitted trench widths are set out in the table below and will be strictly enforced. The Contractor may reduce the trench width provided adequate room is allowed for the proper support of the trench and for the laying, aligning and jointing of the pipes and for the placing of the bedding and covering materials as required.

Maximum Permitted Overall Trench Widths

Nominal Internal Diameter of Pipes mm	Maximum Overall Width of Trench mm
150	600
225	700
300	750
375	1050
450	1150
525	1200
600	1350
675	1450
750	1500
825	1600
900	1900
975	2000
1050	2050
1125	2200
1200	2300
1350	2450
1500	2600
1650	2800
1800	2950

The same principle shall apply to dual trenches, subject to the maximum width of half the maximum permitted trench width in respect of each of the pipes plus the specified distance between pipe centres.

3.61 Junctions and Connections

Where shown on the Drawings or directed by the Engineer, pipe junctions shall be inserted during the construction of the drains. Junctions on the drains which are not immediately connected up shall be closed with stoneware disc stoppers set in and filled up to the ends of the sockets with puddle clay. All junctions with the drains shall be wholly surrounded with 150mm of Grade 20 concrete. Connections shall be tested in the manner prescribed for drains. The inside of the last pipe and the outer face of the stopper shall be painted red to indicate a foul connection of blue to indicate a surface water connection. Where it s necessary to make a saddle connection to an existing sewer or drain, a template shall be made in the shape of the saddle to be fixed, and the outline of the template shall be marked on the wall of the sewer or drain by means of a chisel.

The hole as marked shall be neatly cut out to the required shape to suit the saddle. Saddle junctions shall be inserted in the drain so that the junction piece is oblique with the direction of the flow of the drain and as near as practicable to the crown thereof. The saddle shall be bedded in cement mortar, care being taken to clean all surplus mortar from the inside of the junction piece and to remove any mortar and debris which may fall into the drain. When a connection is to be made to an existing manhole, the soffit of the connection shall be level with the soffit of the main sewer or drain, and the connection shall be turned into the main sewer or drain so that it is rebuilt in the manner specified for new manholes and the wall of the manhole made good neatly in granolithic rendering. The manhole shall be made watertight.

3.62 Drains in Common Trench

Drains in common trench shall be laid not less than 600mm apart, and where necessary because of larger diameter pipes, manholes, etc, this distance apart shall be increased so that the piped, manholes and concrete surround can be positioned to the Engineer's satisfaction.

The maximum distance centre to centre for pipes to be laid in Common Trench shall be 1.5m. Where due to the difference in invert levels a step in the trench formation is required, the Contractor shall excavate the trench to produce a sound true and even bed for each pipe, and to ensure that the formation which is to support the higher level drain is not disturbed or damaged. Any part of the formation which is disturbed or damaged shall be excavated to such additional depth as may be required by the Engineer and made up to proper level with all-in ballast.

3.63 Manholes Generally

Manholes shall be constructed in accordance with the details and to the positions shown on the drawings or as directed by the Engineer. Excavations shall be of the minimum dimensions for the construction of the chamber, allowing for any necessary timbering.

Invert channels shall form a vertical transition between the gradients of the incoming and outgoing drains and where there is a change in horizontal direction of these drains, the channel shall be accutately finished to a smooth curved surface with purpose made channels. The sides of the main channels above half diameter shall be vertical up to the level of the soffit of the inlet pipe.

All connections to manholes shall be vertically backdropped or ramped backdropped externally and to enter the manhole at level soffits to the main channel. All internal manhole connections to be clayware/concrete half round channels and to be benched/channelled in the direction of flow.

Benching shall have a minimum fall of 25 mm from back to front and 25 mm radius nosing to the channel, the whole of the benching and vertical sides of the channel to be finished in 1 : 1 cement mortar rendering, (25 mm thick) finished to a smooth hard surface with a steel trowel.

External manhole covers and frames to be circular pattern Grade A, Heavy Duty, in paved areas and medium duty in grassed areas complying with BS 497. Internal covers to be medium duty double seal air tight covers and frames to Engineers approval.

Frames to be bedded 1 : 3 cement mortar on a minimum of two courses of brickwork with the surface flush with the existing or proposed adjoining ground level. Normally acceptable tolerances will be within the range of true level and 5 mm below.

Two sets of manhole lifting keys for each type of cover shall be provided and handed over to the Engineer's Representative as soon as fixing of the covers commences.

Manhole ladder rungs shall be mild steel complying with the requirements of B.S. 1247 to Local Authority standard pattern. They shall be hot-dip galvanised after manufacture.

The centres of the treads are to be 300 mm apart vertically as shown on the drawings. The bottom rung to be not more than 300 mm above the benching and the top run shall be not more than 450 mm below the top of the manhole cover.

Where detailed, ladders shall be fixed vertically to manhole and shaft walls. Access ladders to be manufactured from mild steel with 65mm x 12mm stringers 360mm apart with 22mm dia. rungs shouldered and riveted to the stringers at 300mm centres. The stringers shall be attached to the walls at their head and foot by galvanised rag bolts of 18mm diameter and stayed to the walls by galvanised steel stayes of the same section as the stringers, set not more than 2.40m apart. Ladders to be brought down to finished benching level.

Any fish plates on the stringers shall be of the same section as the stringers, secured with 2 bolts on each side of the joint. The bolts shall be cup headed and when secured shall not project more than 3 mm beyond the nuts.
All manholes, when completed, shall be watertight.

3.65 Cement Rendering in Manholes

Cement rendering shall be applied in two layers of equal thickness the first coat being scored while soft and thoroughly wetted before the second coat is applied. The surface to be rendered shall be thoroughly cleaned with a wire brush and shall be wetted immediately before the application of the rendering. The rendering shall be finished with a steel float to a hard, smooth uniform surface and all external and internal angles shall be left clean and sharp. Surface Water Manholes to be rendered in two coats externally. Foul Manholes to be rendered internally and externally in two coats.

3.66 Testing of Manholes

When manholes are required to be tested the inside of the manhole shall be cleared of all dirt and foreign matter. All outlet pipes shall be closed by means of expanding stoppers. The manhole shall then be completely filled with water and after time has been allowed for absorption to take place, refilled to the level of the top of the cover.

For two hours no more water shall be added to the manhole and if at the end of this time the water has not dropped in level by more than 25mm, the manhole shall be regarded as satisfactory. Should the drop in level be more than the amount stated, the outside faces of the manhole shall be uncovered, leakages located and the manhole emptied. After all defective areas in the walls have been made good the test shall be reapplied and the process repeated as may be necessary until the manhole satisfies the requirements of the test.

3.68 Connection Markers

The position of the closed end of each junction or connection shall be indicated by a marker consisting of a 100mm x 100mm x 1220mm timber post, driven 600mm into the ground and connected to the end of the last pipe by a stout galvanized wire. The posts are to be creosoted to 700mm from the bottom end. The remainder of the posts to be painted red in the case of foul connections, and blue in the case of surface water connections.

The stopper closing the end of each junction or connection shall be similarly painted.

3.69 Sewers, Drains & Gullies to be left Clean

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 Engineer, that all sewers and drains in the area covered by the Contract are clean and completely free from obstructions. If rodding and flushing fail to remove any obstructions such as mortar, mixer washings, grout, clay deposits, etc. which have been formed in the pipelines, manholes and gulley catch pits, the Contractor shall, at his own expense, open up and relay affected work.

GENERAL

3.70 Reinstatement of Working Area

The reinstatement of the working area shall include the removal of all stone, debris, rubbish, excavated material and clay from the surface of the working area, the grading and levelling of the area to the level of the adjacent land, the removal of all vehicle and plant tracks from the surface, and the ploughing up, disc-harrowing, chain-harrowing and rolling with a Cambridge roller and levelling and grass seeding any areas of working space which in the opinion of the Engineer have become over-consolidated due to the passage of plant and execution of the Works. The term 'working area' shall be deemed to include any areas of land used as access routes on to the Site and the Contractor shall allow for compliance with the provisions of this Clause.

3.71 Use of Explosives

No explosives shall be used for any purpose unless the Contractor has obtained the written approval of the Engineer.

3.72 Solid Rock

The term 'solid rock' shall mean boulders exceeding 0.500m in volume, or rock which, in the opinion of the Engineer, requires drilling and blasting, wedging, sledging or barring for its removal. No soft or disintegrated rock or shale rock which may be broken up with a pick, loose, shaken, or previously blasted rock, broken stone in rock fillings or elsewhere and no rock which may fall into the excavation shall be considered as solid rock.

3.73 Thrust Boring

Thrust boring for gas, water, electricity, or post office services under existing carriageways shall be driven horizontally from a pit, the edge of which shall be at least 1.500m from the kerbline. The depth of the boring shall be at least 1m below the finished road surface, or at least 750mm below the underside of the road formation, with a maximum length of drive of 15m. The Contractor shall ensure that there is no heaving or disturbance of the earth over the boring, and will be held responsible for any immediate or subsequent damage to the road structure which is held to be caused by the thrust boring. Lining or grouting of thrust bores shall be carried out in all cases unless in the opinion of the Engineer ground conditions render it unnecessary.

3.74 Connections to Existing Outfall Sewers, Drains and Manholes

Where described in the Contract, existing sewers and drains shall be properly extended, connected and jointed to new sewers, culverts, drains or channels. All such connections shall be made during the construction of the new main sewer, drain or other work and their positions recorded by the Contractor who shall hand to the Engineer a copy of the record of the connections made the previous day. Where pipe connections are made to a brick sewer, concrete culvert, stone built or lined channel, the pipes shall be well and tightly built into the concrete, brick or masonry work and be so placed as to discharge at an angle not greater than 60 degrees to the direction of flow of the main sewer, drain or channel and with the end of the pipe carefully cut to the necessary angle. Where the connections are between pipe sewers or drains, special connecting pipes as described in the Contract shall be laid true and properly jointed.

Where connecting to an existing manhole, the side of the manhole is to be exposed to take the new connection modification to existing benching etc. shall be carried out in accordance with the requirements of the engineer and the manholes shall be rendered watertight on completion.

Before entering or breaking into an existing sewer or drain, the Contractor shall give notice of his intention to do so to the authority responsible for the pipeline to which the connection is to be made.

3.76 Completion of Drainage Works

On completion of drainage works the Contractor shall engage a specialist firm of Drain Clearing Contractors to thoroughly cleanse all pipe lines and carry out a C.C.T.V. survey of all lines to check and confirm the satisfactory condition of the completed works or to identify any areas damaged during construction. The completed audio visual cassette record shall be the property of the Engineer who shall retain it as a record of the completed system. Any faults identified shall be made good by the Contractor at his own expense. A P.C. sum is included in the Bill of Quantities to cover these works.

WATER SUPPLY

4.1 Pipes for watermains shall be :

uPVC Pressure Pipes to IS 123, BS 3505 or BS 3506.

4.2 Pipes for watermains shall be :

Asbestos Cement Pressure Pipes complying with IS 188 or BS 486.

4.3 Pipes for watermains shall be :

Ductile Iron Pipes cast and spun complying with I.S. 261 or BS 4772.

4.4 Pipes for watermains shall be :

Polyethylene Pipe Type 50 complying with IS 135.

4.5 Valves, Tees and Tapers

All valves, tees and tapers shall be standard flanged cast iron, complying with BS 2035.

4.6 Sluice Valves

Sluice valves shall comply with BS 5163 Class 1 and shall close when turned anti-clockwise. The depth of the sluice valve spindle below finished ground level shall be 300 mm minimum and shall not exceed 600mm.

For depth greater than 600mm an extension spindle (with guides built into chamber at 450mm c/cs) shall be securely fixed to sluice valve spindles.

4.7 Hydrants

Fire Hydrants shall comply with BS 750 and the outlet shall be to the relevant local authority Standard pattern. The top of the spindle shall be located not more than 300 mm below the surface level, and where necessary extension pieces shall be used.

Approved marker plates shall be provided and fixed to denote the positions of valves and hydrants.

4.8 Laying of Pipes

Trenches shall be excavated in straight and even lines :

a) Minimum width - the nominal internal diameter of the pipe plus 300 mm provided that no trench shall have a width less than 450 mm.

b) Maximum width 600 mm greater than pipe diameter except in very particular cases where greater widths may be allowed.

Whatever the width of the pipe trenches within the specified limits, sufficient excavation shall be made at the position of the pipe points to enable the pipe jointer to complete the jointing operations satisfactorily.

4.10 Bed and Surround to Pipes

Bedding to the pipes to be granular material 10 mm size, thoroughly compacted before laying pipes. Surround to the pipes to be granular material thoroughly compacted by hand in 75 mm layers.

4.11 Concrete Anchor Blocks

Anchor blocks of Grade 20 concrete shall be placed around the pipes at both sides of all sluice valve chambers and also at bends of greater curvature than 22½. The blocks shall be taken 150 mm below the pipe invert for the full width of trench and shall encase the pipes to 150 mm over the top of the barrel. The minimum length of anchor block shall be 600 mm unless indicated otherwise on drawings.

4.12 Indicator Plates and Posts

The positions of valves and hydrants shall be indicated by a metal plate secured to a precast concrete post of approved type or secured to the wall of an adjacent building. The plate shall comply with BS 3251 : 1976 and shall be raised "V" for valve and "H" for hydrant together with the valve size and distance from the marker post. Where marker posts are used they shall be concrete complying with IS 162.

4.13 Testing of Watermains

All watermains shall be tested in lengths as directed by the Engineer. Before the test is made, all pipes and bends shall be suitably supported against movement by partial backfilling or other approved means and cap ends shall be securely strutted. The mains shall be tested hydraulically to 1½ times the maximum working pressure specified by the manufacturer for the particular class of pipe, or as directed by the Engineer. The test pressure shall be maintained without loss for a period of one hour.

The Contractor shall supply all labour, materials and plant necessary for testing and the cost of such tests shall be deemed to be included in the rates for pipelaying in the Bill of Quantities - CP 2010 makes recommendations regarding the test pressures to be applied to pipelines of ductile iron and A.C.

4.14 Chambers for Sluice Valves, Air Valves, Hydrants, Stopcocks

Chambers for sluice valves, air valves, hydrants and stopcocks shall be concrete blockwork as shown on drawings. Chambers for stopcocks shall comply with BS 5834. Precast concrete or in situ concrete chambers may also be used subject to approval.

4.15 Surface Boxes

Hydrant, Sluice valve and Air valve chambers shall be provided with cast iron surface boxes complying with IS 261. Surface boxes shall be bedded in mortar on the chamber walls and where the chamber is located other than on a footpath, driveway or carriageway shall be surrounded by 150 mm concrete.

4.16 Sterilisation

When the whole of the mains have been tested, and approved by the Engineer, they shall be cleaned out and sterilised as follows, BEFORE connection is made to the existing Main.

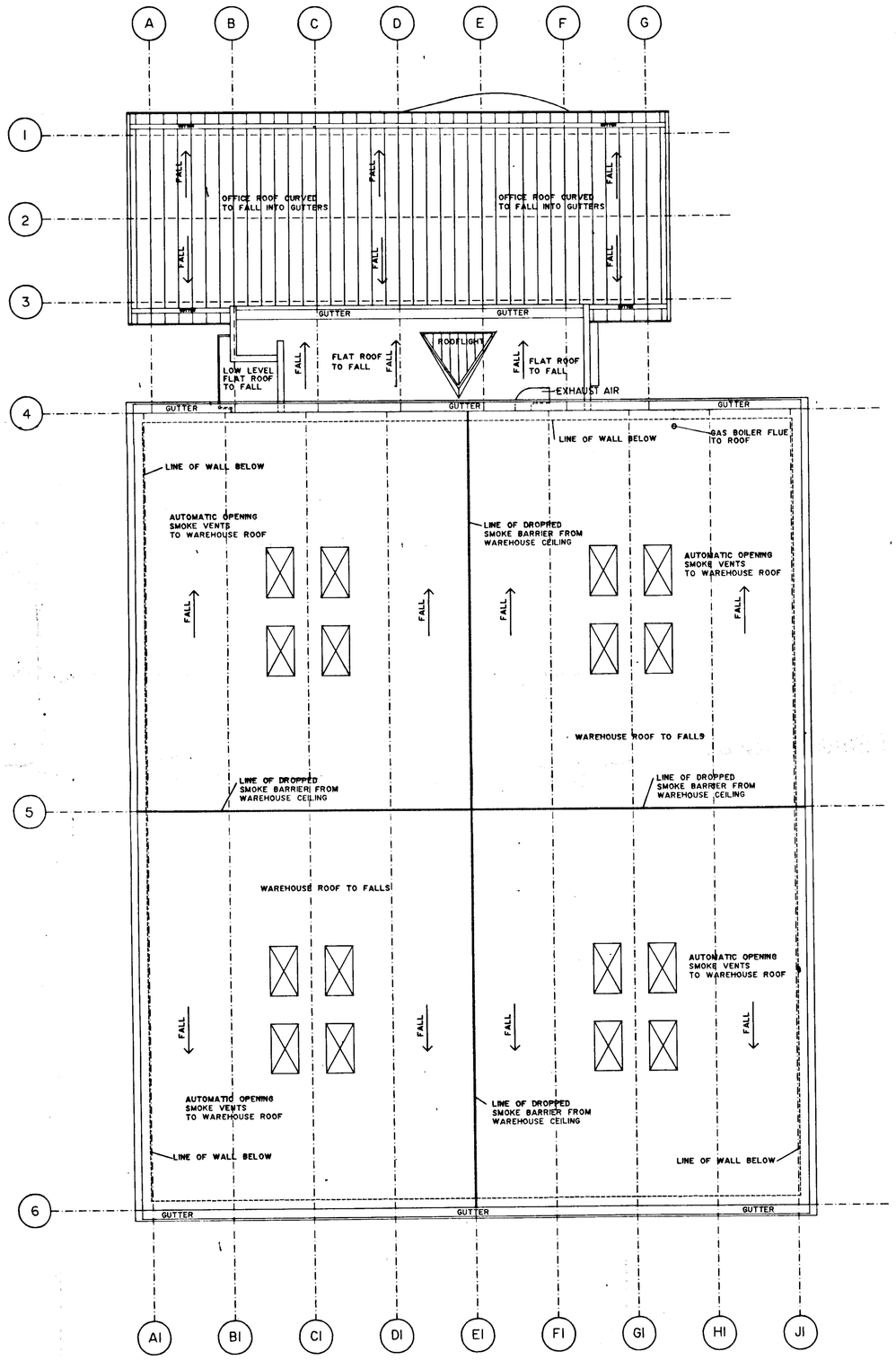
1. The mains shall be flushed through until clean water is observed to flow from every hydrant and site connection.

2. The main is then to be charged with heavily chlorinated water (50mg/litre) and allowed to stand for at least 24 hours. After which it is to be flushed out until all traces of chlorinated water have been removed.

3. The main is then to be left full of fresh water for a further period of 24 hours. Samples of the water used are to be taken at the commencement and completion of the 24 hour period for testing at an approved laboratory. On receipt of satisfactory results, the final connection may be made to the Local Authority Main.

4.17 Connections to Existing Watermain

Connections to existing watermain shall be carried out under the supervision of the Engineer.



ROOF PLAN

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING - ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES STREET SOUTH,
CITY QUAY,
DUBLIN 2.

PHONE (01) 770077

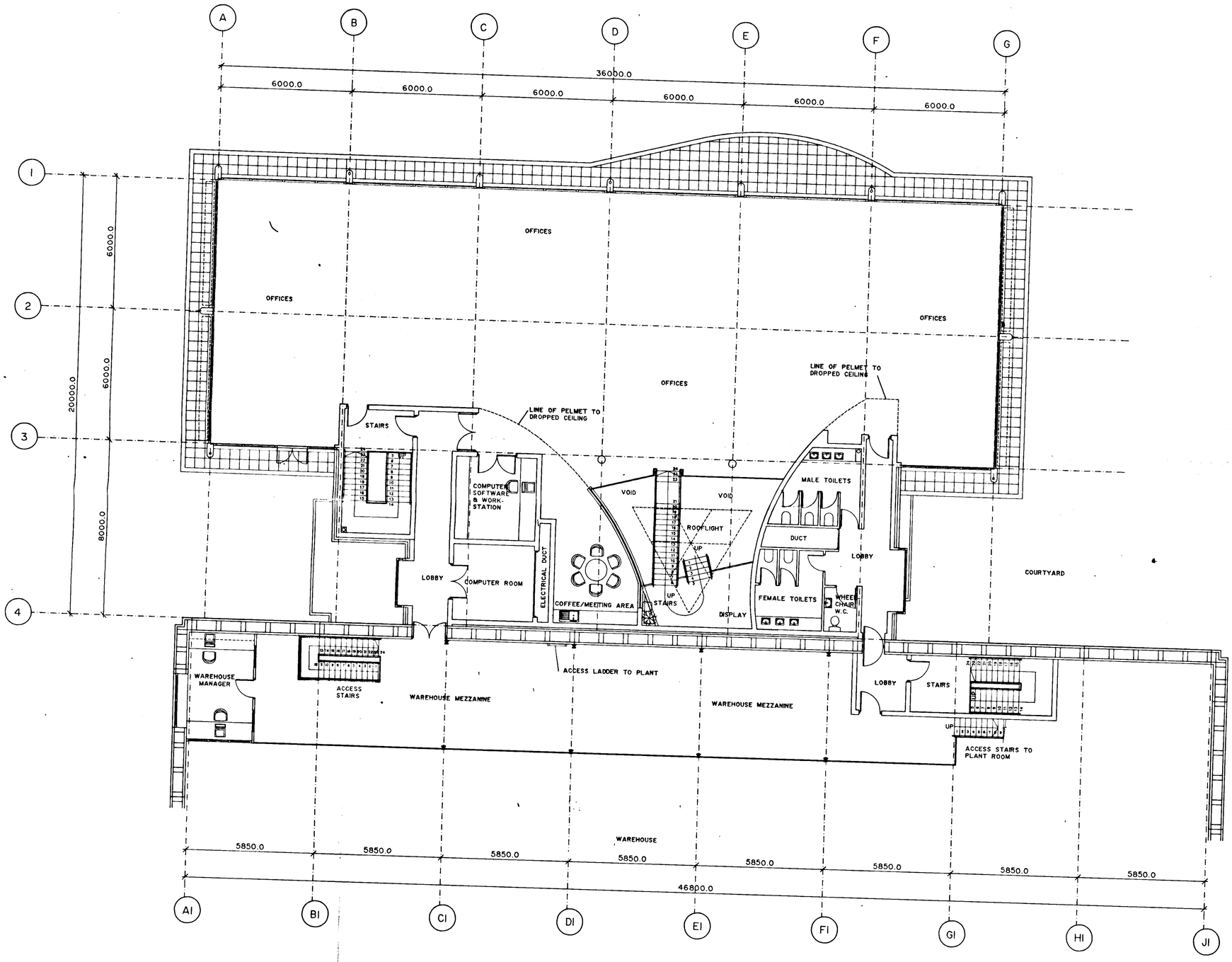
INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN.
FOR MITSUBISHI ELECTRIC

OVERALL ROOF PLAN

SCALE 1:200 DATE APRIL 1991 DRAWN G.G.	NO.	9012	208

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING : ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES



FIRST FLOOR PLAN

REVISION B GENERAL UPDATE 11/4/1991 G.G.

REVISION A ACCESS STAIRS ADDED & GENERAL UPDATE 28/3/1991 G.G.

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.
PHONE (01) 770077

INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN.
FOR MITSUBISHI ELECTRIC

FIRST FLOOR PLAN

SCALE 1:100
DATE MARCH 1991
DRAWN G.G.

NO. 9012 204B

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING : ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES

N

WESTERN PARKWAY MOTORWAY

SITE BOUNDARY

BUILDING LINE

20M

CAR PARK 60 SPACES TOTAL

ENTRANCE

INDUSTRIAL / OFFICE

FIRE FIGHTING ROADWAY

PATH

SERVICE DEPT

WAREHOUSE

FIRE FIGHTING ROADWAY

UP RAMP

LOADING BAYS

RAMP

DRIVERS TOILET

SITE ENTRANCE

WAREHOUSE & OFFICES UNDER CONSTRUCTION

PROPOSED WAREHOUSE & OFFICES

MAIN ACCESS ROAD TO UNITS

MITSUBISHI ELECTRIC SITE PLAN

WESTGATE BUSINESS PARK

WAREHOUSE & OFFICES UNDER CONSTRUCTION

PROPOSED WAREHOUSE & OFFICES

PROPOSED WAREHOUSE & OFFICES

DUBLIN COUNTY COUNCIL
Planning Dept. Planning Section
APPLICATION RECEIVED
15 APR 1991
REG No. 91A/0587
APPLICATION TYPE OVP/ABBL
No. L.R.S.

REVISION A FIREFIGHTING ACCESS ROAD SHOWN 10/4/1991 G.G

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.

PHONE (01) 770077

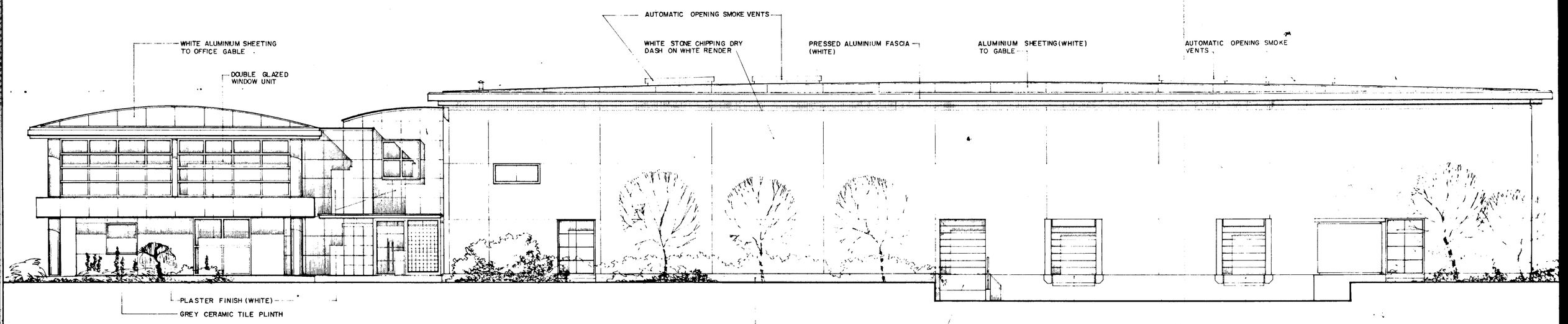
INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK BALLYMOUNT ROAD, CO. DUBLIN
FOR MITSUBISHI ELECTRIC

SITE PLAN

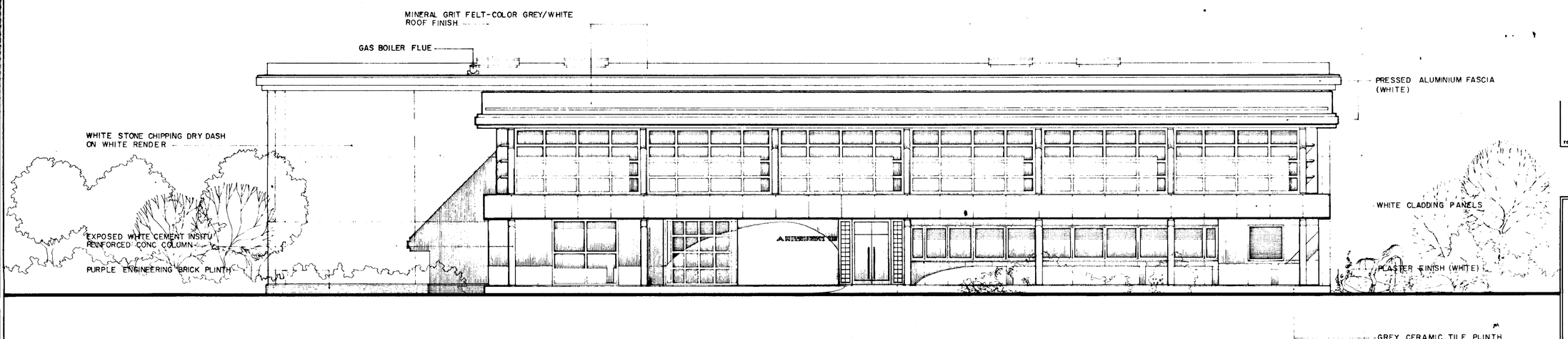
SCALE 1:500 DATE MARCH 1991 DRAWN G.G.	NO. 9012	201 A

no dimensions to be scaled from this drawing ; all dimensions to be checked by the contractor on site; any errors or discrepancies to be reported to the architects in charge.

notes :



EAST ELEVATION



SOUTH ELEVATION

DUBLIN COUNTY COUNCIL
Planning Dept. Registry Section
APPLICATION RECEIVED
15 APR 1991
REG No. 91A/0587
APPLICATION TYPE OPP/A/BSL
No. 108

revisions

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2. PHONE: 770877 FAX: 771186

INDUSTRIAL WAREHOUSE & OFFICES
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN
for MITSUBISHI ELECTRIC

BUILDING ELEVATIONS

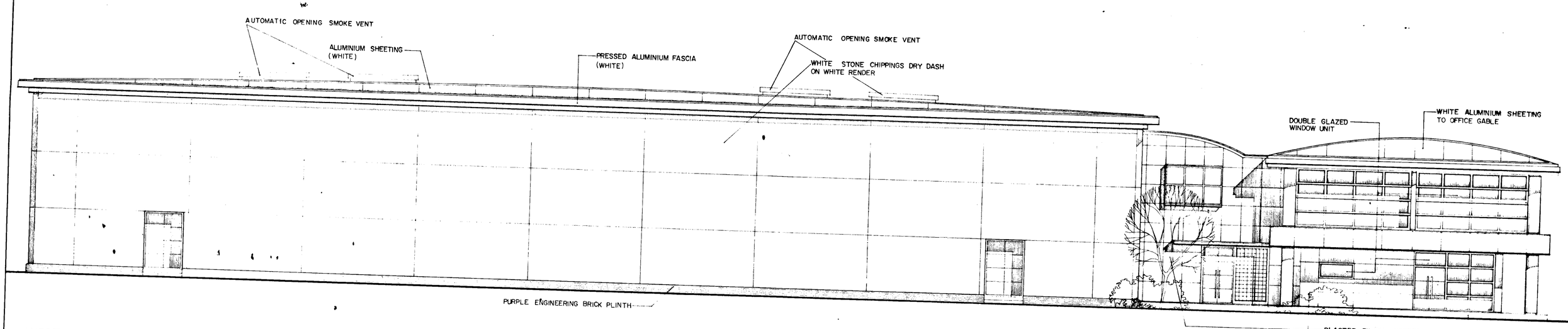
scale 1 :100
date APRIL 91
drawn D.H

no. 9012 205

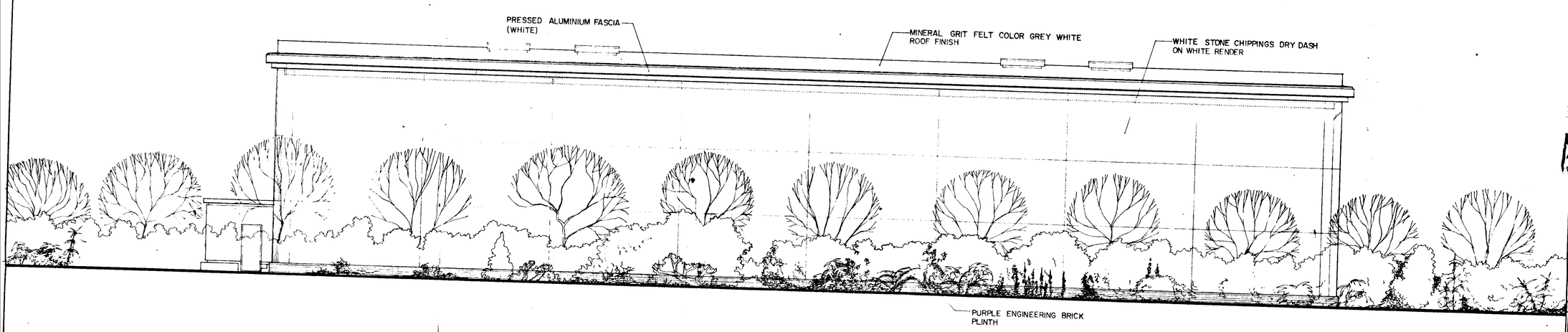
JDH 13878

no dimensions to be scaled from this drawing - all dimensions to be checked by the contractor on site; any errors or discrepancies to be reported to the architects in charge.

notes:



WEST ELEVATION



NORTH ELEVATION

DH 13878

DUBLIN COUNTY COUNCIL
Planning Department
APPLICATION
15 APR 1991
REG No 91A/0587
APPLICATION TYPE O/P/A/RBL

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2. PHONE: 778877 FAX: 771186

INDUSTRIAL WAREHOUSE & OFFICES
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN.
for MITSUBISHI ELECTRIC

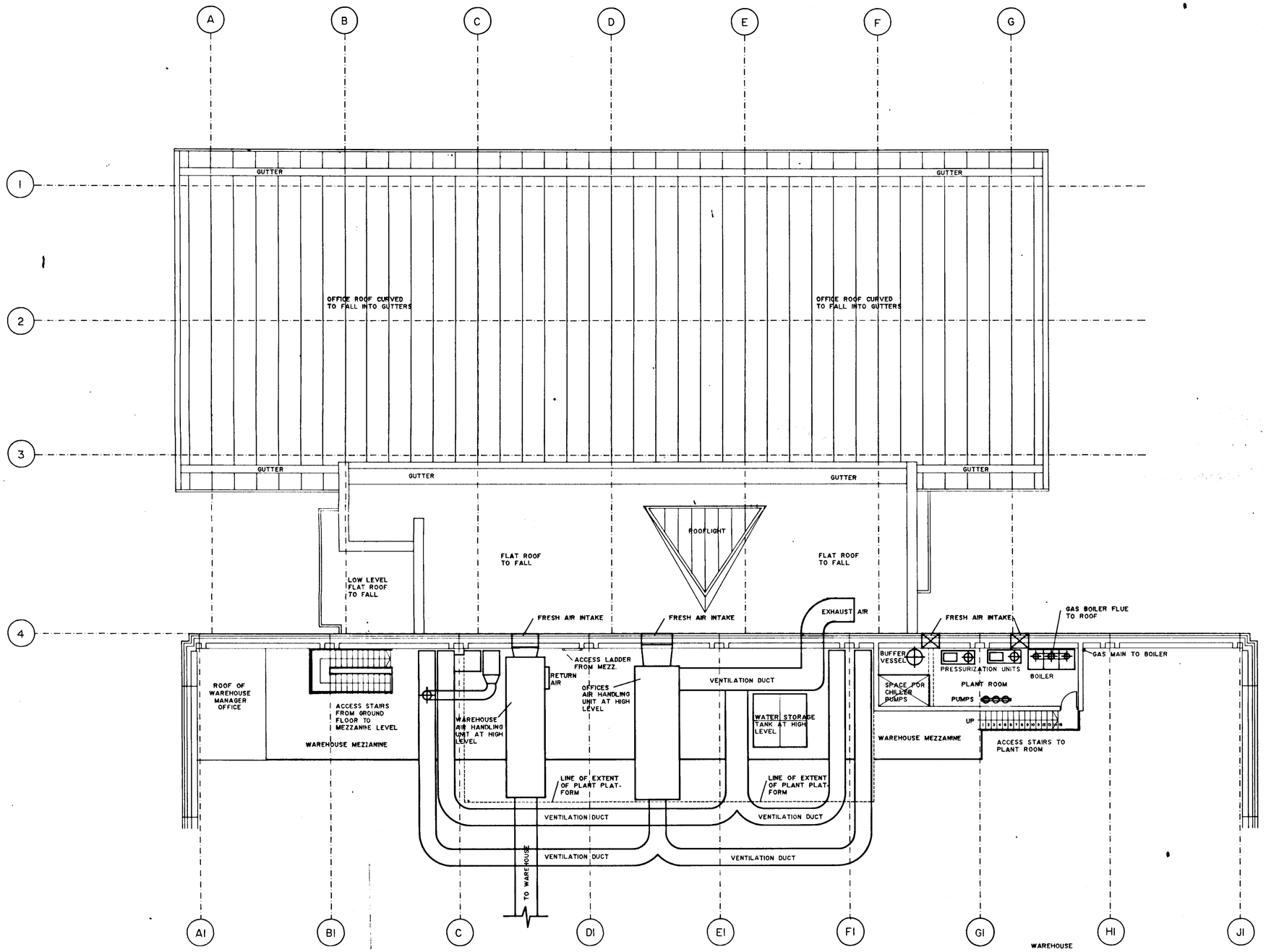
BUILDING ELEVATIONS

scale 1:100
date APRIL '91
drawn D.H.

no. 9012 206

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING : ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES



OFFICE ROOF PLAN & HIGH LEVEL PLANT LAYOUT

REVISION A GENERAL UPDATE 10/4/1991 G.G.

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.
PHONE (01) 770077

INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN.
FOR MITSUBISHI ELECTRIC

OFFICE ROOFPLAN & HIGH LEVEL PLANT LAYOUT

SCALE 1:100
DATE APRIL 1991
DRAWN G.G.

NO 9012 207A

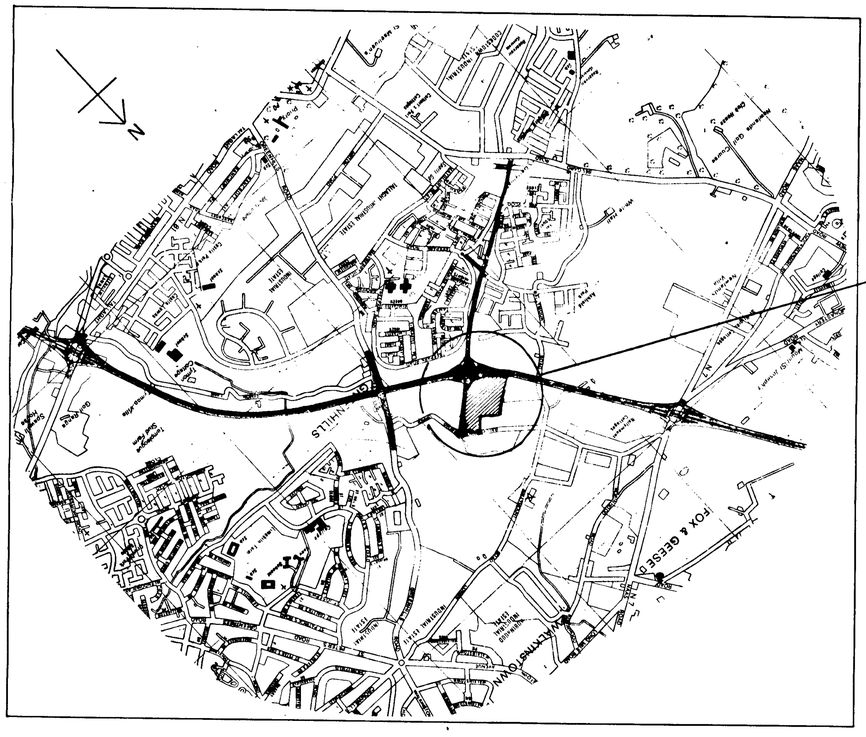
NO DIMENSIONS TO BE SCALED FROM THIS DRAWING ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES ,

WESTERN PARKWAY MOTORWAY

WESTERN PARKWAY MOTORWAY

N



LOCATION MAP Scale 1= 20000

OFFICES & WAREHOUSE UNDER CONSTRUCTION

MITSUBISHI ELECTRIC SITE

PROPOSED OFFICE & WAREHOUSE

ENTRANCE

SITE ACCESS ROAD

WESTGATE BUSINESS PARK

OFFICES & WAREHOUSE UNDER CONSTRUCTION

PROPOSED OFFICE & WAREHOUSE

PROPOSED OFFICE & WAREHOUSE

SITE LOCATION MAP Scale 1=1000

BALLYMOUNT ROAD UPPER

DUBLIN COUNTY COUNCIL
Planning Dept. Reg. No. APPLICATION RECEIVED
15 APR 1991
REG No. 91A/0587
APPLICATION TYPE O/P/A/BSL
No. L.P.S.

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.

PHONE (01) 770077

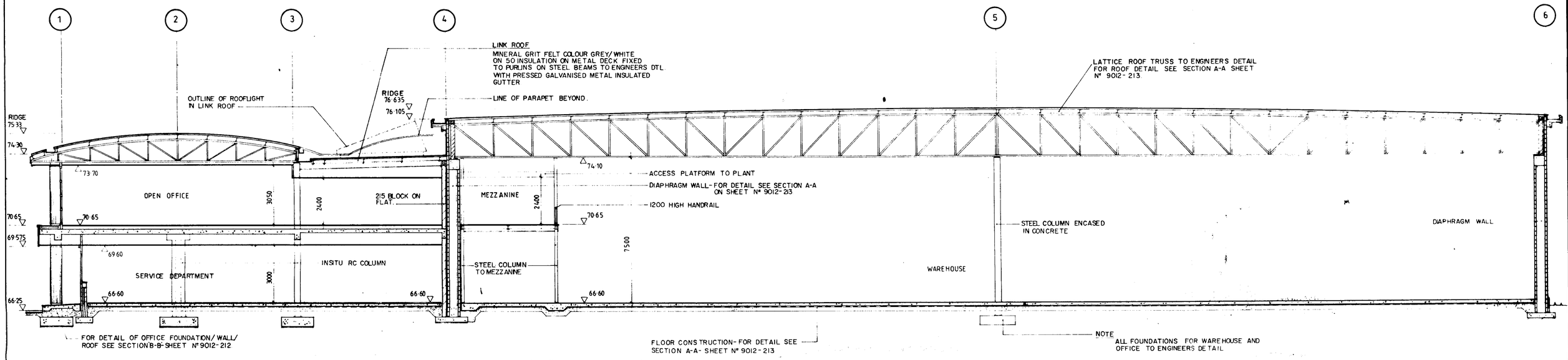
INDUSTRAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK, BALLYMOUNT ROAD, CO. DUBLIN.
FOR MITSUBISHI ELECTRIC

SITE LOCATION MAP

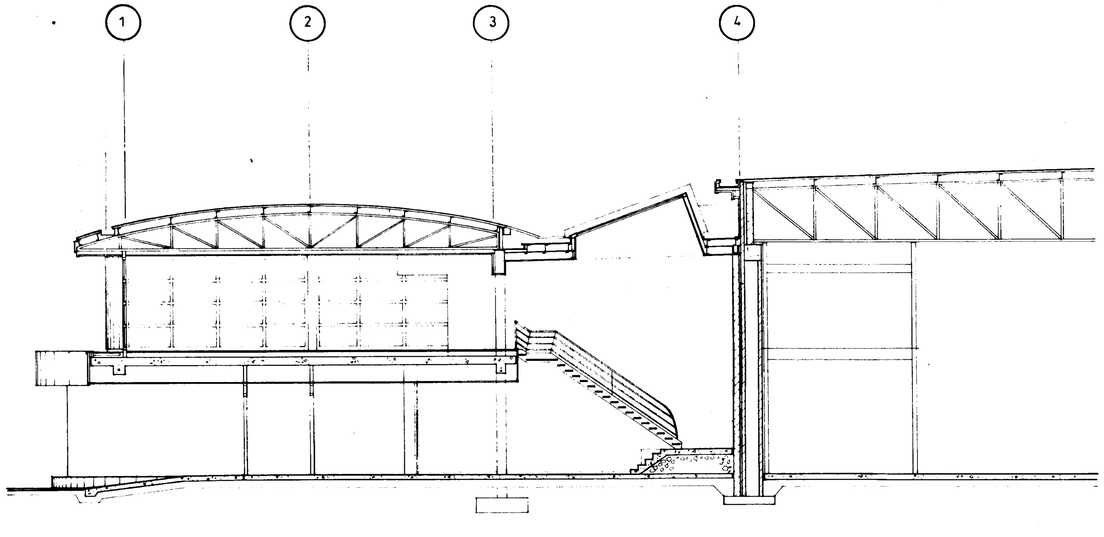
SCALE	1=1000 @ A1	NO.	9012 / 200
DATE	APRIL 1991		
DRAWN	G.G.		

no dimensions to be scaled from this drawing ; all dimensions to be checked by the contractor on site ; any errors or discrepancies to be reported to the architects in charge.

notes :



BUILDINGS CROSS SECTION X-X



SECTION THROUGH RECEPTION/ DISPLAY AREA

revisions

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2. PHONE: 776877 FAX: 771186

INDUSTRIAL WAREHOUSE & OFFICES
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO DUBLIN
for MITSUBISHI ELECTRIC

OVERALL CROSS SECTION

scale 1:100 date APRIL '91 drawn J.O.C	no. 9012	209

JDH 13878

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING . ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES

WESTERN PARKWAY MOTORWAY

M4 (48) M2\M3 (120) M4\M3 (140) M1\M3 (120) SITE BOUNDARY

LS LS LS

CAR PARK 60 SPACES TOTAL

S4(50) S4(30) S4(30) S2(100) S3 (100) ENTRANCE

SITE BOUNDARY BUILDING LINE

M3 (90)

S1 (100)

INDUSTRIAL/OFFICE

S1 (80) BUILDING LINE

M2 (130)

M4(150)

M1\M3 (100) SITE BOUNDARY

FIRE FIGHTING ROADWAY

T1

PATH B SERVICE DEPT B B

M2 (90)

LS M2 (85)

M2\M3 (80)

S1 (60)

M1\M4 (120)

FIRE FIGHTING ROADWAY T3

S4 (100) LS

WAREHOUSE & OFFICES UNDER CONSTRUCTION

S5 (120)

UP RAMP

WAREHOUSE

LOADING BAYS

S1 (90) LS

M2 (75)

S6 (120) RAMP

DRIVERS TOILET

M2 (90) T2 LS

SITE BOUNDARY S6 (120)

SITE ENTRANCE

T1

SHRUB PLANTING S2\S3 (480)

M2\M4 (120)

M1\M3 (120)

M1\M4 (150) SITE BOUNDARY

PROPOSED WAREHOUSE & OFFICES

1 5 APR 1991

MAIN ACCESS ROAD TO UNITS

MITSUBISHI ELECTRIC SITE PLAN

MAIN ACCESS ROAD TO UNITS

WESTGATE BUSINESS PARK

WAREHOUSE & OFFICES UNDER CONSTRUCTION

PROPOSED WAREHOUSE & OFFICES

PROPOSED WAREHOUSE & OFFICES

REF N

PLANTING LEGEND

LOCATION	SPECIES	SIZE (cm)	POSITION	NO REQD
BOUNDARY PLANTING				
M1	Tilia platyphyllos (25%)	90-120	—	
	Alnus glutinosa (25%)	90-120	—	
	Betula pendula (25%)	90-120	—	
	Fraxinus excelsior (25%)	90-120	—	305
M2	Acer platinoides (25%)	90-120	—	
	Pinus sylvestris (25%)	30-50	—	
	Alnus cordata (25%)	90-120	—	
	Crataegus monogyne (25%	90-120	—	540
M3	Acer pseudoplatanus (25%)	90-120	—	
	Salix daphnoides (25%)	120-150	—	
	Larix decidua (25%)	30-50	—	
	Alnus glutinosa (25%)	90-120	—	430
M4	Tilia platyphyllos (25%)	90-120	—	
	Betula pendula (25%)	90-120	—	
	Alnus glutinosa (25%)	90-120	—	
	Alnus cordata (25%)	90-120	—	458
FOCAL PLANTING	Acer platinoides	8-10 (GIRTH)	T1	
	Betula papyrifera	6-8	T2	
	Sorbus acuparia	6-8	T3	25
SHRUB PLANTING	Berberis 'telstar'		S1	
	Cornus alba		S2	
	Cornus stolonifera - flav.		S3	
	Lonicera pileata		S4	
	Mahonia 'charity'		S5	
	Viburnum 'eva price'		S6	1680

LS LAMP STANDARD

B BOLLARD LIGHT

WHIPS PLANTING

SHRUBS

SELECTED TREES

PLANTED GRASS

REVISION A FIREFIGHTING ACCESS ROAD SHOWN 10/4/1991 G.G.

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.

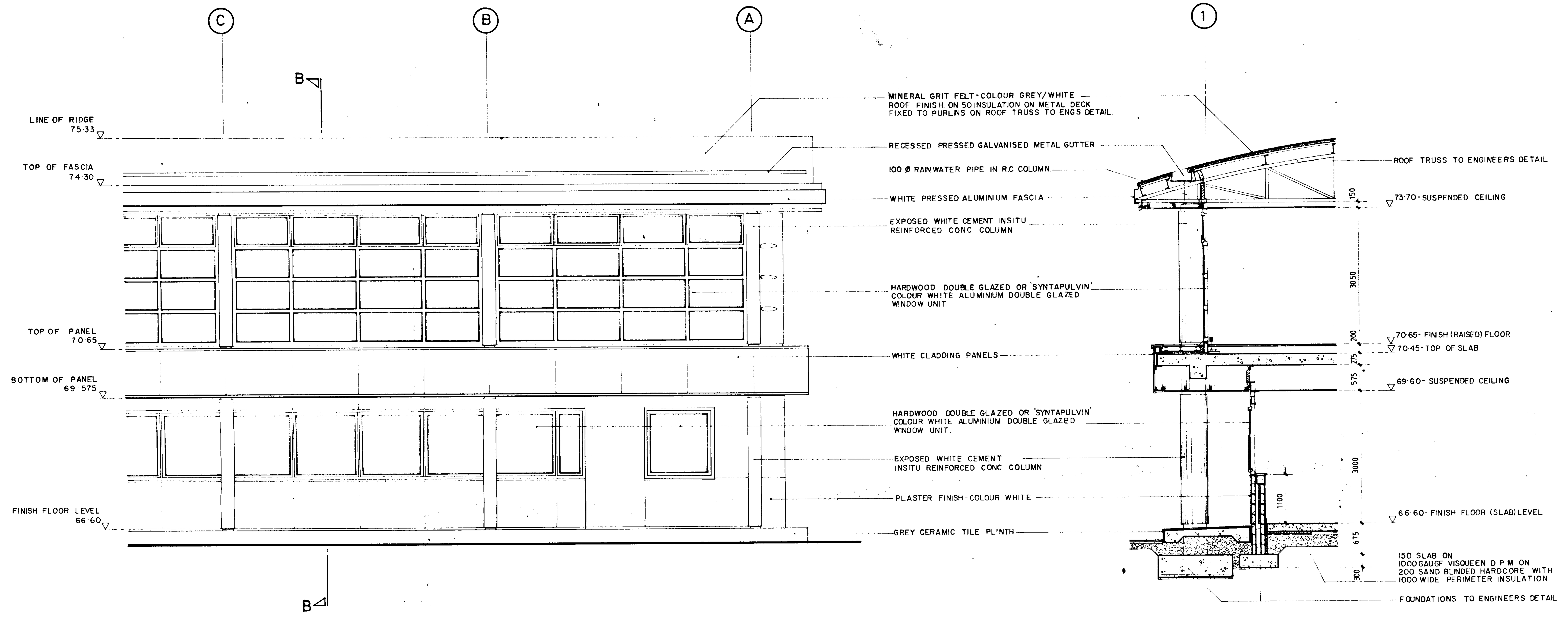
PHONE (01) 770077

INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK BALLYMOUNT ROAD, CO. DUBLIN
FOR MITSUBISHI ELECTRIC

LANDSCAPING PROPOSALS

SCALE 1:500
DATE MARCH 1991
DRAWN G.G.

NO. 9012 210



BAY ELEVATION

BAY WALL SECTION B-B

revisions

KEANE MURPHY DUFF
Chartered Architects
KMD
4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2. PHONE: 770077 FAX: 771186

INDUSTRIAL WAREHOUSE & OFFICES
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN
for MITSUBISHI ELECTRIC

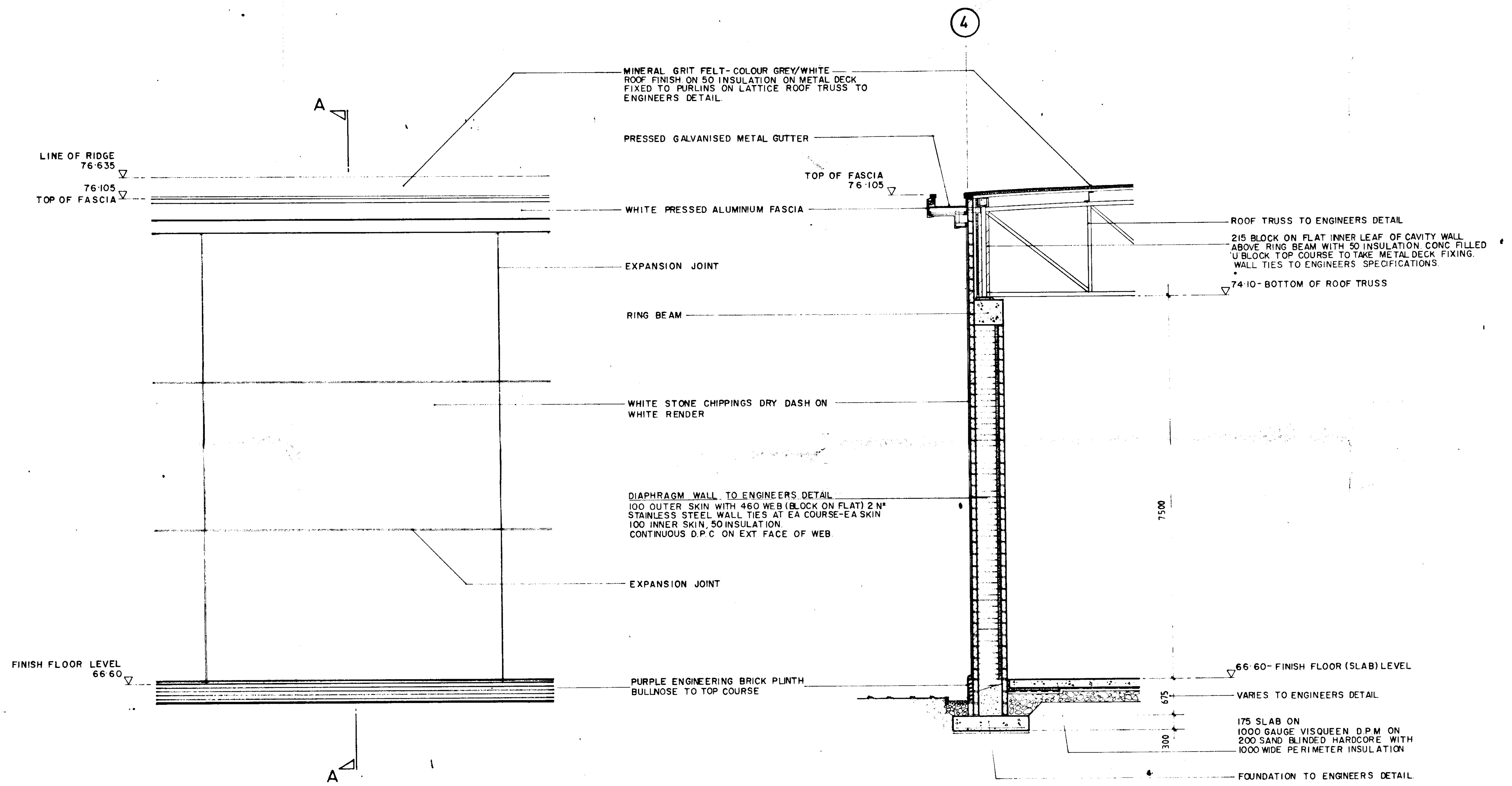
TYPICAL OFFICE BAY
SECTION AND ELEVATION

scale 1:50
date APRIL '91
drawn J.O.C.
no. 9012 212

JDH 13878

no dimensions to be scaled from this drawing ; all dimensions to be checked by the contractor on site ; any errors or discrepancies to be reported to the architects in charge.

notes :



BAY ELEVATION

BAY WALL SECTION A-A

DUBLIN COUNTY COUNCIL Building Control Section APPLICATION RECEIVED 15 APR 1991 REG No. 91A/0583 APPLICATION TYPE O/P/A/BBL

revisions

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2. PHONE: 770077 FAX: 771106

INDUSTRIAL WAREHOUSE & OFFICES
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN
for MITSUBISHI ELECTRIC

TYP. WAREHOUSE BAY
SECTION AND ELEVATION

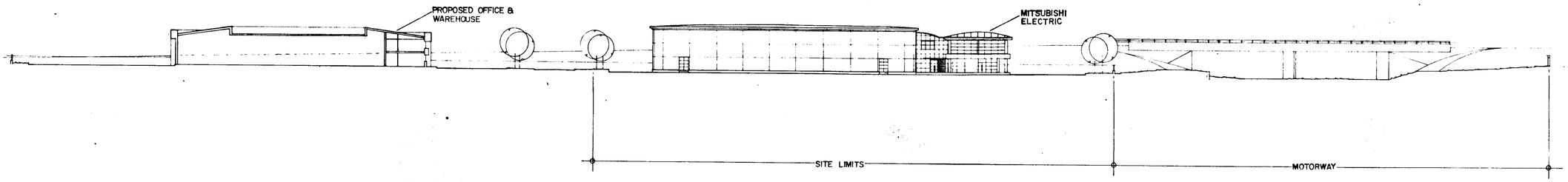
scale 1:50
date APRIL '91
drawn J.O.C

no. 9012 213

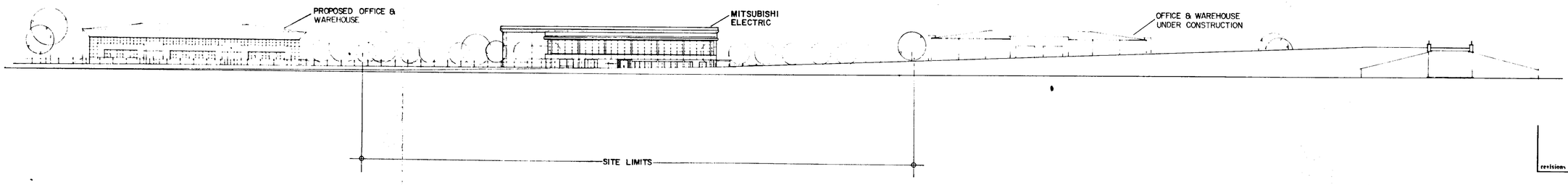
M 13878

no dimensions to be scaled from this drawing ; all dimensions to be checked by the contractor on site ; any errors or discrepancies to be reported to the architects in charge.

notes :



SECTION 1:1



SECTION 2:2

revisions

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2.
PHONE: 770077
FAX: 771186

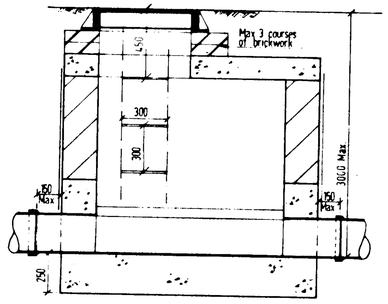
INDUSTRIAL WAREHOUSE & OFFICE
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO DUBLIN
for MITSUBISHI ELECTRIC

SITE SECTIONS

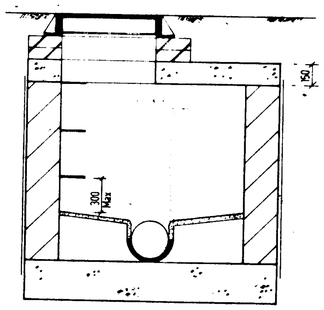
scale 1:500
date APRIL '91
drawn D.H.

no. 9012 214

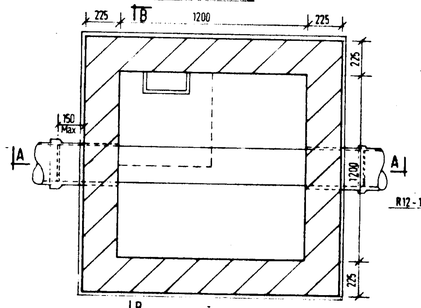
93078



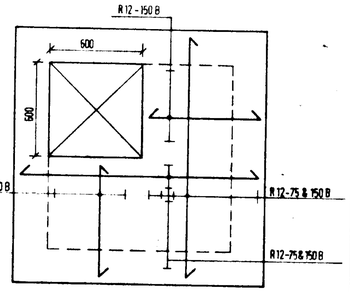
SECTION A-A



SECTION B-B

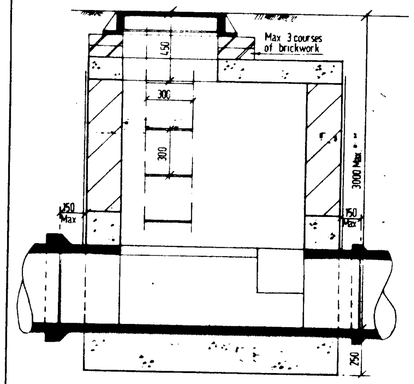


SECTIONAL PLAN

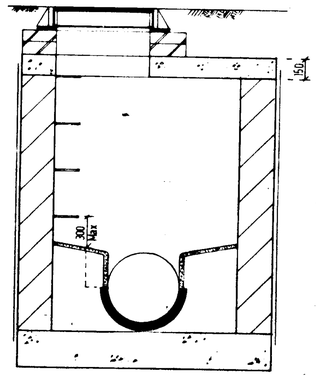


ROOF PLAN

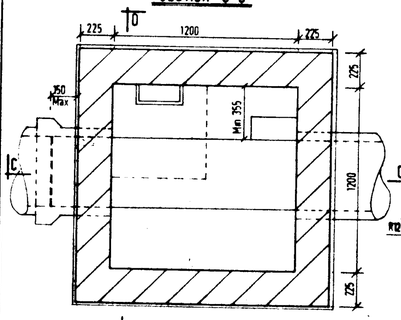
SHALLOW MANHOLE (on pipes up to 300mm dia)



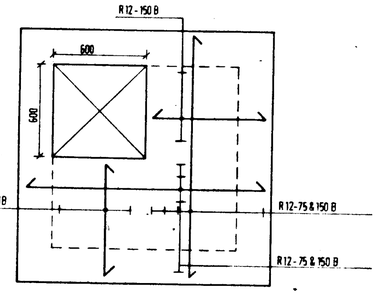
SECTION C-C



SECTION D-D

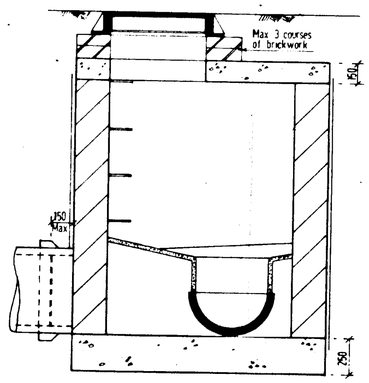


SECTIONAL PLAN

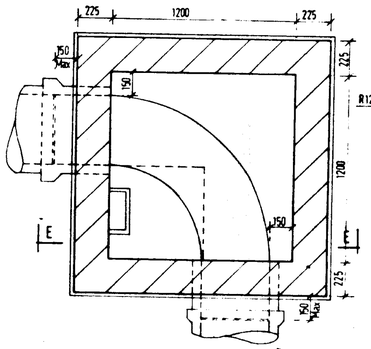


ROOF PLAN

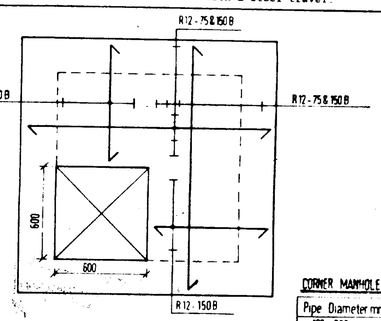
SHALLOW MANHOLE (on pipes 375 - 600mm dia)



SECTION E-E



SECTIONAL PLAN



ROOF PLAN

CORNER MANHOLE (if over 3·0m deep shaft as for deep manhole)

NOTES

Manhole Construction
Manholes to be constructed in solid concrete blockwork to I.S. 20 (Type A - 10.5N/mm²) and cement mortar, minimum 225mm thick for depths up to 3.0m and 350mm thick for depths between 3.0m and 6.0m. Pipes 225mm diameter and over when built into walls shall have a R.C. lintol over the pipe to the full thickness of the blockwork and the full length of the wall.

Covers
Manhole covers and frames to be ductile iron, non-rock, grade A heavy duty to I.S. 261 with a 600mm clear opening and closed keyways.

Ladder Rungs
Ladder rungs shall be 20mm diameter mild steel heavily galvanised after manufacture as shown on the drawing and fitted at 300mm centres. Length embedded in wall 125mm.

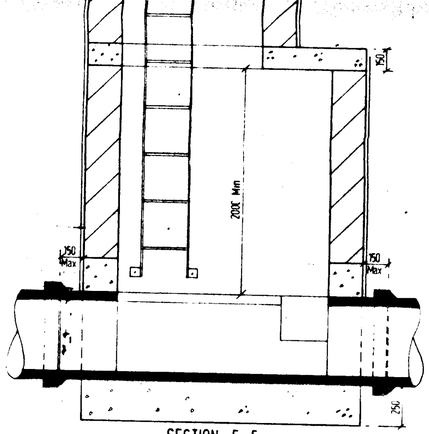
Access Ladders
Access ladders to be manufactured from mild steel with 65mm x 12mm stringers 300mm apart with 20mm diameter rungs at 300mm c/c. Mild steel stays 65mm x 12mm to be provided at intervals not exceeding 2.40m. Ladder and stays to be heavily galvanised after manufacture. The ladder is to be fixed with 18mm diameter bolts.

Benching
Benching is to be formed in grade 30 concrete and should rise vertically from the top edge of the channel to a height not less than that of the soffit of the outlet and slope upwards to meet the wall of the manhole at a gradient of 1 : 6 (min. rise 25mm). It should be floated with a steel float to a smooth hard surface with a 25mm thick coat of 1 : 1 cement : mortar laid while the benching concrete is still green.

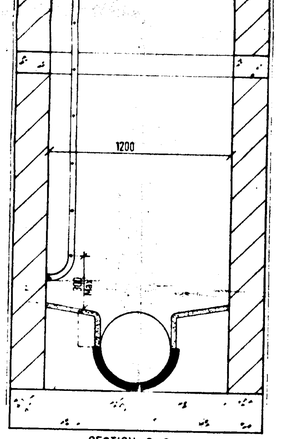
Rendering
Surface water manholes shall be rendered externally in 1 : 3 cement mortar 25mm thick and finished with a steel trawel.

CORNER MANHOLE SIZES

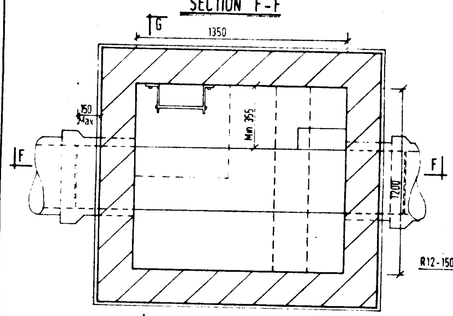
Pipe Diameter mm	Manhole Size m
100 - 300	1·2 x 1·2
375 - 600	1·5 x 1·5
600 - 750	1·5 x 1·75



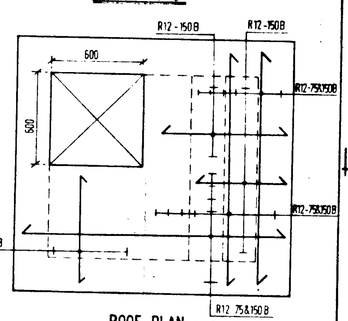
SECTION F-F



SECTION G-G

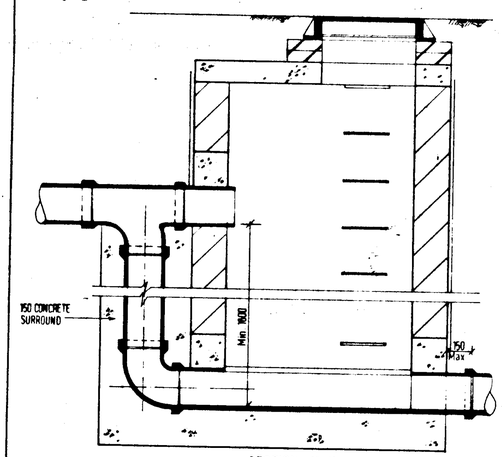


SECTIONAL PLAN

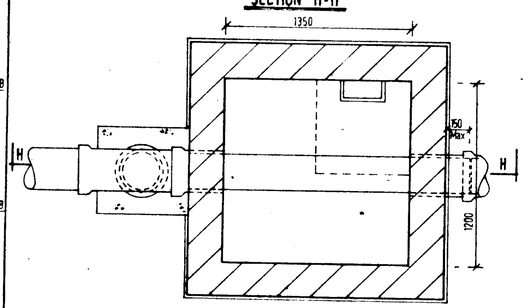


ROOF PLAN (SHOWING ROOF STEEL & SHAFT ROOF STEEL)

DEEP MANHOLES (depths over 3·0m.)

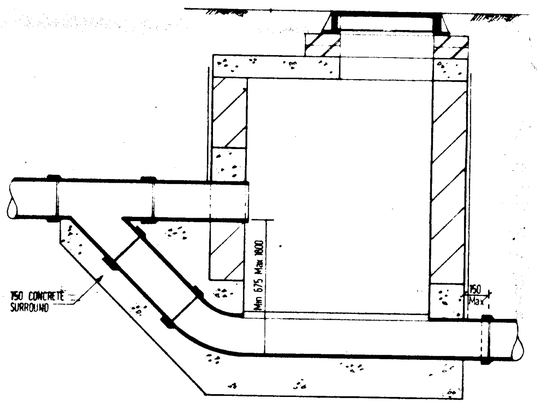


SECTION H-H

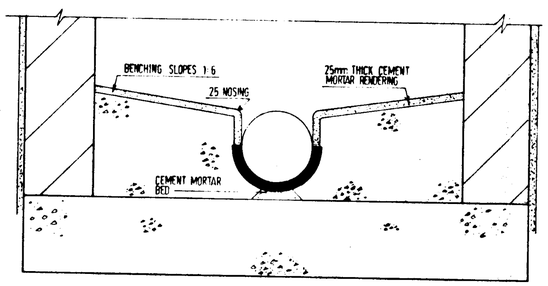


SECTIONAL PLAN

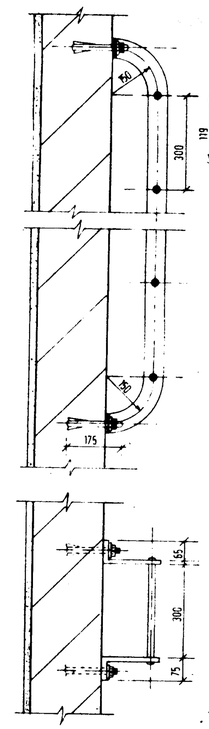
VERTICAL BACKDROP MANHOLE



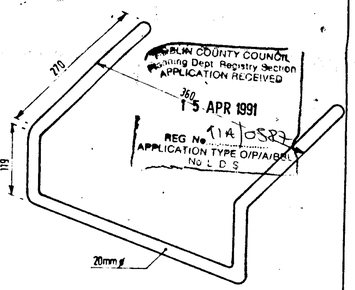
RAMPED BACKDROP MANHOLE



BENCHING DETAIL



ACCESS LADDER DETAIL



LADDER RUNGS

Drawing Status
PLANNING

Job Title
OFFICES & WAREHOUSING AT WESTGATE BUSINESS PARK FOR MITSUBISHI ELECTRICAL.

Drawing Title
MANHOLE DETAILS

Ove Arup & Partners Ireland
Consulting Engineers
Dublin : Cork : Limerick : Waterford

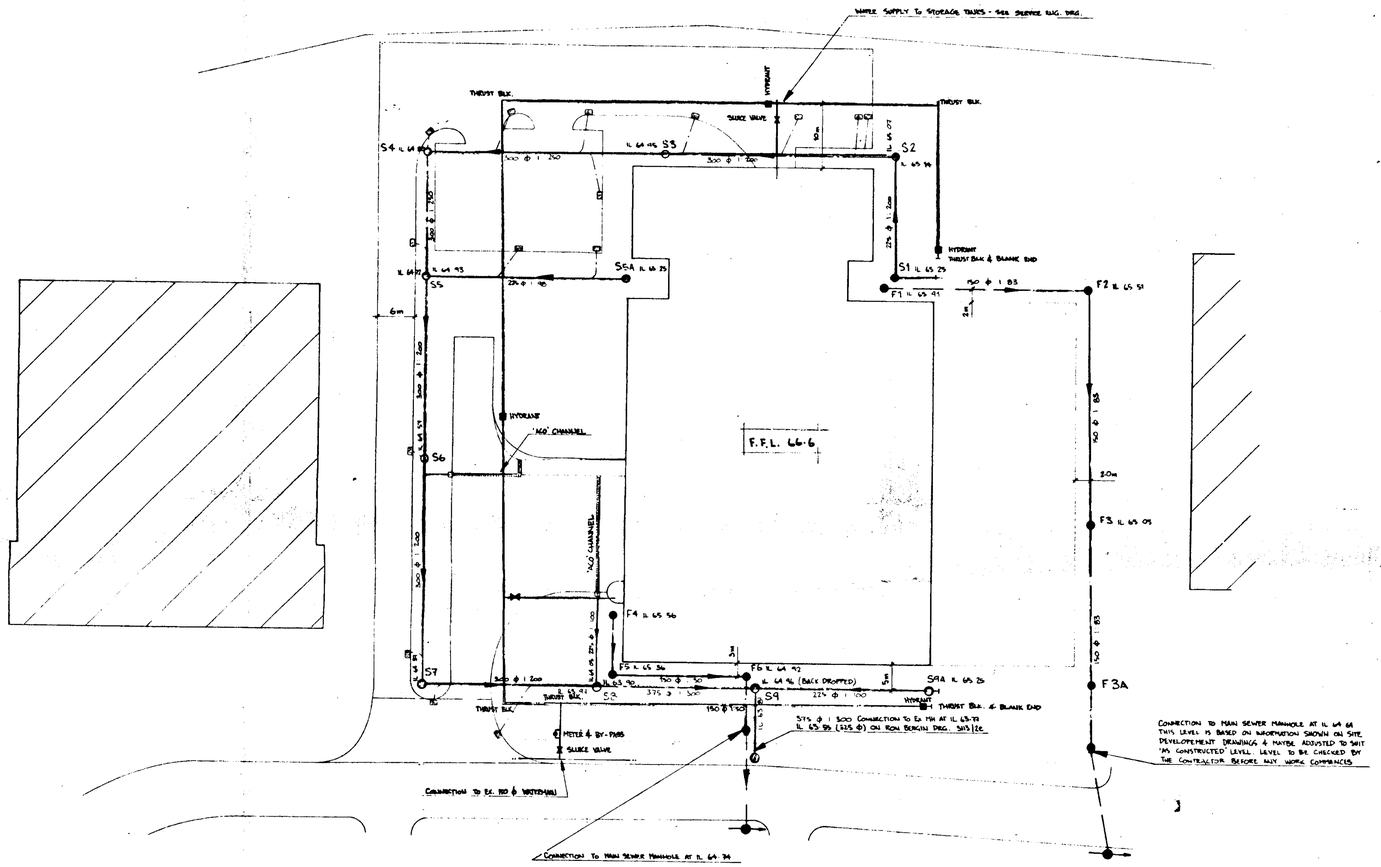
Scales 1 10 1 20

Drn KD	Date	Chd	Passed

Job No.	Drawing No	Rev.
D787	D787/C/L/5	

ARUP

Western Parkway



Roads Specification:

1: Lightly Trafficed Roads & Carparks
80 mm of Dense Bitmac in 2 layers on 300 mm Clause 804

2: Heavily Trafficed Area at Entrance
100 mm of Dense Bitmac in 2 layers on 350 mm Clause 804

3: Concrete Loading Bay
200 mm dp Conc. Slab with Top Layer A252 B.S. Mesh on 150 mm Clause 804. Joints in Slab & Transition to Bitmac as Detailed.

External Drainage Specification:

1: Foul Drainage — Manhole
Diameter & Gradient as Detailed
Pipes & Fittings to be Clayware to I.S. 106 or B.S. 65 with Granular Bed & Surround where Cover is > 900 mm in Non Trafficed Area & > 1.2 m in Trafficed Areas. Where Cover is less than above use 150 mm Conc. Bed & Surround with Flexible Joints at Max 5 m C/Rs. Flexible Joints in Conc. Bed & Surround to be Provided @ 150 mm from Walls Penetrated by Pipes (Manhole &c.) See Sk. 2.

2: Surface Water Drainage — Manhole — Road Gully
Diameter & Gradient as Detailed
Pipes & Fittings to be Spigot & Socket Class H Conc. Pipes to I.S. 6, 166 or B.S. 5911. Bed & Surround, Joints as Above.

3: Channel & Grating in Loading Area
'NO' Channel Frame Drain (Nominal 100 mm Width @ 4% Gradient) with Class E Grating (400 Kn) or Equal Approved. Bedded & Surround in Grade 30 Conc., Frame Secured into Surround with Fatigued Anchor & Grating Locks Provided. Sump Unit & Mud Bucket to be Fitted at Outlet. Workmanship to B.S. 8301

Watermain Specification:

150 Ø — Hydrant — Sluice Valve

Pipes to be uPVC Pressure Pipes to I.S. 135, B.S. 3505 or B.S. 3506 with 150 mm Granular Bed & Surround (min. Aggregate Size 10 mm) Pipes under Road & Trafficed Areas to be Ductile Iron to I.S. 261 or B.S. 4772.

Mark	Date	By	Rev

Client
MITSUBISHI ELECTRIC

Drawing Status
PLANNING

Job Title
OFFICES AND WAREHOUSE AT WESTGATE BUSINESS PARK

Drawing Title
DRAINAGE, WATERMAIN & ROAD LAYOUT

Ove Arup & Partners Ireland
Consulting Engineers
Dublin : Cork : Limerick

Scales 1:500

Drn	Date	Chd	Passed

Job No.	Drawing No	Rev.
D 787	Sk. 4 APR. 91	

ARUP

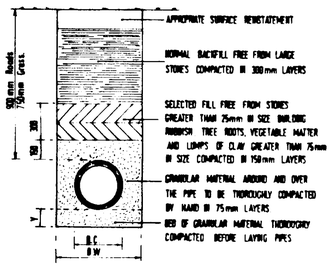
WATERMAIN BEDDING DETAIL.

Pipe diam (mm)	B.C. Outside diam	B.W. Bed width	Y=½B.C. or 150mm Bed thickness	Y=½B.C. or 200mm Bed thickness
100	122	450	150	200
125	150	475	150	200
150	178	500	150	200
175	203	525	150	200
200	228	550	150	200
225	255	600	150	200
250	282	650	150	200
300	340	700	150	200
375	427	950	150	200
450	511	1050	150	200

Note IN UNIFORM SOIL USE COLUMN SHOWING Y = ½ B.C. or 150mm
IN ROCK USE COLUMN SHOWING Y = ½ B.C. or 200mm

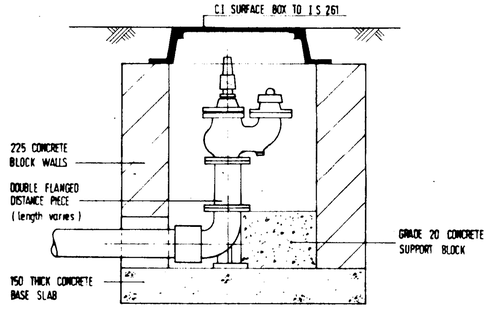
DIMENSION Y - IN UNIFORM SOILS THE DEPTH OF BED SHALL BE Y = ½ B.C. or 150mm WHICHEVER IS THE GREATER UNDER THE BARRELL BUT NOT LESS THAN 50mm UNDER THE SOCKETS.

IN ROCK OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS OR LARGE FLINTS OR STONES OR OTHER IRREGULAR HARD SPOTS THE DEPTH SHALL BE Y = ½ B.C. or 200mm WHICHEVER IS THE GREATER UNDER THE BARRELL BUT NOT LESS THAN 200mm UNDER THE SOCKET ALSO.

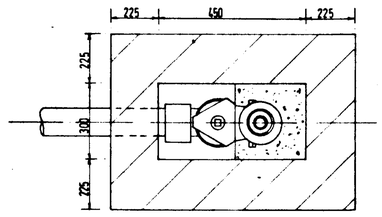


CLASS B BEDDING

DETAIL OF A DUCK-FOOT FIRE HYDRANT.

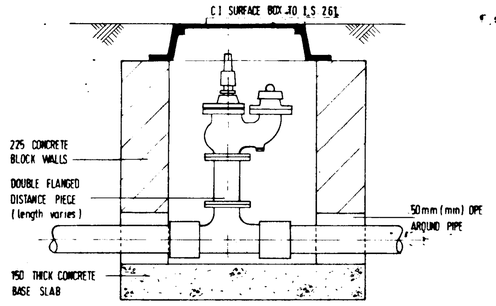


SECTION

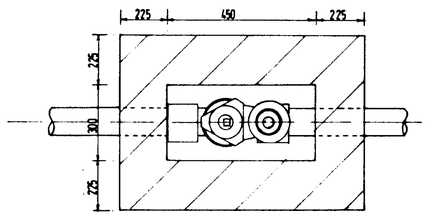


PLAN

DETAIL OF A FIRE HYDRANT.



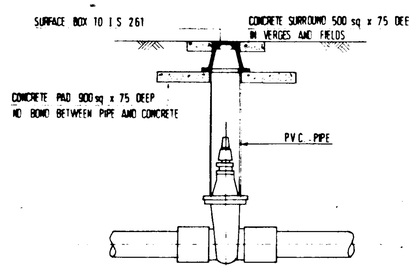
SECTION



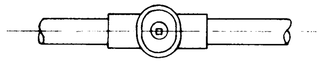
PLAN

NOTE -
1. HYDRANT TEE SHALL BE APPROPRIATE TO THE TYPE OF MAIN INSTALLED
2. DEPTH OF HYDRANT OUTLET NOT TO EXCEED 300mm BELOW FINISHED GROUND LEVEL

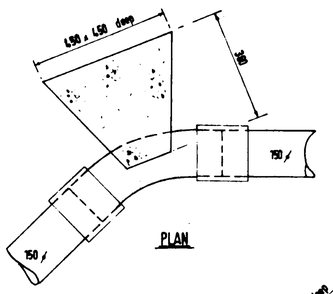
DETAIL OF A SLUICE VALVE.



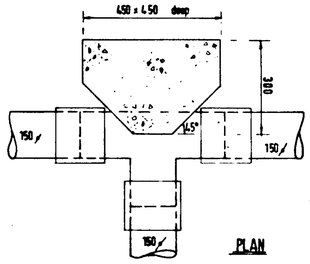
SECTION



PLAN

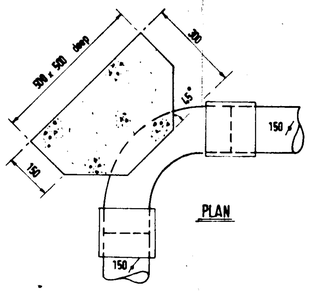


45° BEND



PLAN

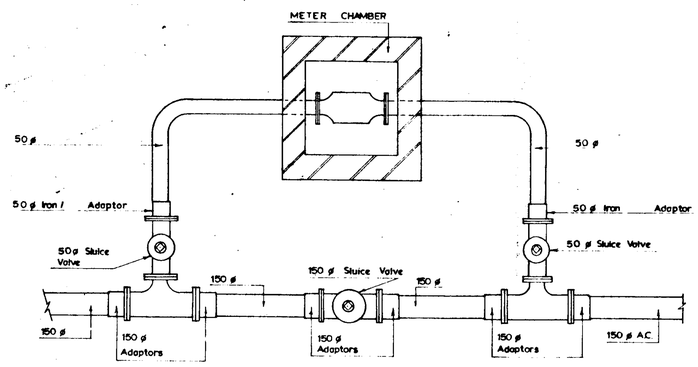
TEE - PIECE



PLAN

90° BEND

TYPICAL THRUST BLOCK DETAILS.



METER BYPASS DETAIL

MARK | DATE | BY | REVISIONS

MITSUBISHI ELECTRIC
OFFICES AND WAREHOUSE AT
WESTGATE BUSINESS PARK

WATERMAIN DETAILS

OVE ARUP & PARTNERS

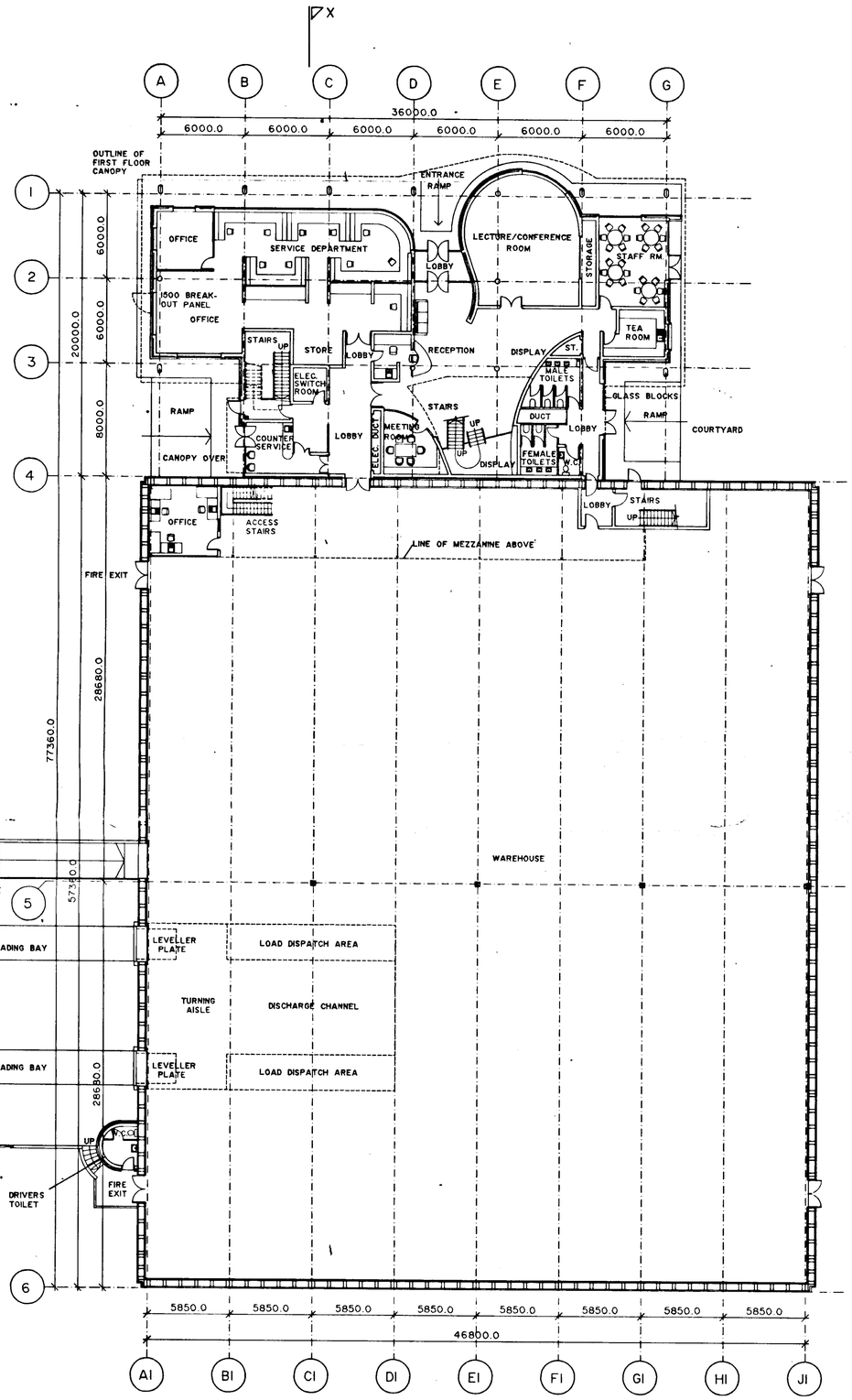
JOB No. D787 | DRG. No. D787/C/L/6 | REV.

SCALE 1:10

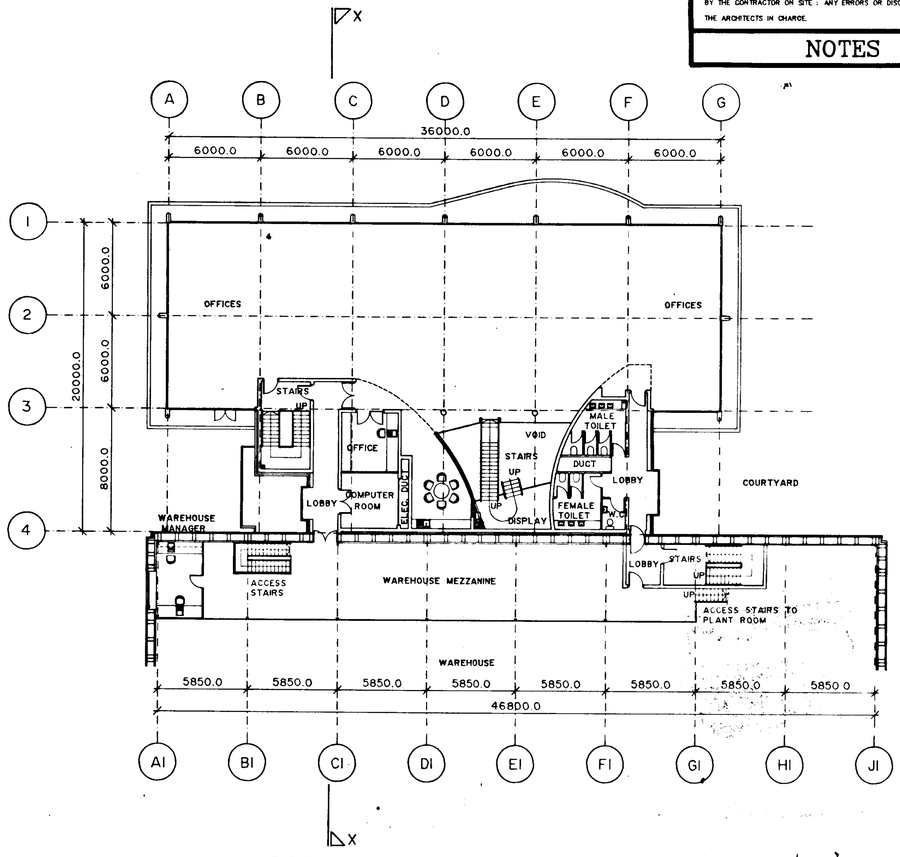
DRAWN D.f. DATE 4/91 CHECKED

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING - ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE ; ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES



GROUND FLOOR PLAN



FIRST FLOOR PLAN

REVISION A GENERAL UPDATE 11/4/1991 G.G.

KEANE MURPHY DUFF
Chartered Architects
KMD
4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.
PHONE (01) 770077

INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK BALLYMOUNT ROAD, CO. DUBLIN.
FOR MITSUBISHI ELECTRIC

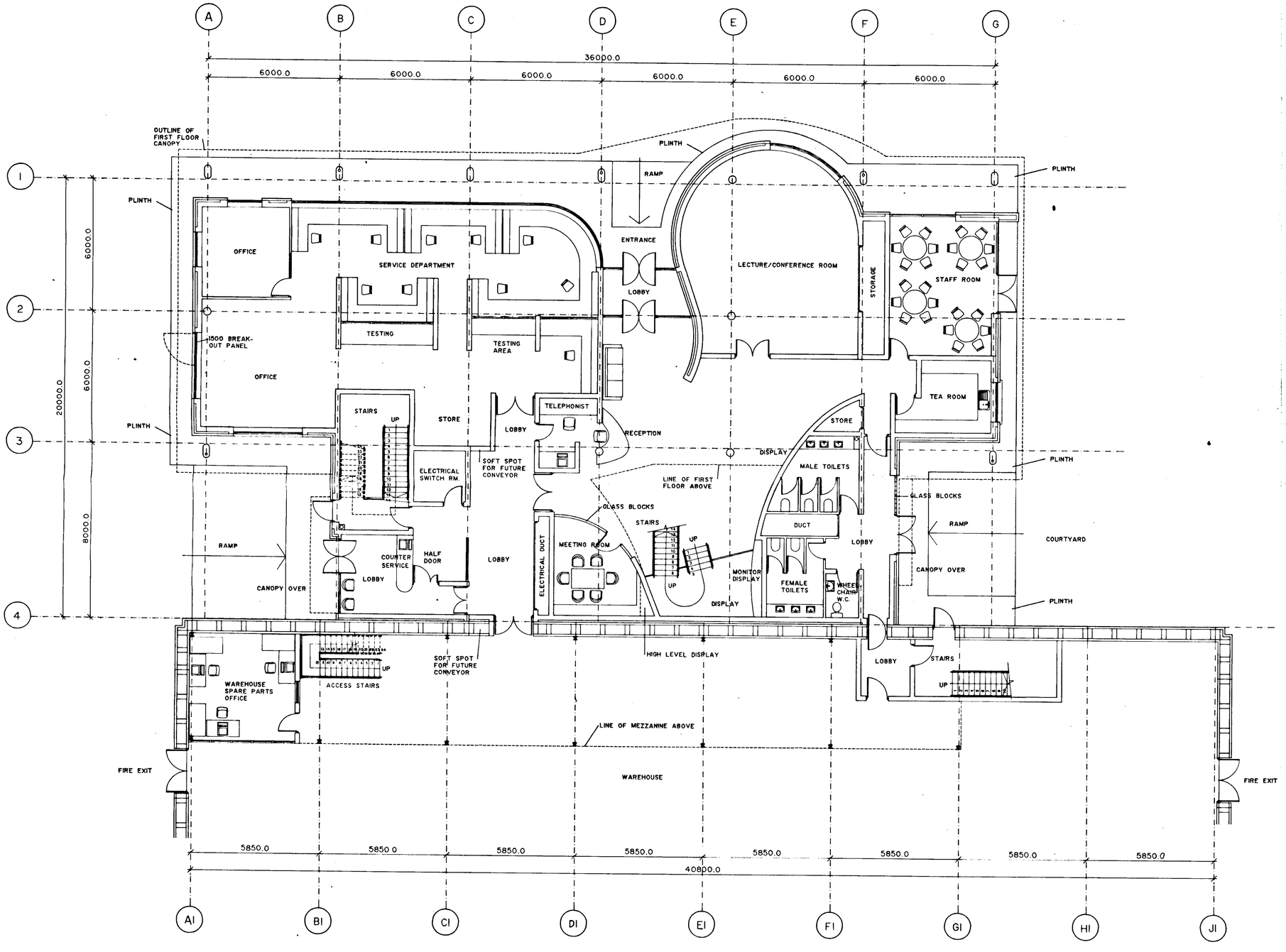
OVERALL PLANS

SCALE 1:200
DATE MARCH 1991
DRAWN G.G.

NO. 9012 202 A

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING : ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES



GROUND FLOOR PLAN

REVISION B GENERAL UPDATE 11/4/1991 G.G.

REVISION A NEW ACCESS STAIRS SHOWN & GENERAL UPDATE 28/3/1991 G.G.

KEANE MURPHY DUFF
Chartered Architects

KMD

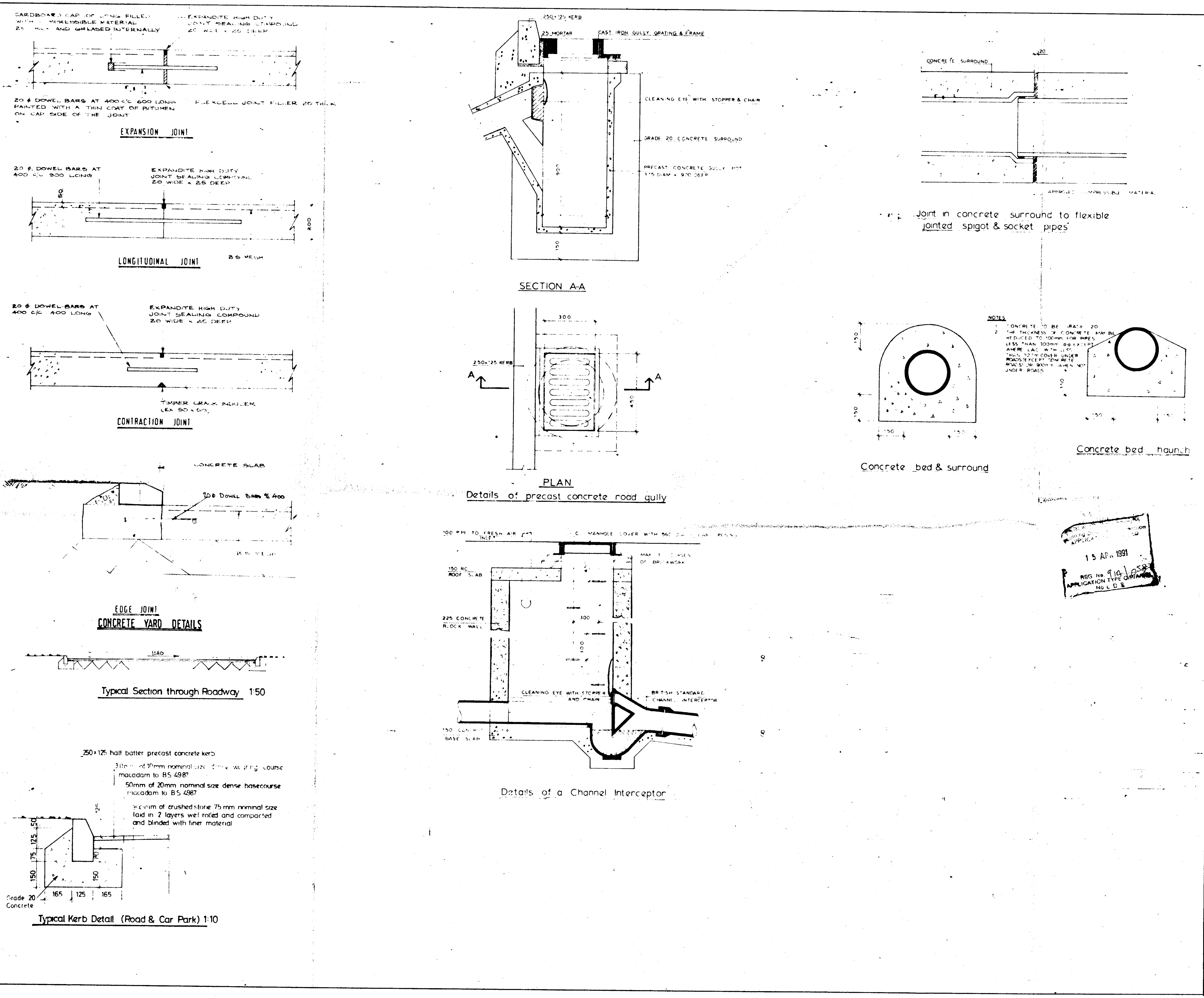
4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.
PHONE (01) 770077

INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN.
FOR MITSUBISHI ELECTRIC

GROUND FLOOR PLAN

SCALE 1:100
DATE MARCH 1991
DRAWN G.G.

No. 9012 203B


EXPANSION JOINT
20 ϕ DOWEL BARS AT 400 c/c 600 LONG PAINTED WITH A THIN COAT OF BITUMEN ON CAP SIDE OF THE JOINT
LONGITUDINAL JOINT
20 ϕ DOWEL BARS AT 400 c/c 900 LONG
EXPANDITE HIGH DUTY JOINT SEALING COMPOUND 20 WIDE x 25 DEEP
CONTRACTION JOINT
20 ϕ DOWEL BARS AT 400 c/c 400 LONG
EXPANDITE HIGH DUTY JOINT SEALING COMPOUND 20 WIDE x 25 DEEP
CONCRETE SLAB
EDGE JOINT
CONCRETE YARD DETAILS
Typical Section through Roadway 1:50
250 x 125 half batter precast concrete kerb
50mm of 20mm nominal size dense basecourse macadam to BS 4987
and blinded with finer material
Grade 20 Concrete
Typical Kerb Detail (Road & Car Park) 1:10
250x125 KERB
25 MORTAR
CAST IRON GULLY GRATING & FRAME
CLEANING EYE WITH STOPPER & CHAIN
GRADE 20 CONCRETE SURROUND
SECTION A-A
PLAN
Details of precast concrete road gully
CLEANING EYE WITH STOPPER AND CHAIN
BRITISH STANDARD CHANNEL INTERCEPTOR
225 CONCRETE BLOCK WALL
Details of a Channel Interceptor
CONCRETE SURROUND
Joint in concrete surround to flexible jointed spigot & socket pipes
NOTES
Concrete bed & surround
Concrete bed haunch
15 APR 1991

PLANNING

OFFICES AND WAREHOUSE AT WESTGATE BUSINESS PARK FOR MITSUBISHI ELECTRIC

DRAINAGE DETAILS

Ove Arup & Partners Ireland

Dublin : Cork : Limerick : Waterford

Scales as shown

Drn p.t.

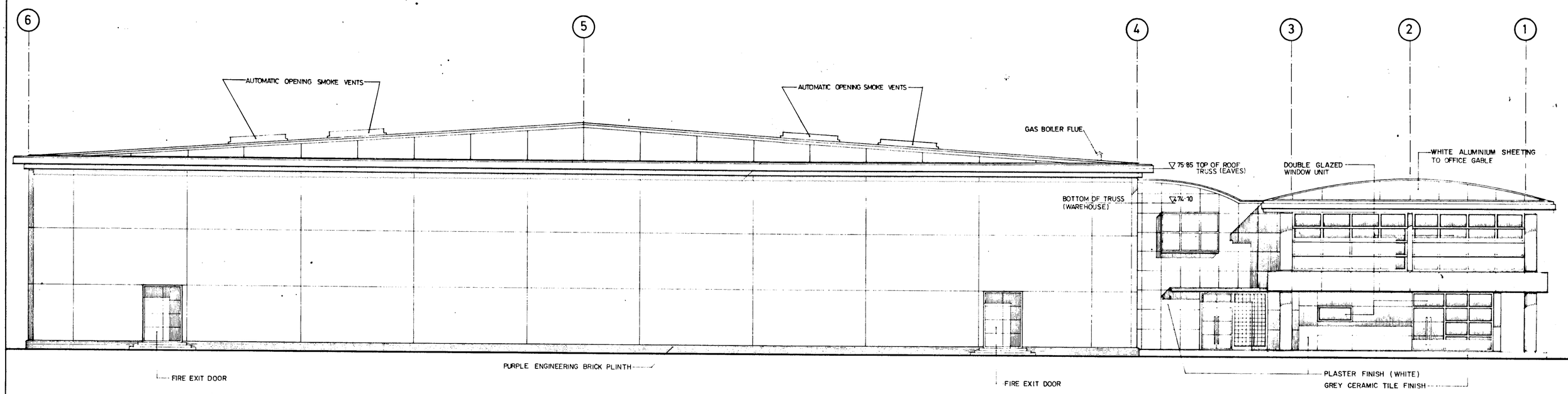
Job No D787

Drawing No D787/C/L/3

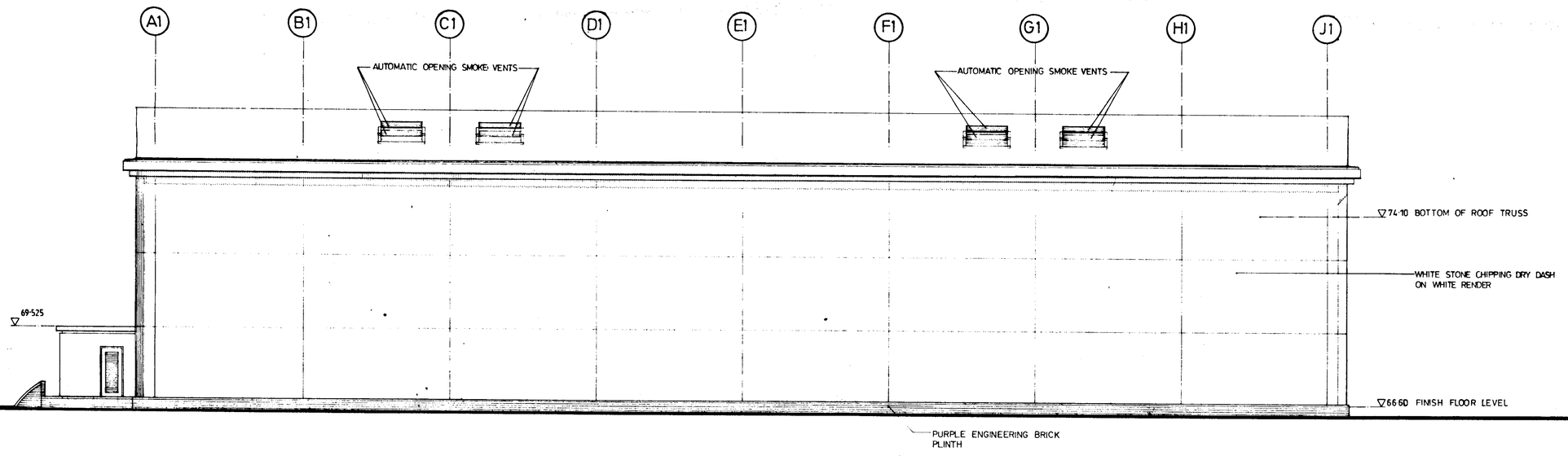
ARUP

no dimensions to be scaled from this drawing ; all dimensions to be checked by the contractor on site ; any errors or discrepancies to be reported to the architects in charge.

notes :



WEST ELEVATION 2/301



NORTH ELEVATION 3/301

RECEIVED
24 MAY 1991
Reg. Sec.

revisions

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2.
PHONE: 778877
FAX: 771186

INDUSTRIAL WAREHOUSE & OFFICES
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN.
for MITSUBISHI ELECTRIC

BUILDING ELEVATIONS

B

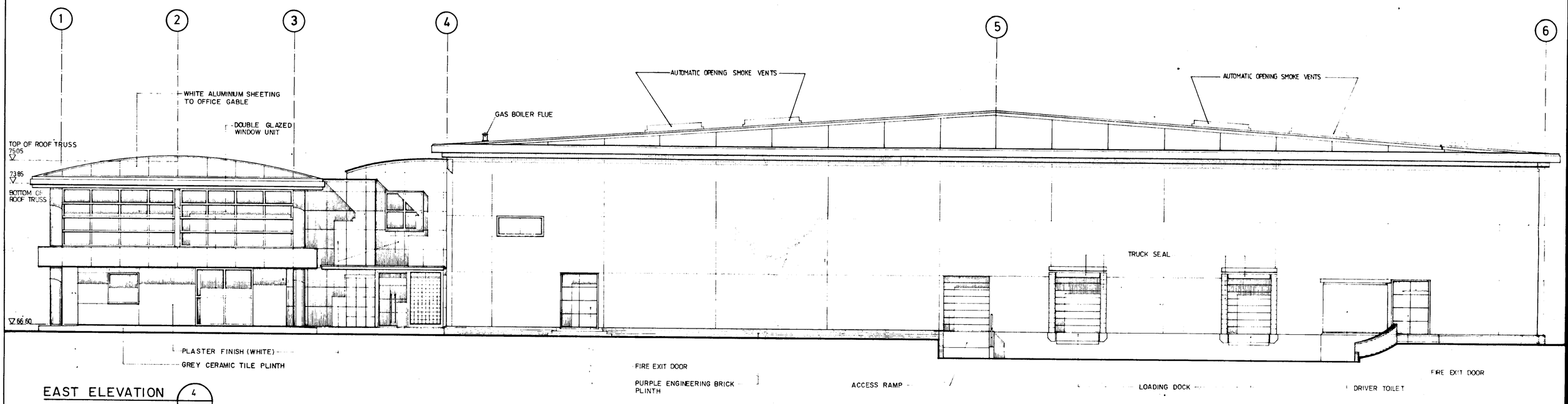
scale 1:100
date APRIL '91
drawn D.H.

no. 9012 306

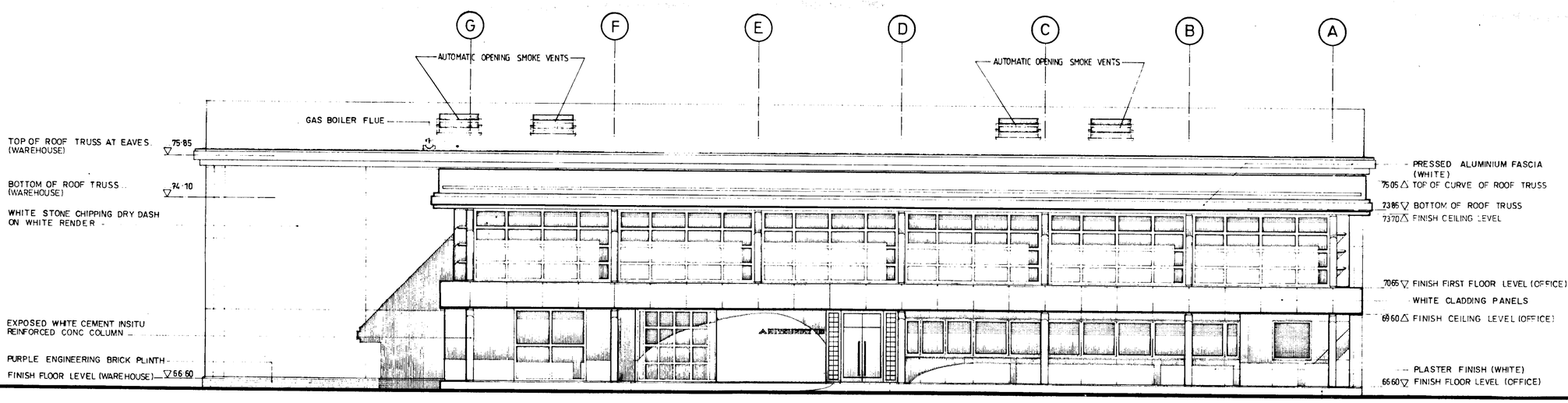
JDH 13878

no dimensions to be scaled from this drawing ; all dimensions to be checked by the contractor on site ; any errors or discrepancies to be reported to the architects in charge.

notes :



EAST ELEVATION 4/301



SOUTH ELEVATION 1/301

RECEIVED
24 MAY 1991
PA/0584
Reg. Sec.

revisions

KEANE MURPHY DUFF
Chartered Architects

KMD

4 PRINCES ST. SOUTH, CITY QUAY, DUBLIN 2. PHONE: 770877 FAX: 771186

INDUSTRIAL WAREHOUSE & OFFICES
at WESTGATE BUSINESS PARK
BALLYMOUNT ROAD, CO. DUBLIN
for MITSUBISHI ELECTRIC

BUILDING ELEVATIONS

B

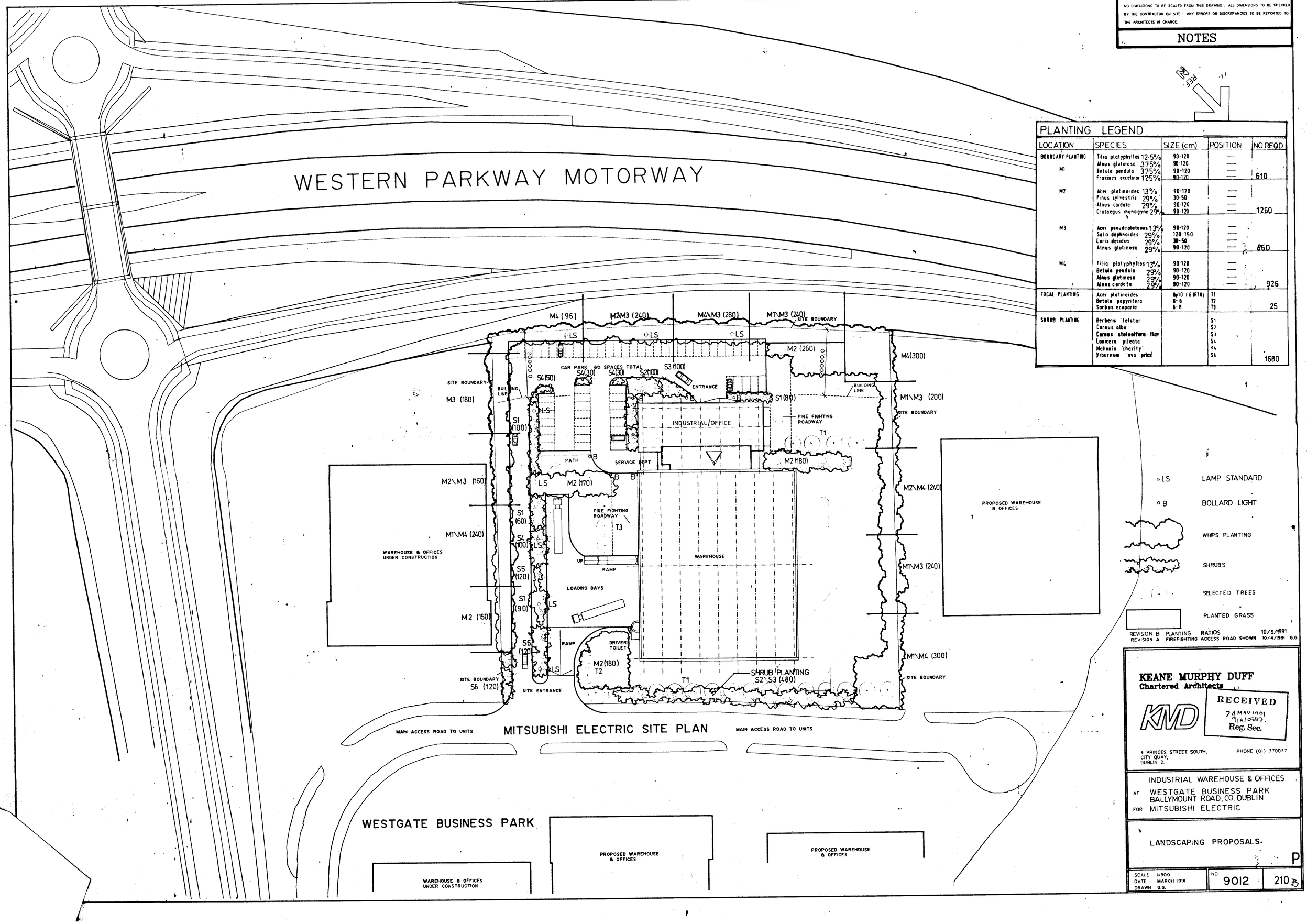
scale 1 100
date APRIL 91
drawn D.H

no. 9012 307

JDH 13878

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING : ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE : ANY ERRORS OR DISCREPANCIES TO BE REPORTED TO THE ARCHITECTS IN CHARGE.

NOTES



PLANTING LEGEND

LOCATION	SPECIES	SIZE (cm)	POSITION	NO REQD
BOUNDARY PLANTING	Tilia platyphyllos 12·5%	90-120	—	
	Alnus glutinosa 37·5%	90-120	—	
M1	Betula pendula 37·5%	90-120	—	
	Fraxinus excelsior 12·5%	90-120	—	610
	Acer platinoides 13%	90-120	—	
M2	Pinus sylvestris 29%	30-50	—	
	Alnus cardata 29%	90-120	—	
	Crataegus monogyne 29%	90-120	—	1260
	Acer pseudoplatanus 13%	90-120	—	
M3	Salix daphnoides 29%	120-150	—	
	Larix decidua 29%	30-50	—	
	Alnus glutinosa 29%	90-120	—	860
	Tilia platyphyllos 13%	90-120	—	
M4	Betula pendula 29%	90-120	—	
	Alnus glutinosa 29%	90-120	—	
	Alnus cardata 29%	90-120	—	926
FOCAL PLANTING	Acer platinoides	8-10 (6 IRTH)	T1	
	Betula papyrifera	6-8	T2	
	Sorbus ecuparia	6-8	T3	25
SHRUB PLANTING	Berberis 'telstar'		S1	
	Cornus alba		S2	
	Cornus stolonifera 'flav.		S3	
	Lonicera pileata		S4	
	Mahonia 'charity'		S5	
	Viburnum 'eva price'		S6	1680

- ○LS LAMP STANDARD
- ○B BOLLARD LIGHT
- WHIPS PLANTING
- SHRUBS
- SELECTED TREES
- PLANTED GRASS

REVISION B PLANTING RATIOS 10/5/1991
REVISION A FIREFIGHTING ACCESS ROAD SHOWN 10/4/1991 G.G.

KEANE MURPHY DUFF
Chartered Architects
KMD
4 PRINCES STREET SOUTH, CITY QUAY, DUBLIN 2.
PHONE (01) 770077

INDUSTRIAL WAREHOUSE & OFFICES
AT WESTGATE BUSINESS PARK BALLYMOUNT ROAD, CO. DUBLIN
FOR MITSUBISHI ELECTRIC

LANDSCAPING PROPOSALS.

P

SCALE 1:500 DATE MARCH 1991 DRAWN G.G.	NO. 9012	210 B