BYE LAW APPLICATION FEES

REF. NO.: 91A/794 CERTIFICATE NO.: 17972 B

PROPOSAL: Ind. Unit

LOCATION: Greenhills Rd.

APPLICANT: Hibernian Ins. Co.

	1	2	3	4	5	6	7
CLASS	DWELLINGS/AREA LENGTH/STRUCTURE	RATE	AMT. OF FEE REQUIRED	AMT. LODGED	BALANCE DUE	RED. FEE APPL.	AMT. OF RED. FEE
A	Dwelling (Houses/Flats)	@ £55					
B	Domestic Ext. (Improvement/ Alts.)	@ £30					
C	Building for office or other comm. purpose See 25326	@ £3.50 per M^2 or £70 2620m²	£9170	£9583.10	—	£413.10 overpayment	
D	Building or other structure for purposes of agriculture	@ £1.00 per M^2 in excess of 300 M^2 Min. £70					
E	Petrol Filling Station	@ £200					
F	Dev. of prop. not coming within any of the forgoing classes	£70 or £9 per .1 hect. whichever is the greater					

Column 1 Certified: Signed: _____ Grade: _____ Date: _____

Column 1 Endorsed: Signed: _____ Grade: _____ Date: _____

Columns 2,3,4,5,6 & 7 Certified: Signed: M. Deane Grade: III Date: 3/4/92

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

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

An Bord Pleanala,
Floor 3,
Blocks 6 & 7,
Irish Life Centre,
Lower Abbey St.,
Dublin 1.

Our Ref: 91A/0794

Your Ref.: PL6/5/86454

8 October 1991

Re: Construction of a light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills Road, Tallaght for Hibernian Insurance Co. Ltd.

Dear Sir/Madam,

I refer to your letter dated 9th August, 1991 & 5th September, 1991, enclosing correspondence with regard to the above appeal.

The Planning Authority's comments are as follows:-

Condition No. 9 of the Councils Decision to Grant No. P/3057/91 dated 03.07.91 (Reg. Ref. 91A/0794) - As the financial contribution towards the cost of public services has already been paid in respect of the overall site under RA/243, the Council does not propose to collect the financial contribution referred to in the said condition no. 9.

Yours faithfully,

for Principal Officer.

Date: 3 October 1991.

Our Ref: CN 9533 DB/SOB

Michael O'Meara,
Architectural & Planning Consultant,
4, Eagle Terrace,
Dundrum,
Dublin 14.

Re: Proposed light industrial unit at Hibernian Industrial Estate, Greenhills Road, Tallaght. Register Reference 91A/0794.

Dear Sir,

I refer to your letter dated 29.07.91 regarding the financial contribution in the sum of £21,153. required by condition No. 9 of the Councils decision to grant No. P/3057/91 dated 03.07.91 (Register Reference 91A/0794) and I am to inform you that as the financial contribution towards the cost of public services has already been paid in respect of the overall site under RA/243, the Council does not propose to collect the financial contribution referred to in the said condition No. 9.

Yours faithfully,

For Principal Officer.

PK

MICHAEL O'MEARA
Architectural & Planning Consultant

4 Eagle Terrace,
Dundrum, Dublin 14.

Tel: 01-985722
Fax: 01-985722

6/9/91

Dublin County Council
Planning Dept.
Block 2
Irish Life Centre
Lr. Abbey Street
Dublin 1.

4 September 1991.

Re: Proposed Light Industrial/Warehouse Unit at
Hibernian Industrial Estate, Greenhills Rd., Tallaght.
Ref. No. 91A/0794

Dear Sirs,

I refer to your letter of 22 August 1991 re. the Notification of Grant of Permission for the above and herewith return same as requested.

Yours faithfully,

Michael O'Meara.

MICHAEL O'MEARA

05 SEPT 91

Encl.

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

Grant Order Number : P/ 3808 /91 Date of Grant : 13th August 1991

Decision Order Number : P/ 3057 /91 Date of Decision : 3rd July 1991

Register Reference : 91A/0794 Date Received : 17th May 1991

Applicant : Hibernian Insurance Co. Ltd.

Development : Construction of a light industrial/warehouse unit

Location : Hibernian Industrial Estate, Greenhills Road, Tallaght

Additional Information Requested/Received : //

Time Extension(s) up to and including :

A PERMISSION has been granted for the development described above, subject to the Conditions on the attached Numbered Pages.

NUMBER OF CONDITIONS:- ...9.....ATTACHED.

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

Date:...13 AUG 1991.....

APPROVAL of the Council under Building Bye-Laws must be obtained before the development is commenced and the terms of approval must be complied with in the carrying out of the work.

Michael O'Meara, Architect,
4 Eagle Terrace,
Dundrum,
Dublin 14

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

Reg.Ref. 91A/0794
Decision Order No. P/ 3057 /91

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 Sanitary Services Department be ascertained and strictly adhered to in the proposed development.

03 REASON: In order to comply with the Sanitary Services Acts, 1878-1964.

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

05 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.

06 That no advertising sign or structure be erected except those which are exempted development, without prior approval of Planning Authority.
REASON: In the interest of the proper planning and development of the area.

07 That off-street car parking facilities and parking for trucks be provided in accordance with the Development Plan Standards.
REASON: In the interest of the proper planning and development of the area.

08 That details of landscaping and boundary treatment be submitted to and agreed in writing by Planning Authority and work thereon completed prior to occupation of units.
REASON: In the interest of amenity.

09 That a financial contribution in the sum of £ 21153. be paid by the proposer to the Dublin County Council towards the cost of provision of public services in the area of the proposed development and which facilitate this development; this contribution to be paid before the commencement of development on the site.
REASON: The provision of such services in the area by the Council will facilitate the proposed development. It is considered reasonable that the developer should contribute towards the cost of providing the services.

CERTIFICATE NO: 85326

: 91A/0794

Stannells Road Tallaght

OPOSAL: Light Industrial Unit

CATION: Hibernian Insurance Co Ltd

PPLICANT:

1	2	3	4	5	6	7
DWELLINGS/AREA LENGTH/STRUCT	RATE	AMT. OF FEE REQ.	AMOUNT LODGED	BALANCE DUE	BALANCE DUE	DATE/ RECEIPT NO
Dwellings	£32					
	£16					
	£50p per M² in excess of 300M² Min.£40					
metres² 2620.0m²	£1.75 per M² or £40	£4585	£4791.50	£206.50 overlodgement		
x .1 hect.	£25 per hect. or £250					
x .1 hect.	£25 per hect. or £40					
x .1 hect	£25 per hect. or £100					
	£100					
x metres²	£10 per M² or £40					
x1,000m²	£25 per 1,000m² or £40					
x .1 hect.	£25 per hect. or £40					

umn 1 Certified: Signed: J. Y[illegible] Grade: D/TE Date: 22/5/91

umn 1 Endorsed: Signed: [illegible] Grade: 8.0 Date: 21/5/91

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

lumns 2,3,4,5,6 & 7 Endorsed: Signed:

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

ASSESSMENT OF FINANCIAL CONTRIBUTION

REG. REF.: 91A/794

CONT. REG.:

SERVICES INVOLVED: WATER/FOUL SEWER/SURFACE WATER

AREA OF SITE:

FLOOR AREA OF PRESENT PROPOSAL: 28203 Ft²

MEASURED BY: J.Y. 22/5/91.

CHECKED BY:

METHOD OF ASSESSMENT:

TOTAL ASSESSMENT

MANAGER'S ORDER NO: P/ /.
DATED

ENTERED IN CONTRIBUTIONS REGISTER:

91A/794 IS PART OF TA 243. ANS 5/9/91

DEVELOPMENT CONTROL ASSISTANT GRADE

STD: $\frac{28203 \times 750}{1000}$ = £21,152.25

70503/4
21/5 21/4
= 21153

Say £21,153

WE 1/7/91

Register Reference : 91A/0794

Date : 22nd May 1991

Development : Construction of a light industrial/warehouse unit

LOCATION : Hibernian Industrial Estate, Greenhills Road, Tallaght

Applicant : Hibernian Insurance Co. Ltd.

App. Type : PERMISSION

Planning Officer : M.DARLEY

Date Recd. : 17th May 1991

COUNTY COUNCIL

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

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 8/8/91
Time 4:10

Yours faithfully,

PRINCIPAL OFFICER

This plan is acceptable subject to the following:

1. Compliance with the Office Premises Act 1958

2. Compliance with the Safety in Industry Acts.

3. Mechanically aided extract ventilation being provided from the water closet cubicles to give 3 air changes per hr.

4. Intake ventilation being provided to the lobbies serving the sanitary accommodation to give a min. of 2 air changes per hr.

5. A drinking water supply direct from the rising main be provided on all floors.

SUPER.ENVIRON. HEALTH OFFICER,
33 GARDINER PLACE,
DUBLIN 1.

6. Numbers of staff and details of type of industrial work envisaged to be submitted when known.

[signature] 29/7

[signature] 30/7/91

DUBLIN COUNTY COUNCIL

REG. REF: 91A/0794.

DEVELOPMENT: Construction of a light industrial/warehouse unit.

LOCATION: Hibernian Industrial Estate, Greenhills Road.

APPLICANT: Hibernian Insurance Co. Ltd.

DATE LODGED: 17.5.91.

This application is for full permission for construction of a light industrial/warehouse at Greenhills Road.

The proposed development would be served by an existing 9m wide Industrial Estate cul-de-sac. The cul-de-sac presently serves 3 warehouses and an Industrial Unit.

The applicant intends access to the site via two points, one of which (the most southerly one) has already a dished kerb and footpath. This would be required also for the other proposed access and to be to the satisfaction of the Area Engineer.

The applicant has proposed 84 car spaces which is in excess of the 75 required by Dublin County Council Standards.

No Roads objection subject to:-

1) A financial contribution, in the sum of money equivalent to the value of £15,000 (ie £10,000 pro rata) as on 1st January, 1991, updated in accordance with the Wholesale Price Index-Building and Construction (Capital Goods) as published by the Central Statistics Office to the value pertaining at the time of payment shall be paid by the developer to Dublin County Council towards the cost of road improvements and Traffic Management proposals in the area serving this site.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 02.07.91
Time 4.20

MA/BMcC
18.6.91.

SIGNED: Michael Arthurs **ENDORSED:** E Madden

DATE: 19-6-91 **DATE:** 25th June 91

P/5394/91 11-11-91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

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

A decision has been made in the following case to grant permission under the above Acts:-

Reg. Ref.	Dec. Date	Applicant	Proposal
91A/0794	03.07.91 3057	Hibernian Insurance Co. Ltd.	Proposed construction of a light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills Road, Tallaght

As the appeal in the above case was WITHDRAWN/~~LATE~~/~~INVALID~~, I recommend that the grant be made.

L.D. L.D.

L.D. Principal Officer.

ORDER: The permission which the Planning Authority decided to make by the order above specified is hereby granted by the Planning Authority, the grant to be subject to the conditions, if any specified in order relating hereto.

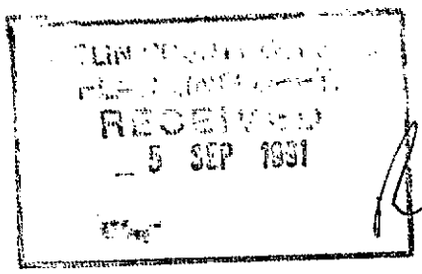
DATED: 14 November, 1991

Assistant County Manager

to whom the appropriate powers have been delegated by order of the Dublin City and County Manager dated 6th November 1991

Our Ref: PL 6/5/86454
P.A. Ref: 91A/794

PK



9/9

An Bord Pleanála

Floor 3 Blocks 6 & 7
Irish Life Centre
Lower Abbey Street
Dublin 1
tel (01) 728011

The Secretary,
Dublin County Council,
Planning Department,
Irish Life Centre.

5th September 1991.

Appeal re: light industrial/warehouse unit at Hibernian Industrial Estate Greenhills, Tallaght, Co. Dublin.

Dear Sir/Madam,

An Bord Pleanála has asked me to refer to the documents received from you in relation to the above-mentioned appeals.

To enable consideration of the appeals to proceed, the following further documents are required:-

1. Please forward details to the Board as to how the contributions calculations were calculated or the approach to the calculation of these contributions.

2. A copy of documents in relation to TA/243

3. A copy of the original permission granted in 1979.

with Bonds + Contributions 9/9.

Would you be good enough to have this information forwarded within **seven** days, please.

Yours sincerely,

Mary Kelly

Mary Kelly.

BP 008

91A-794

Site MAP REQD

Scale = Location 1:2500

FOR MARY KELLY

A.B.P.

28/8/91

D.D by organising Copy.

Michael O'Meara, Architect,
4 Eagle Terrace,
Dundrum,
Dublin 14.

Our Ref: 91A/0794

22 August 1991

Re: Proposed construction of a light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills road, Tallaght for Hibernian Insurance Co. Ltd.

Dear Sir,

I refer to the above planning application I should be obliged if you would return the Notification of Grant of Permission which issued to you on the 14th August, 1991 as this Department had not been informed that a first party appeal had been lodged.

A copy of this letter will be attached to the Planning Register.

I regret any inconvenience caused.

Yours faithfully,

for Principal Officer.

P/3057/91

CONTRIBUTION:
Standard: £21,153
Roads:
S. Sers:
Open Space:
Other:
SECURITY
Bond / C.I.F.:
Cash:

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Register Reference : 91A/0794 Date Received : 17th May 1991

Correspondence Name and Address : Michael O'Meara, Architect, 4 Eagle Terrace, Dundrum, Dublin 14

Development : Construction of a light industrial/warehouse unit

Location : Hibernian Industrial Estate, Greenhills Road, Tallaght

Applicant : Hibernian Insurance Co. Ltd.

App. Type : Permission

Zoning : E

MD.
(MD/DK)

Report of the Dublin Planning Officer dated 27th June, 1991.

This is an application for PERMISSION for the construction of a light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills Road, Tallaght for Hibernian Insurance Company Ltd.

The site area is stated 6,000 sq. m. The floor area of the proposed development is stated to be 2,472 sq. m. In support of the application, the agent for the applicant has stated that the general usage would be anticipated as 50% light industrial and 50% warehousing. Car parking has been allowed for 3 x 100 sq. m. for factory warehouse area and 4 x 100 sq. m. for office area. The site is bounded on two sides by estate service roads. It is of a regular shape. The proposed units are finished in selected p.v.c. coated metal cladding. There is area of fenestration on the north and east elevation. Car parking is provided for 86 cars, which meets Development Plan standards.

The Sanitary Services Department have reported that services are avaiable. The Roads Department report ~~that.~~ not Received

I recommend that a decision to GRANT PERMISSION be made under the Local Government (Planning and Development) Acts, 1963-1990 subject to the following (9) 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

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0794

Page No: 0002

Location: Hibernian Industrial Estate, Greenhills Road, Tallaght

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 Sanitary Services Department be ascertained and strictly adhered to in the proposed development.

03 REASON: In order to comply with the Sanitary Services Acts, 1878-1964.

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

05 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.

06 That no advertising sign or structure be erected except those which are exempted development, without prior approval of Planning Authority.
REASON: In the interest of the proper planning and development of the area.

07 That off-street car parking facilities and parking for trucks be provided in accordance with the Development Plan Standards.
REASON: In the interest of the proper planning and development of the area.

08 That details of landscaping and boundary treatment be submitted to and ~~approved~~ agreed in writing by Planning Authority and work theron completed prior to occupation of units.
REASON: In the interest of amenity.

~~09~~ ~~That details of the boundary treatment shall be submitted to and agreed in writing by the Planning Authority prior to the commencement of development on site.~~

R.C.

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

9 ~~10~~ That a financial contribution in the sum of £ 21,153 — be paid by the

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0794

Page No: 0003

Location: Hibernian Industrial Estate, Greenhills Road, Tallaght

proposer to the Dublin County Council towards the cost of provision of public services in the area of the proposed development and which facilitate this development; this contribution to be paid before the commencement of development on the site.

REASON: The provision of such services in the area by the Council will facilitate the proposed development. It is considered reasonable that the developer should contribute towards the cost of providing the services.

Endorsed:-.....
for Principal Officer

Richard...Greaves...S.E.P.
for Dublin Planning Officer 28.6.91

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 (9) conditions set out above is hereby made.

Dated : 3 July 1991. .....
APPROVED OFFICER

to whom the appropriate powers have been delegated by order of the Dublin City and County Manager dated 19 June 1991.

SS + CMS.

Register Reference : 91A/0794 Date : 22nd May 1991

Development : Construction of a light industrial/warehouse unit

LOCATION : Hibernian Industrial Estate, Greenhills Road, Tallaght

Applicant : Hibernian Insurance Co. Ltd.

App. Type : PERMISSION

Planning Officer : M.DARLEY

Date Recd. : 17th May 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
28 MAY 1991
SAN SERVICES

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

Date received in Sanitary Services .....

FOUL SEWER Available to existing system; subject to;

① The applicant lodging for over permission for any use other than the storage of dry goods.

② All effluent other than domestic effluent being the subject of a licence under the Water Pollution Act.

SURFACE WATER

Available to existing system;

Surface water run off is subject to the provision of the Water Pollution Act (All fuel storage tanks are to be bunded)

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 21:06:91
Time 9:00

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

17/6/91

MFB3L

Register Reference : 91A/0794 Date : 22nd May 1991

....

ENDORSED_________________________ DATE______________

WATER SUPPLY. Available for zoned use 24 hour Storage to be provided applicant to consult & agree with S.S. Waiver byelaw
Refer to C.F.O

[signature] A/SEE
30/5/91

....

ENDORSED [signature] DATE 19/6/91

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 21.06.91
Time 9.00

CONHAIRLE CHONTAE ATHA CLIATH

DUBLIN COUNTY COUNCIL

Building Control Department,
Liffey House,
Tara Street,
Dublin 1.

Telephone: 773066

Planning Department,
Irish Life Centre,
Lower Abbey Street,
Dublin 1.

Telephone: 724755
Extension: 231/234

~~16th April, 1992~~

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

LOCATION: Hibernian Ind. Est., Greenhills Road, Tallaght

PROPOSED DEVELOPMENT: Light Industrial Unit

APPLICANT: Hibernian Insurance Co. Ltd.

PLANNING REG.REF.: 91A/794

DATE OF RECEIPT OF SUBMISSION: 25th March, 1992

A Chara,

With reference to above, I acknowledge receipt of application for:

Building Bys-Law Approval

Mise, le meas

A. Smith

PRINCIPAL OFFICER

John Moylan & Associates,
79 Merrion Square,
Dublin 2

JOHN MOYLAN & ASSOCIATES Consulting Engineers

79 Merrion Square,
Dublin 2.

Telephone: (01) 615337/612475.
Facsimile: (01) 610255.

Your Ref.

Our Ref.
E-245/JM

13th August 1991

The Chief Planning Officer,
Dublin County Council,
Block 11,
Irish Life Centre,
Lower Abbey Street,
Dublin 1.

Re: Proposed Light Industrial Unit at Hibernian Industrial Estate, Greenhills Road, Tallaght
For Hibernian Insurance Co. Ltd.

Dear Sirs,

We wish to advise that we have been appointed civil and structural consulting engineers in connection with the above development.

We confirm that all works of a civil and structural content will be designed at this office in accordance with the relevant updated Irish and British Standards and Codes of Practice.

If the job proceeds and if we are engaged to do so the structural works will be supervised by periodic visits to the site in the manner normal to consulting engineers. The frequency of such visits will depend on the apparent need for supervision as the job proceeds.

Yours faithfully,

John Moylan

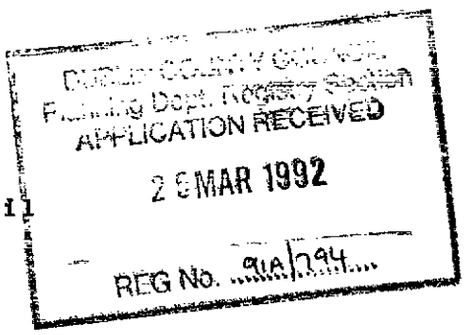
John Moylan
John Moylan & Associates.

John Moylan, B.E., C. Eng., M.I.E.I., M. Cons., E.I.

MICHAEL O'MEARA
Architectural & Planning Consultant

4 Eagle Terrace,
Dundrum, Dublin 14.

Tel: 01-985722
Fax: 01-985722



Planning Dept.
Dublin County Council
Irish Life Centre
Lr. Abbey Street
DUBLIN 2.

25 March 1992.

Re: Proposed Light Industrial Unit at
Hibernian Industrial Estate, Greenhills Rd. Tallaght
Reg. No. 91A/0794

BYE LAW APPLICATION
REC. No. N61228
£9583.10

Dear Sirs,

I wish to apply for Building Bye Law Approval for the erection of a light industrial facility at the above location on behalf of Hibernian Insurance Co. Ltd.

Planning Permission has already been granted for this development on 26 November 1991.

This site of 1.5 acres is the remaining area of this Industrial Estate to be developed and as such it will complete this particular development. The building is designed to be sub-divided into three units each with their own office accommodation on two floors.

The existing building line on the main access road will be maintained at 15.6m. However, the building line to the estate road will be 20.5m to facilitate truck loading access. Car parking has been allowed for at 3/100 sq.m. for factory/warehouse area and 4/100 sq.m. for office areas. The future users of this building are not known at present. However, the general usage would be anticipated as 50% light industrial and 50% warehousing.

Enclosed with this application please find the following documentation:-

2 copies each of Architectural Drgs. No.	916/9	Site block plan
	10	Ground floor plan
	11	First floor plan
	12	Sections
	13	Elevations
	14	Location map.

BBL. 91A/0794
2-12-6.

25/3/.....

2 copies each of
Structural Drgs. No.E-245/01 Foundation Plan
02 Ground Floor Plan
03 First Floor Plan
04 Roof Plan
05 Elevations
06 Sections Sheet 1
07 Foundation & Ground Floor Details
08 Sections Sheet 2.

2 copies each General Specification
Civil & Structural Specification
Outline Structural Calculations
Engineers Certificate.

Also please find enclosed cheque in the sum of £9583.00 in respect of Bye Law Fees.

Yours faithfully,

Michael O'Meara.

MICHAEL O'MEARA.

encls.

RECEIPT CODE

COMHAIRLE CHONTAE ÁTHA CLIATH

PAID BY

CASH

CHEQUE ✓

M.O.

B.L.

I.T.

DUBLIN COUNTY COUNCIL

46/49 UPPER O'CONNELL STREET

DUBLIN 1.

BYE LAW APPLICATION

REC. No. N 61228

£9583.10

Received this 25th day of March 1992

from Arthur Pollack Prop Management

the sum of nine thousand five hundred & eighty three Pounds

ten Pence, being fee for

bye-law application at Greenhills Rd.

Madeleine Deane Cashier

S. CAREY
Principal Officer

GENERAL SPECIFICATION

FOR

PROPOSED LIGHT INDUSTRIAL UNIT

AT

HIBERNIAN INDUSTRIAL ESTATE
GREENHILLS ROAD
TALLAGHT
DUBLIN 24.

February 1992.

1. GENERAL DESCRIPTION

The proposed development consists of a light industrial building sub-divided into three factory/warehouse units with ancillary offices within the structure.

Construction is of structural steel portal frames, with secondary beams, purlins and bracing in structural steel.

Dividing walls are in 215 solid concrete blockwork.

Externally the building is clad in horizontal P.V.C. faced metal cladding.

Roof consists of P.V.C.-coated insulated metal sheeting at low pitch with perimeter parapet.

2. EXCAVATION AND EARTHWORKS

2.1 Hard filling shall consist of broken stone, broken concrete pit rejects of pit run gravel, with a maximum size of 100 mm. All hard filling shall be laid in layers of not more than 225 mm. and each layer shall be thoroughly compacted. Hardcore under slabs shall be 200 mm. thick consolidated with a 10 tonne roller.

2.2 All excavations and earthworks shall be carried out to the lines and levels shown on the drawings on to such further lines and levels as may be directed by the Consultant. The work shall be carried out in general to comply with B.S. Code of Practice 2003.

2.3 All soil and vegetable matter to a min. depth of 225 mm. over the site of the construction works to be removed and separately stacked.

2.4 All backfilling to be in well-consolidated layers not exceeding 300 mm. and well rammed in.

3. CONCRETE WORK

3.1 The quality of materials and the standard of workmanship for the reinforced concrete shall comply with the relevant clauses of B.S. Codes of Practice CP 110 and B.S. 5328 and in addition concrete supplied from a central batching plant shall be batched, mixed and delivered in accordance with B.S. 1926 except where superceded by this Specification.

3.2 The cement used on this Contract shall be manufactured in Ireland and shall be normal Portland or Rapid Hardening to comply with the Current Irish Standard 1 or B.S. 12.

3.3 The mixing water shall be clean and uncontaminated obtained from an approved source.

3.4 The aggregates shall comply with the latest edition of Irish Standard 5 or B.S. 882 provided the grading is approved by the Consultant.

The fine aggregate shall be a natural pit or river sand passing a 5 mm. screen and shall be thoroughly washed in a mechanical washing plant. It shall be graded from the largest to the smallest particle sizes in approved proportion.

The Coarse Aggregate shall be retained on a 5 mm. screen and shall be composed of clean washed gravel or crushed stone, or a combination of both, of approved quality and grading, free from laminated and flaky particles, dust and other impurities.

3.5 All concrete used shall be "designed mix" concrete in accordance with B.S. 5328: 1976 and CP 110: 1972 and to the specification set out in the following table:-

Concrete Grade	28 day works strength (N/mm2)	Cement Type	Max. Coarse Agg. Size (mm.)	Max Water/ Cement Ratio	Min.Cement Content (kg./m3)
7	7	OPC	20	0.55	200
20	20	OPC	20	0.55	300
30	30	OPC	10	0.45	340

3.6 All vertical construction joints shall be formed with well-braced timber stop ends holed or slotted where necessary to allow the reinforcement to pass through the joints. The concrete shall be compacted against the stop end for the full height of the lift. The vertical joints shall be stepped and staggered in approved positions and such joints shall not be located at or adjacent to joints.

A tongued and grooved key shall be formed at horizontal and vertical joints. The width of the groove shall be about one third the thickness of the concrete and shall be formed with prepared timber battens having slightly splayed edges. he spacing of construction joints shall be max. area 100 m2 and max.side 13 m.

3.7 All formwork shall be treated with approved mould oil or grease before use and shall be carefully cleaned down and further oiled or greased before re-use.

3.8 Rolled mild steel bars, cold twisted bars and high tensile fabric reinforcement shall comply with the requirements of British Standards 4449, 4461 and 4483 respectively.

3.9 All ground slabs shall be cast on a hardcore bed of 200 mm. blinded with sand and consolidated with a 10 tonne roller. The damp proof membrane shall be 1200 gauge polythene sheet, lapped a minimum of 225 mm. at joints. Floors shall generally be power floated slabs, except where a 75 mm. screed is provided for floor trunking.

3.10 Joints in the ground floor slabs shall be formed as follows:-

Longitudinal joints:	12 mm. bars 600 mm. long at 600 mm. c/c; saw cut to top of slab 10 mm. x 25 mm. deep filled with high duty sealer (in self-finished floors only).
Expansion joints:	20 mm. bars 600 mm. long at 300 mm. c/c with joint formed with 20 mm. wide compressible filler topped with high duty sealer.
Transverse joints:	50 mm. x 50 mm. triangular timber fillet placed on blinding; saw cut to top of slab 10 mm. x 25 mm. deep filled with high duty sealer. A mesh strip 900 mm. wide shall be provided at mid-point.

3.10 Continued/...

Isolation Joints: 12 mm. compressible filler on 2-ply felt at slab perimeters and elsewhere as required.

3.11 Screeds where provided shall be mixed in the proportion of 1 part cement to 3 parts sand and be of 50 mm. nominal thickness.

4. BLOCKWORK AND BRICKWORK

Concrete Blocks: Concrete Blocks shall be made with materials and of the quality described in IS 20 : 1974 of the thickness specified and made by an approved manufacturer.

The quality of ordinary blocks shall be as Clondalkin common blocks from 450 range - solid (25% void) 100 mm. or 200 mm. thick and hollow 215 mm. thick, with 3 N/mm2 or 5 N/mm2 strength as required.

225 Solid Block Walls: shall be constructed in parallel leaves, tied with reinforcing mesh in every second course.

Cement: Cements shall be as specified under Concrete Work.

Sand: Sand shall be as specified under Concrete Work.

Lime: Lime shall be hydrated lime as IS 8 : 1949.

Mortar: Mortar shall consist of 1:2:9cement/lime/sand mix, with the addition of an approved water-proofer. Mortar in parapets shall be 1:1:6 cement/lime/sand, with the addition of an approved waterproofer. Mortar which has commenced to set shall not be used.

Storage of Materials: Cements and limes shall be stored off the ground, under cover and away from damp and in such manner as to enable them to be used in rotation separately according to type on clean, hard dry standings and protected from contamination. Pre-cast concrete blocks shall be open stacked to permit ventilation and protected from rain, snow and rising damp.

Damp Proof Course: Bitumen based damp proof course shall be fibre or asbestos based to the minimum specification set out in BS 743 : 1970, Ref. B or C or polythene to BS 743, Para 6. Widths shall be sufficient to span full thickness of wall less 12 mm. set back on facework unless otherwise noted on the drawings. Damp proof course to be laid in mortar, with minimum 150 mm. end laps on solid walls and full laps and angles.

5. ROOFING

5.1 Roofing shall consist of P.V.C. coated double skin insulated metal roof decking, 35mm profile, complete with cappings, barges and all flashings as required and incorporating 10% translucent sheeting for daylight factor.

5.2 The roofing shall be fixed to 200/120 "Ultra ZED" cold rolled steel purlins at 1.4m centres on steel portal rafters.

5.3 Supply and fix automatic smoke ventilators in the roof with an opening area equal to 1% of the floor area complete with clutch operators.

6. CLADDING

6.1 External cladding shall consist of 35mm P.V.C. faced, profiled, galvanized m.s. sheeting, fixed horizontally to 170/140 "Ultra ZED" sheeting rails at 2.0m centres. Sheets shall be fixed in each trough with P.V.C. capped, self-drilling, self-tapping screws. Vertical joints shall be fully sealed. Window cills, heads and cappings shall be formed from matching material. All joints in cills and cappings shall be butt joints with soakers, fully sealed.

6.2 Internal cladding shall consist of 20mm stove enamelled galvanized m.s. sheeting or selected P.V.C. faced foilbacked plasterboard lining fixed horizontally over 60mm glass fibre mat.

7. CARPENTER

7.1 Quality of Materials

Timber: Shall be of first quality complying with BS 1860. Timber shall be Whitewood of Northern European origin or alternatively of native origin if it meets the standards required by this Specification.

Tolerances: The following will be the maximum permitted tolerances on sawn sizes as against the nominal dimensions:

Nominal Dimensions	Maximum permissable under	Variation over
1 in. to under 2 in.	1.5 mm.	3 mm.
2 in. to under 6 in.	3 mm.	6 mm.
6 in. to under 12 in.	6 mm.	6 mm.
12 in. and over	6 mm.	

Finish: All timber for carpentry work shall be taken as having a sawn finish unless otherwise stated.

Moisture Content: When ready for fixing in position, the moisture content of timber shall be in accordance with IS 96 even though preservative treated timber is not included in the IS.

Preservative: All timber shall be treated by the vacuum pressure process of preservative treatment with a copper-chrome-arsenic composition in accordance with BS 4072. After treatment, timber shall be open stacked in a well ventilated covered place, to ensure complete evaporation of surplus solvent.

Cuts on, or holes bored in, treated timber shall be treated with an approved brush-on type preservative.

7.2 Workmanship

Jointing: Jointing of timbers shall be as normally carried out in good quality carpentry.

8. JOINER

8.1 Quality of Materials

Timber: Timber used for joinery shall have the following characteristics:

Rate of growth shall be not less than 10 growth rings per 30 mm.

Slope of grain shall not exceed one in ten in softwoods and one in eight in hardwoods.

Each species in hardwood shall have the same character of grain.

Boxed heart will be permissible provided that there is no shake on the exposed surfaces. Soft pitch will not be permitted on finished surfaces.

Sapwood will not be permitted in hardwood.

Splits and ring shakes will not be permitted.

Timber which will have a transparent finish shall be free from checks and shakes, on the finished surfaces, more than 0.25 mm. wide, or continuous for more than 300 mm. in length, or more than 18 mm. of the thickness.

Timber to be painted may include checks and shakes on the finished surfaces provided that:-

(i) they are neither more than 300 mm. long nor more than 1.5 mm. wide.

(ii) they do not exceed in depth one quarter of the thickness of the piece.

(iii) if over 0.5 mm. wide they are filled with timber inserts or hard stopping.

Timber surfaces which are not exposed may include checks and shakes which do not exceed in depth one half of the thickness of the piece and do not extend continuously for the full length.

Depth of a check or shake is the distance to which a feeler gauge .005 inches thick can be inserted at any point.

8. Continued/...

Knots will not be permitted on surfaces which are to have a transparent finish. Otherwise sound and tight knots, including clusters, will be permitted, provided that the mean diameter does not exceed 40 mm. and that the knot or cluster does not occupy more than half the width of the surface. In the case of knots on corners, on neither surface should it intrude more than 40 mm. and on one of the surfaces it must not exceed half the width of the pieces.

Decayed, dead or loose knots will not be permitted. They may be cut out and plugged. Sizes of plugs may not exceed the sizes laid down for knots in the above paragraph. Plugs shall be the full depth of the hole and the grain shall run in the direction of thegrain of the piece.

Pitch pockets will not be permitted, but they may be cut out and replaced.

All timber shall be free from all signs of decay and insect attack, but pinworm holes, except when the timber is to have an exposed finish, will be permitted if filled with hard stopping.

Tolerances: Finished dimensions, after surfacing, shall have an allowance of 3 mm. off nominal dimensions for each wrought surface. All joinery shall be taken as wrought on each surface unless otherwise stated.

Moisture Content: When ready for fixing in position the moisture of a timber shall be in accordance with IS 96 even though preservative treated timber is not included in the IS.

Types: Unless otherwise stated, joinery timber shall be Redwood, or Northern European origin.

Preservative: All Redwood shall be treated with preservative as described under Carpentry.

Plywood: Plywood shall have a moisture content of between 10 and 15 per cent. It shall be European Birch, interior quality, grade BB. Exposed or cut edges shall be smooth and fair and shall show the core laminations free from gaps and imperfections.

All sheets shall be flat and free from warp.

8.1 Workmanship

Flush Doors: Single flush doors shall be approximately 2140 x 826 mm.

They shall be 50 mm. nominal thickness, constructed to IS 48 faced both sides with 6 mm. birch plywood and lipped all round in 50 x 20 mm. afromosia.

Frames: Door frames shall be ex. 100 mm. x 75 mm. Redwood with 15 mm. rebates, (25 mm. for fire doors), fixed with 4 No. 10 mm. expanding bolts per stile, or with 50 mm. x 12 s.w.g. galvanised straps built in as blockwork proceeds. Architraves shall be ex. 75 mm. x 25 mm. Saddles shall be ex. 50 mm. x 25 mm. hardwood, 4 times screw fixed to plugs.

Skirting: shall be ex. 100 mm. x 25 mm. Redwood fixed to treated grounds with 38 mm. nails.

Ironmongery: Door leaves generally shall be hung on 1.5 pairs brass butt hinges and fitted with 3 lever Union mortice lock, Union Term lever handles and back plates, or equal approved ironmongery.

Fire Doors and Frames: To comply with B.S. 476 Part 8 fitted with self-closers.

9. PLASTERER

9.1 Quality of Materials

Cement: Shall be as specified under Concrete Work.

Sand: Shall be as specified under Concrete Work.

Water: Shall be clean and free from harmfull matter.

Gypsum Plaster: Gypsum plaster in its various grades shall be 'Gyplite' plaster, as supplied by Gypsum Industries Ltd.

Plasterboard: Gypsum plasterboard 10 mm. thick, shall be 'Gyplath' as supplied by Gypsum Industries Limited.

9.2 Workmanship

Internal Plastering:

To block walls shall consist of 2 coat work, with a floating coat of 'Gyplite' undercoat plaster and a finishing coat of 'Gyplite' finishing plaster to a total thickness of 12 mm.

Internal plastering to timber stud partitions and ceilings shall consist of Gypsum Baseboard, 10 mm. thick nailed to studs or joists at 150 mm. centres, using 30 mm. x 12 s.w.g. clout headed galvanised nails, all nails driven flush. Joints on ceilings and partitions to be broken as often as possible, and joints between walls and ceilings on opposite sides of a stud partition to be staggered. 5 mm. space to be left between all sheets. Joints between walls and ceilings to be scrimmed using 100 mm. wide jute scrim and neat Gypweld board finish plaster.

Plastering to be carried out in 2 coats - the floating coat to be Gyplite Bonding Coat ruled to an even surface and lightly scratched to form a key. The finishing coat to consist of Gyplite Finish.

10. CEILINGS

10.1 Ceilings shall be 1200/600 p.v.c. faced glass fibre tiles suspended from metal T sections.

11. PAINTER AND DECORATOR

11.1 Quality of Materials

The following Irish Standard Specification shall apply:

Emulsion Paint	IS 129
Knotting	IS 16
Oil Paint	IS 115
Metal Primer	IS 33
Oil Based Primer	IS 18

Materials shall be obtained from an approved manufacturer and used in accordance with the manufacturer's instructions.

11.2 Workmanship

Painting may not proceed externally during damp or foggy weather, nor during frost or in weather in which frost is liable. Internally, all surfaces to receive paint must be dry.

Before any painting proceeds, all dust shall be eliminated.

Any surface on which paint is to be applied must be perfectly clean.

Each coat of paint should be thoroughly dry before a subsequent coat is applied, and rubbed down with fine waterproof abrasive where necessary.

Woodwork shall be filled as necessary to present a smooth surface to receive paint.

Apply 3 coats of vinyl emulsion paint to all internal surfaces, blockwork and plasterwork.

Knot, stop and prime all joinery and finish with two undercoats and one gloss coat.

External metalwork to be given one coat of phosphate primer after removal of all scale and loose rust.

Finish with two coats undercoat and one coat gloss paint.

12. EXTERNAL DOORS AND WINDOWS

12.1 External doors and windows shall be fabricated in anodized aluminium.

Windows shall be single glazed with 4 mm. glass, and doors with 6 mm. g.w. clear glass.

Windows shall have top hung opening sashes.

External doors shall be fitted with overhead closers.

13. FLASHINGS

13.1 All metal flashings shall be in no. 4 milled lead sheet complying with B.S. 1178 : 1969 or super purity (Grade S1) 20 gauge sheet aluminium.

Cover flashings shall be turned into the blockwork at least 25 mm. under the wall damp proof course and shall be built in as the work proceeds.

Lapped joints for flashings to be at least 100 mm.

Tacks, where shown, to be 65 mm. wide out of Code 6 lead, or sheet aluminium, turned up 25 mm. of the external face of the flashing at approximately 750 mm. c/c.

Any nailing to be carried out with copper nails or lead or galvanized nails for aluminium.

13.2 Flashings to parapets, verges, etc. on roofing to be formed with preformed metal profiles by roofing contractor.

14. DRAINAGE

14.1 Excavation for drains which shall be in straight lines and to even gradients as required, shall be wide enough to allow adequate working space for the pipe layers and jointers.

14.2 Any excavation carried out by machine shall stop not less than 75 mm. from the proposed finished excavation level, to avoid damage to the proposed formation. The remainder shall then be taken out by hand.

14.3 Drain trenches must remain open until such time as the drains have been tested and approved.

14.4 Drains shall be laid in straight lines and to even gradients as shown on the drawings. Great care shall be exercised in setting out and determining the levels of pipes, and all necessary instruments shall be used for this purpose.

All drains shall be kept free from earth debris, mortar or other such material.

14.5 Specified sizes of pipes are in all cases internal diameters.

Earthenware pipes shall comply with I.S. 106: 1970.

Concrete pipes shall have OG joints and shall comply with IS 166 : 1972.

P.V.C. pipes and fittings shall comply with B.S. 4660:1973.

14.6 Sluice valve surface boxes shall be Dublin Corporation pattern with 102 mm. ope and 267 mm. deep and weighing about 25½ kg. The cover shall be hinged and the letter "V" clearly cast on the upper surface.

Hydrant surface boxes shall be Dublin Corporation pattern, 463 x 267 mm. clear ope and 65 mm. deep weighing about 62 kg. the letter "H" shall be clearly cast on the upper surface of the cover.

/....

14.7 Manhole covers and frames shall be of approved pattern and manufacture with 568 mm. dia. clear opening. They shall be of cast iron, tough, close-grained, sound, free from all cracks, air holes, twists, fractures, distortions, or other defects and shall be coated with Dr. Angus Smith's solution.

Manhole covers and frames in roads and paved areas subject to vehicular traffic shall weigh about 230 kg.

Manhole covers and frames in fields, terraces, lawns, etc., shall weigh about 178 kg.

14.8 Gravel filling where specified around pipes shall consist of graded all-in gravel, with maximum size 12 mm. and minimum size 5 mm.

14.9 Where the cover is less than 1 metre under roads and under floor slabs, the pipes shall be completely encased in concrete as detailed on the drawings.

14.10 Manholes shall be cast in situ or constructed in 225 mm. solid blockwork. The channel and benching shall be rendered in cement mortar.

14.11 The chambers for hydrants and air valves shall consist of precast concrete units 75 mm. thick and of internal dimensions equal to that of the clear ope of the surface box.

15. INTERNAL DRAINAGE

15.1 Internal Drainage and Sanitation:

The internal drainage and sanitation is generally in accordance with the BS CP 304.

Traps of WCs shall have a 50 mm. minimum seal.

All sanitary appliances shall have a trap fitted immediately beneath its outlet which shall be accessible with adequate means of cleaning.

All traps on pipes 50 mm. andbelow shall have 75 mm. deep seal.

Waste pipes from appliances on the ground floor are connected to a back inlet sealed gully trap before entering a manhole as shown on the drawings.

The soil vent pipes, fittings and accessories shall be unplasticised PVC to comply with BS 4514 : 1969.

15.2 Rainwater pipes shall be in p.v.c.,carried down internally and discharge into back inlet gulley graps externally.

16. GLAZING

16.1 All glass shall comply with the appropriate section of B.S. 952.

16.2 Sealing strip shall be patent self-adhesive glazing strip.

16.3 All glass shall be clean cut edges.

16.4 Where sealing strip is used, it shall pass round both faces of the glass and be trimmed off flush on both sides.

Metal surfaces to receive sealing strip shall be treated with mineral oil before glazing.

16.5 The wire in wired glass shall extend to the edges and be free from rust. The wires of Georgian wired glass shall be parallel to the framing.

17. SITEWORKS

17. 1 The sub-base shall be crushed stone, gravel or other approved material conforming to the gradings as set out hereunder or approved by the consultants, spread evenly on the formation to a loose depth not exceeding 150 mm. and compacted by not less than eight passes of 8 ton roller, or other means approved by the Consultants, to produce a compacted depth of sub-base as indicated on the drawings.

Maximum Size:

Passing B.S. 19.05 mm. sieve / 50 - 100% by weight.

Passing B.S. 4.76 mm. sieve / 20 - 50% by weight.

Passing B.S. No. 36 sieve / 5 - 35% by weight.

Passing B.S. No. 200 sieve / less than 7% .

On completion of the base course, and before any surfacing is laid, the finished surface shall be maintained free from potholes, ruts and undulations, irregularities, depressions, loose materials or other defects and shall remain true to cross section, line and level.

17.2 Paving slabs shall comply with B.S. 368 and shall be to the sizes shown on the drawings. They are to be laid on 50 mm. sand blinding on 100 mm. hardcore.

17.3 Bitumen macadam priming shall comply with B.S. 1621 with aggregate complying with B.S. 63 the base course shall consist of 37 mm. nominal aggregate and the surfacing of 10 mm. nominal aggregate. The total consolidated thickness shall be not less than 70 mm. laid in two layers with a smooth wheeled roller of not less than eight tonnes weight.

18. MECHANCIAL SERVICES

18.1 Warehouse heating shall be designed to achieve 17 degrees Celsius +/- 2 degrees Celsius temperature. Provide warm air unit heaters to each warehouse.

18.2 Mechanical extraction from the ground and first floor W.C.'s if provided shall be by means of a duct system and roof mounted extract fan, operated by the light switch and a delay unit.

Lobbies shall be vented by means of duct system to a roof mounted air vent.

18.3 Water storage to each unit shall consist of a 450 litre tank located at high level within the warehouse area. A fresh water supply from the rising main shall be provided in both office and warehouse areas.

19. ELECTRICAL SERVICES

19.1 The electrical installation shall comply with the National Rules for Electrical Installations.

19.2 Lighting in the office areas shall be designed to achieve 350 lux and in the warehouse areas, 200 lux.

19.3 Office heating shall be by means of storage heaters, backed up with convectors, designed to achieve 20°C at -3°C, +/- 2°C.

19.4 Water heating shall be by means of 'underbasin' package heating units.

20. FIRE PRECAUTIONS

20.1 Each unit shall be provided with 1 no. F.A. hosereel in the warehouse area.

20.2 Fire extinguishers shall be provided in office and warehouse areas.

20.3 Each unit shall be provided with a manual fire alarm system.

20.4 Each unit shall be provided with emergency lighting and self-powered exit indicators.

PROPOSED LIGHT INDUSTRIAL UNIT

AT

HIBERNIAN INDUSTRIAL ESTATE

GREENHILLS ROAD,

TALLAGHT,

DUBLIN 24.

FOR HIBERNIAN INSURANCE CO. LTD.

OUTLINE STRUCTURAL CALCULATIONS

John Moylan & Associates,
Consulting Engineers,
79, Merrion Square,
Dublin 2.

Tel Nos. (01) 615337/612475
Fax No. (01) 610255

August 1991.

JOHN MOYLAN & ASSOCIATES TELEPHONE NO. 615337 / 612475 FAX NO. 610255	CONTRACT: GREENHILLS ROAD - INDUSTRIAL UNITS CALCULATION INDEX

DRG. NO:	JOB NO: E245	SHEET NO: 01
DATE:	DESIGN:	

COMPUTER ANALYSIS OUTPUT.

DESIGN INFORMATION

CLIENT	Hibernian Insurance Co. Ltd.	
ARCHITECT	Micheal O'Meara	
ENGINEER	John Moylan And Associates	
DESIGN CODES	B.S.5950 B.S.8110 I.S.325 C.P.3 Chp.5 Part 2	
INTENDED USE OF STRUCTURE	Warehouse/Industrial	
FIRE RESISTANCE REQUIREMENTS	As per Architects specification	
GENERAL LOADING CONDITIONS	Live Roof	.75 kN/m2
	Floors	3.50 kN/m2
WIND LOADING CONDITIONS	Basic wind speed	44 m/s
EXPOSURE CONDITIONS	Internal	Mild
	External	Moderate
SUBSOIL CONDITIONS	To be determined by site investigations Bearing pressure of 150 kN/m2 asumed	
FOUNDATION TYPE	Pad and strip foundations	
CONCRETE	fcu	30 N/mm2
REINFORCEMENT	fy	460 N/mm2
STEELWORK		Grade 43

JOHN MOYLAN & ASSOCIATES TELEPHONE NO. 615337 / 612475 FAX NO. 610255	CONTRACT: INDUSTRIAL UNITS GLEN HILLS ROAD
DRG. NO:	JOB NO: 8245. SHEET NO: 03
DATE:	DESIGN:

STRUCTURAL FORM.

THE PROPOSED DEVELOPMENT COMPRISES OF A SINGLE STOREY INDUSTRIAL BUILDING DIVIDED INTO 3 SEPARATE UNITS. THE BASIC FORM OF CONSTRUCTION COMPRISES OF

INSULATED METAL CLADDING
ON
PROFILED METAL RAILING
ON
STRUCTURAL STEEL MULTI-BAY PORTAL FRAMES
ON
PAD FOUNDATIONS.

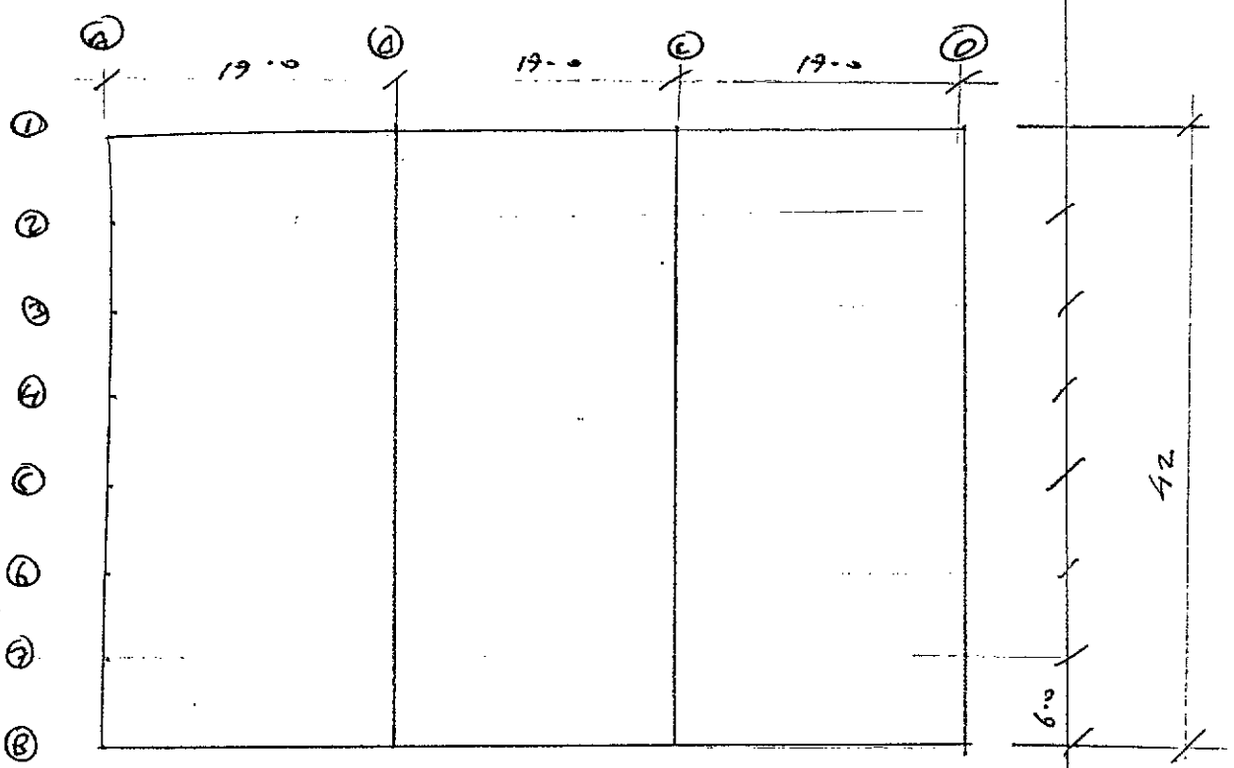
THE STRUCTURAL STEEL FRAME, DESIGNED IN ACCORDANCE WITH BS 5950 HAS BEEN BEEN ANALYSED AND DESIGNED USING SPECIALIST COMPUTER SOFTWARE PACKAGES SUPPLIED BY 'MASTER SERIES'.

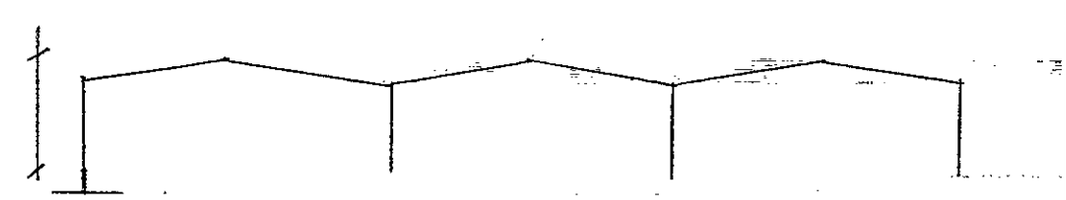
THE OUTPUT FROM THE COMPUTER ANALYSIS FOR SERVICE LOADING CASES HAS BEEN USED IN THE DESIGN OF THE PAD FOUNDATIONS.

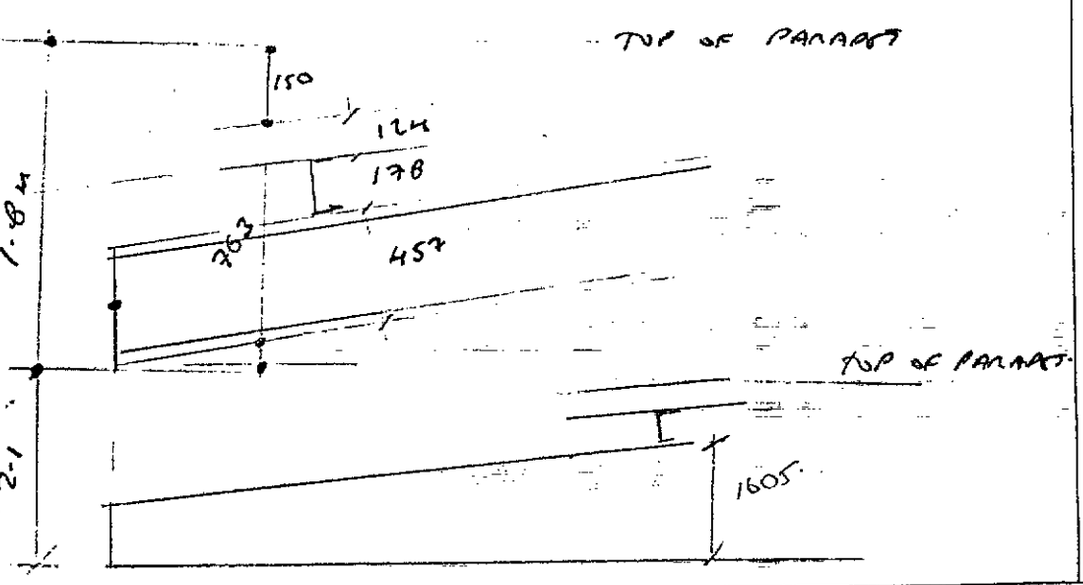
ALL SECONDARY STRUCTURAL ELEMENTS INCLUDING THE PRECAST FLOOR UNITS WILL BE FULLY DESIGNED IN ACCORDANCE WITH THE RELEVANT CODES OF PRACTICE AND FINAL WORKING / CONSTRUCTION DRAWINGS WILL ENSURE THAT ALL STRUCTURAL ELEMENTS HAVE BEEN FULLY CO-ORDINATED TO ENSURE A ROBUST AND STABLE BUILDING.

BRICKWORK GABLE PANELS AND LOAD BEARING BRICKWORK WILL BE FULLY DESIGNED AND DETAILED IN ACCORDANCE WITH BS 5628.

JOHN MOYLAN & ASSOCIATES TELEPHONE NO. 615337 / 612475 FAX NO. 610255	CONTRACT : GREENHILLS ROAD - INDUSTRIAL UNITS. LAYOUT PLANS.
DRG. NO:	JOB NO: 8745. SHEET NO: 04
DATE:	DESIGN:







STEEL FRAME

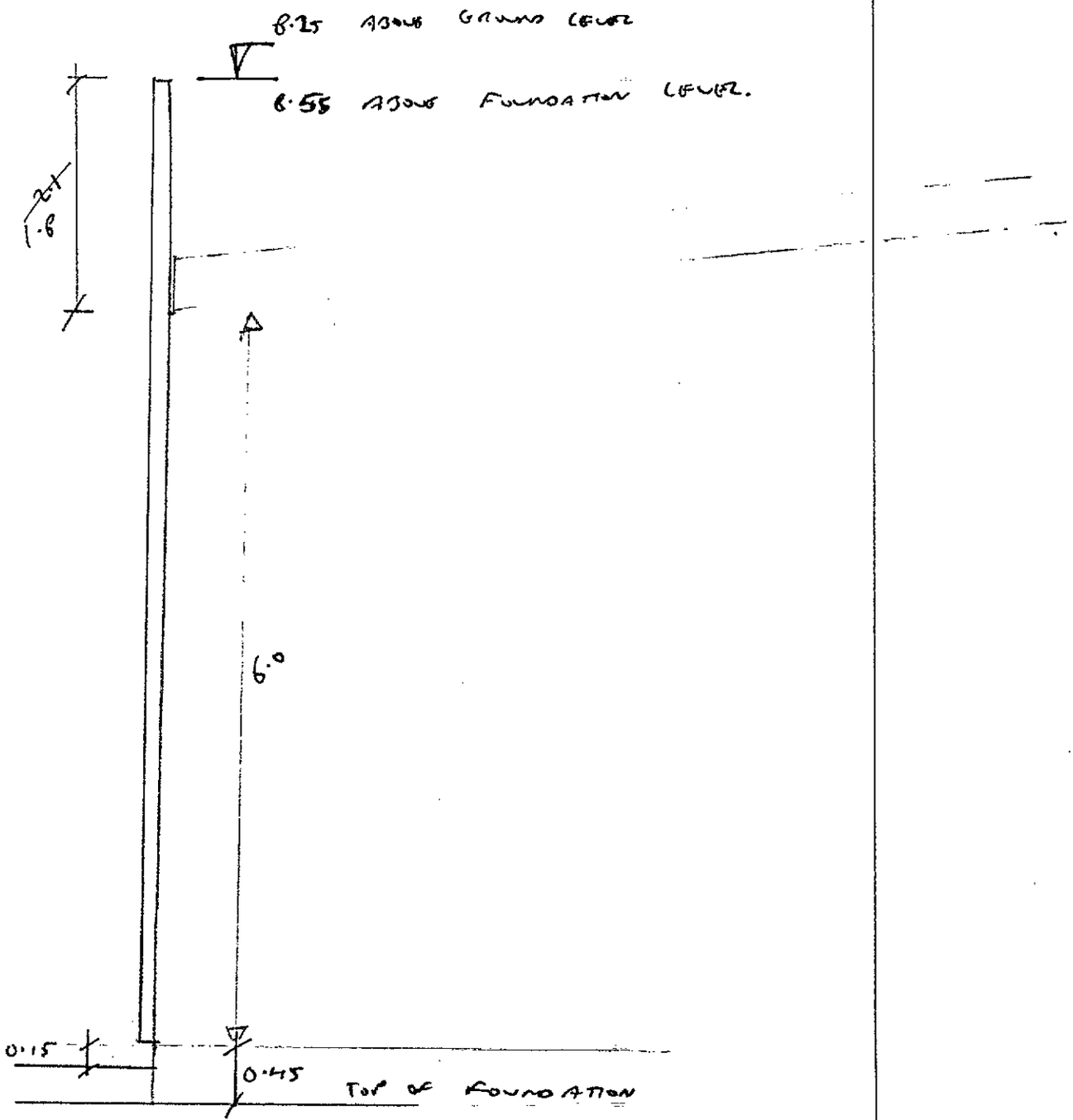
CONCRETE FRAME

JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337 / 612475
FAX NO. 610255

CONTRACT : GREENHILLS ROAD - INDUSTRIAL UNITS.

TYPICAL SECTION

DRG. NO:	JOB NO: E745	SHEET NO: 05
DATE:	DESIGN: J.M.	



JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337 / 612475
FAX NO. 610255

CONTRACT : GREENHILLS ROAD : INDUSTRIAL UNIT

WIND LOADING

DRG. NO:

JOB NO: 8745-

SHEET NO: 06

DATE:

DESIGN: PMJ

CP3 CHAPTER V PART 2

BASIC WIND SPEED 44 ms^{-1}

CATEGORY (3)

CLASS (C)

H 9M 10 $\Rightarrow$ S2 = 0.69

V_s = 30.36 ms^{-1}

$q = \frac{0.613 \times 30.36^2}{1000}$ = 0.565 kN/m^2.

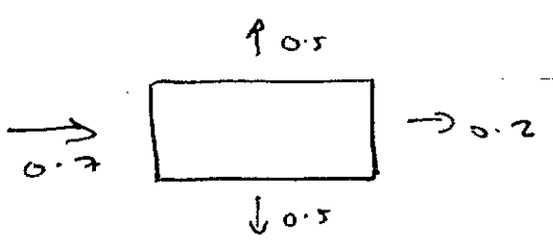
DESIGN FOR q = 0.6 kN/m^2

PRESSURE COEFFICIENTS

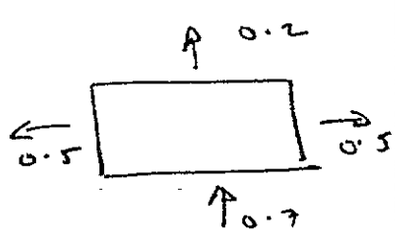
EXTERNAL

$\frac{h}{w} = \frac{8.25}{42} = 0.2$ $\frac{e}{w} = 1.36$.

TABLE 7 FOR WALLS

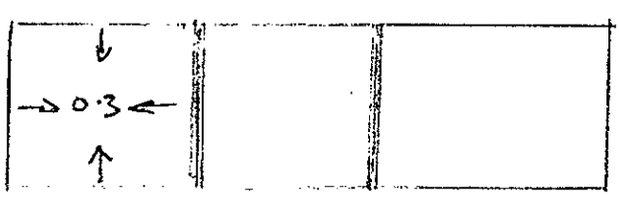


WIND ON SIDE



WIND ON END

INTERNAL



JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337 / 612475
FAX NO. 610255

CONTRACT: GLOBE HILL ROAD – INDUSTRIAL UNIT
WIND LOADING

DRG. NO:

JOB NO: E248

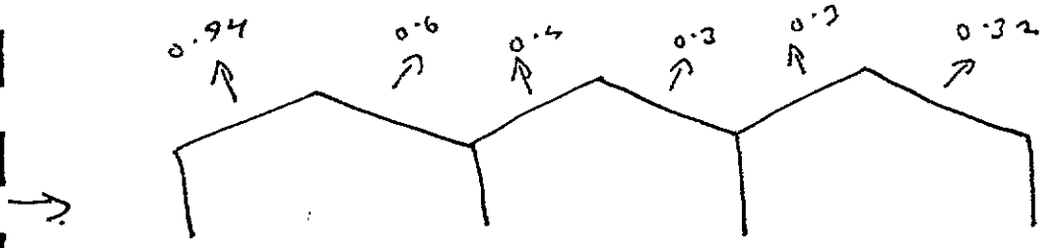
SHEET NO: 07

DATE:

DESIGN:

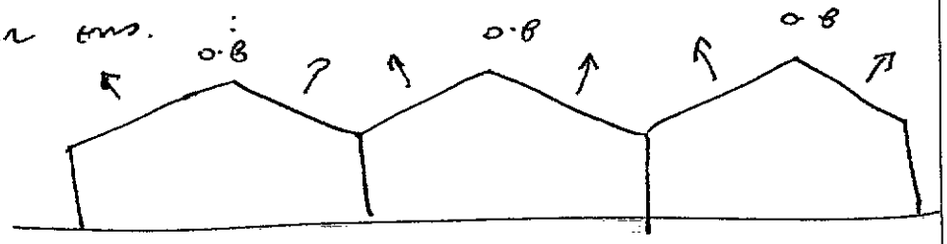
PRESSURE COEFFICIENTS ROOF:

TABLE 11
CP3 CHAP V.



WIND ON SIDE

WIND ON ENDS.



WIND VOL.: COEFF × 6 × 0.6 = 3.6 × COEFFICIENT

FRAME CENTRES.

q.

JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337 / 612475
FAX NO. 610255

CONTRACT : GREENHILLS ROAD INDUSTRIAL UNITS

FRAME ANALYSIS

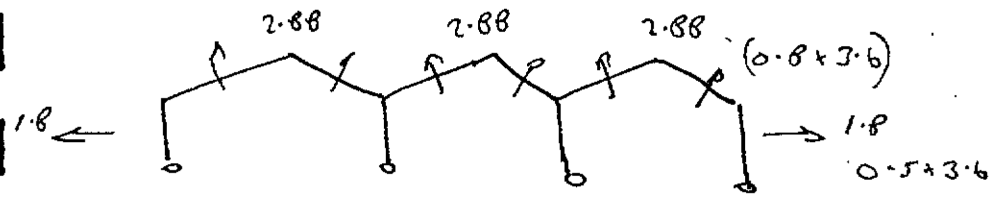
DRG. NO:	JOB NO: E245	SHEET NO: 08
DATE:	DESIGN:	

LOADING FOR MULTI-BAY PORTAL FRAME ANALYSIS — WIND MASTER ANGLES

(1) DEAD : 0·45 x 6·0 — 2·7 kN/m — DL

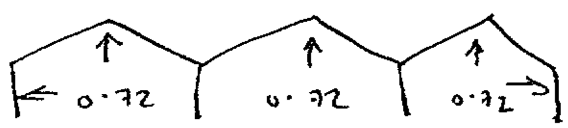
(2) LIVE : 0·9 x 6 [0·75 + 0·15] — 5·4 kN/m — BLI

(3) WIND ON END [MAX UPLIFT ON ROOF]

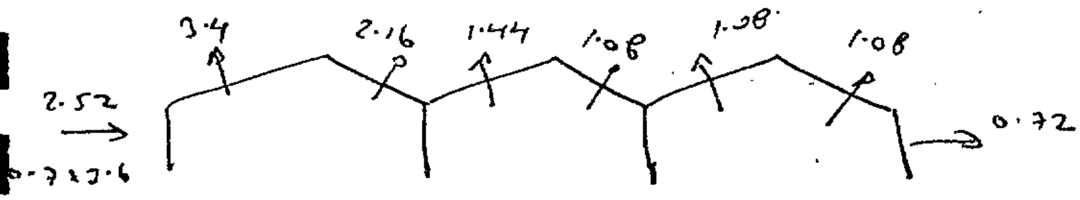


W1

(4) INTERNAL WIND PRESSURE

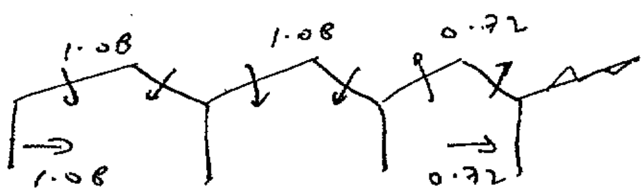


(5) WIND ON SIDE



S1R1 0·94 x 3·6 — S2R1 0·4 x 3·6 — S3R1 0·3 x 3·6
S1R2 0·6 x 3·6 — S2R2 0·3 x 3·6 — S3R2 0·3 x 3·6

(6) INTERNAL WIND SUCTION / WIND PRESSURE ON END BAY



JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337 / 612475
FAX NO. 610255

CONTRACT: Groomhill Road

Frame Analysis – Structural Steel

DRG. NO: | JOB NO: | SHEET NO: 09

DATE: | DESIGN:

The portal frame shown in sketch form on the following sheet was analysed for the following loading cases

① Ultimate dead + live γ_D 1.4
γ_L 1.6

② Service dead + live γ_D 1.0
γ_L 1.0

③ Maximum wind uplift γ_D 1.0
[Dead + wind on end + int. wind pressure] γ_W 1.0

④ Wind on end + min dead (ultimate) γ_D 1.0 γ_W 1.4

⑤ Wind on end + min dead [service] γ_D 1.0 γ_W 1.0

A quick check design to BS 5950 carried out by Master Series confirms that using a 457 x 191 x 67 kg UB stanchion and a 406 x 178 x 54 kg UB rafter that the maximum ratio of

$$\frac{\text{design load}}{\text{design capacity}} = 0.797$$ → sections are OK.

Deflection check: service D+L (2.7+5.4) max rafter def = 60.33

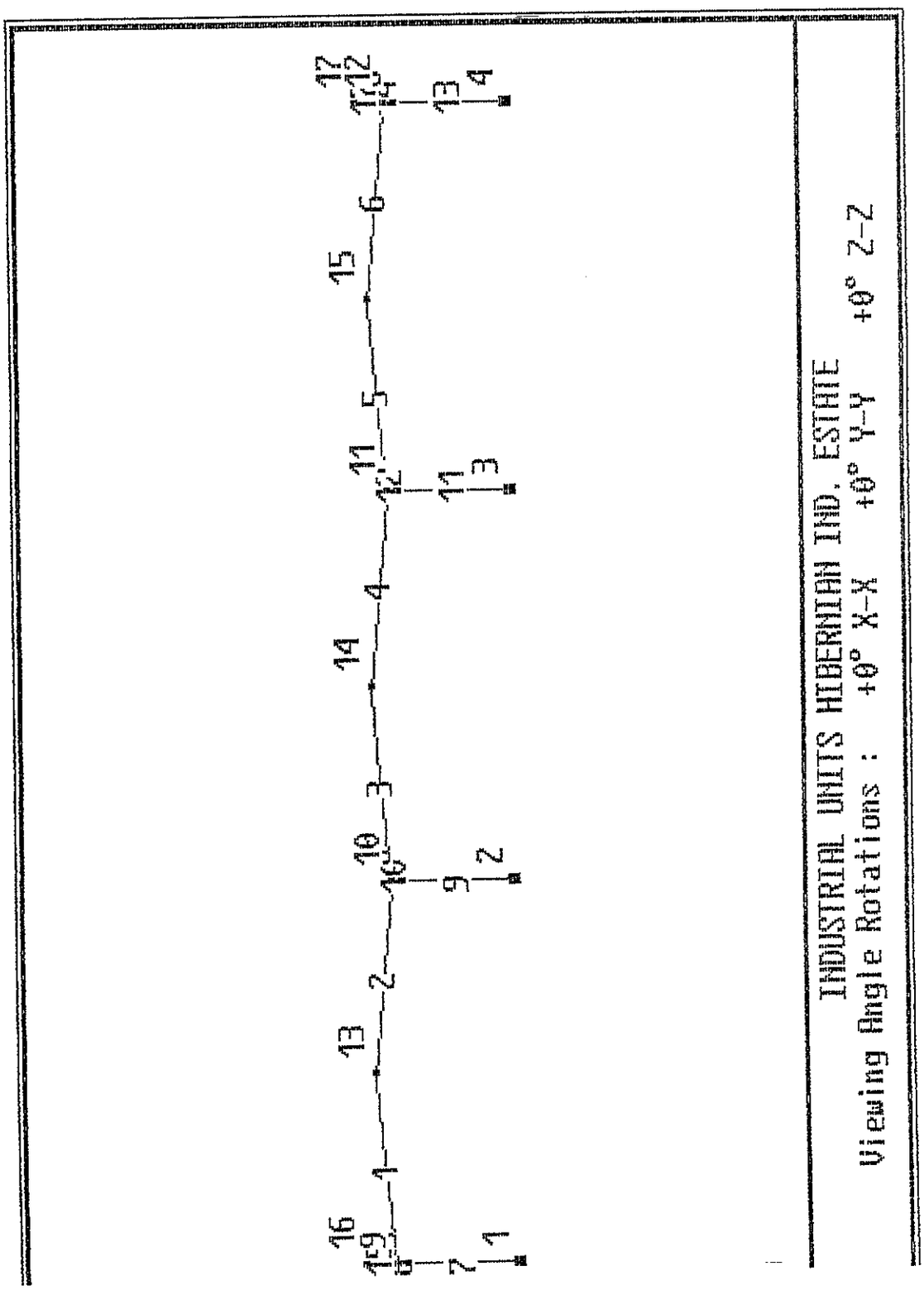
Service live = max def $\frac{5.4}{8.1} \times 60.33$ = 40.22

Allowable def $\frac{19000}{360}$ = 52.7mm ⇒ def ok

(C) MasterFrame INDUSTRIAL UNITS HIBERNIAN IND. ESTATE File: E2458F

John Moylan & Associates
Consulting Engineers
79 Merrion Square
Dublin 2
Tel : (01) 615337/612475 Fax : (01) 610255

Job Ref : BOUNDARY SIGN WESTGATE BUSIN
Sheet : 1
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :



INDUSTRIAL UNITS HIBERNIAN IND. ESTATE.

Member	Sec	Restrained at Ends Only: 1.00xL	0.85xL	0.70xL	Intermediate Restrained @	Fully Local	Restrained Overall	Shear
9	13	42	Failed	Failed	Failed	.....	0.531	0.567	0.128
10	13	42	Failed	Failed	Failed	.....	0.754	0.797	0.139
9	14	42	Failed	Failed	Failed	.....	0.725	0.764	0.134
11	14	42	Failed	Failed	Failed	.....	0.725	0.764	0.134
11	15	42	Failed	Failed	Failed	.....	0.754	0.797	0.139
12	15	42	Failed	Failed	Failed	.....	0.531	0.567	0.128
1	5	33	Failed	Failed	0.822	Pass	0.724	0.463	0.045
5	9	33	0.304	Pass	Pass	Pass	0.724	0.723	0.045
2	6	33	0.420	Pass	Pass	Pass	0.053	0.126	0.003
6	10	33	0.022	Pass	Pass	Pass	0.053	0.053	0.003
3	7	33	0.432	Pass	Pass	Pass	0.264	0.163	0.017
7	11	33	0.111	Pass	Pass	Pass	0.264	0.264	0.017
4	8	33	Failed	Failed	0.822	Pass	0.724	0.463	0.045
8	12	33	0.304	Pass	Pass	Pass	0.724	0.723	0.045
9	16	108	0.157	Pass	Pass	Pass	0.154	0.154	0.035
12	17	108	0.055	Pass	Pass	Pass	0.055	0.055	0.013

PgUp PgDn ^PgUp ^PgDn Home End to move, or ESC to end

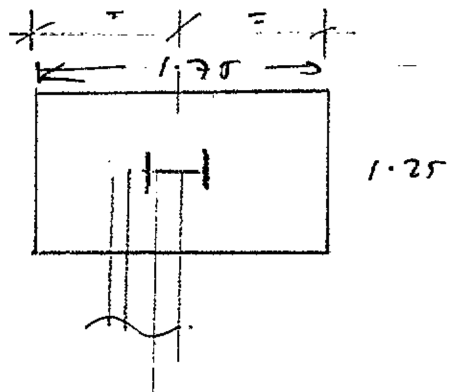
JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337 / 612475
FAX NO. 610255

CONTRACT: Industrial Unity – Greenhills Road
Foundation to Steel Portal

DRG. NO: | JOB NO: | SHEET NO: 12

DATE: | DESIGN:

TYPICAL EXTERNAL STANCHION



525 DP
R.C. PAD.

−0.225

Wall line load 15 kN/m @

Gutter 0.15 × 0.5 × 10 × 6 4.5 kN/m

Blockwork encasement
1.3 × 2.1 × 3 8.0 kN

Applied reactions from computer analysis.

	Vertical	Horizontal
① Dead + Live	74.2	−31.34
③ Dead + Wind uplift	−9.4	11.4
⑤ Dead + Live on side	~~13.4~~ 2.4	~~7.4~~ −13.3

PAD FOUNDATION DESIGN

PROJECT HIBERNIAN IND. ESTATE JOB. NO. E245

PAD REF. TYPICAL EXTERNAL STANCHION

PAD LENGTH	L (m)	1.75
BREATH	B (m)	1.25
DEPTH	h (m)	0.525
DEPTH OF OVER BURDEN		0.3
DENGITY OF OVERBURDEN		18
WALL LINE LOAD B		15
OFF SET FROM PAD C.L.		-0.225
LENGTH IN DIRECTION B		1.5
WALL LINE LOAD L		0
OFF SET FROM PAD C.L.		0
LENGTH IN DIRECTION L		0
GROUND BEAM U.D.L		0
GR.BEAM LENGTH SUPP. ON PAD		0
STANCHION OFFSET		0

SERVICE LOADS		VERTICAL	HORIZONTAL
MIN. D+W	Kn	-9.4	11.4
DEAD+LIVE	Kn	74	-31.5
DEAD/LIVE RATIO		0.333	

SERVICE MOMENTS

WIND	X	Knm	0
	Y	Knm	0

LOAD CASE	D+L			MIN. DEAD + W		
VERTICAL LOADING	LOAD Kn.	LEV. ARM m	MOMENT Knm	LOAD Kn.	LEV. ARM m	MOMENT Knm
COLUMN LOAD	74	0.875	64.75	-9.4	0.875	-8.225
PAD SELF WT.	27.5625	0.875	24.11718	27.5625	0.875	24.11718
OVERBURDEN	11.8125	0.875	10.33593	11.8125	0.875	10.33593
WALL LOAD B	22.5	0.65	14.625	22.5	0.65	14.625
WALL LOAD L	0	0.875	0	0	0.875	0
GUTTER/EAVES BEAM	4.5	0.875	3.9375	4.5	0.875	3.9375
SIDE SHEETING	0	0.875	0	0	0.875	0
BL/WK CASING	8	0.875	7	0	0.875	0
MEZZANINE FL	0	0.875	0	0	0.875	0
	148.375	0.840880	124.7656	56.975	0.786145	44.79062

HORIZONTAL LOADING

MOMENT AT BASE OF COL.	0	0

	LOAD Kn	LEV. ARM m	MOMENT Knm	LOAD Kn	LEV. ARM m	MOMENT Knm

TOTAL LOAD	-31.5	0.525	-16.5375	11.4	0.525	5.985
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	-31.5	0.525	-16.5375	11.4	0.525	5.985

BEARING PRESSURE

LEV. ARM OF R	0.729422	0.891191
C.L OF PAD	0.875	0.875
ECCENTRICITY	-0.14557	0.016191
	R. IS I/S MIDDLE THIRD	R. IS I/S MIDDLE THIRD
p(max)	101.6832	27.49159
p(min)	33.97387	24.59983
Effective Pad Length	1.75	1.75
ALLOWABLE BEARING PRESSURE	150	150
	BEARING PRESS. IS O.K.	BEARING PRESS. IS

OVER TURNING

F.O.S against Overturning	7.544406
	7.483813

SLIDING

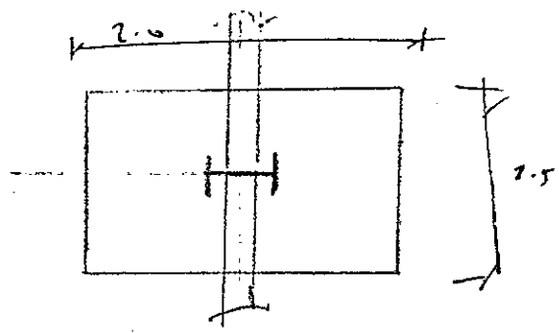
Coeff. of Friction	0.45
F.O.S against Sliding	2.119642
	0.45
	2.249013

UPLIFT

F.O.S AGAINST UPLIFT	UPLIFT O.K.
	7.061170

JOHN MOYLAN & ASSOCIATES TELEPHONE NO. 615337 / 612475 FAX NO. 610255	CONTRACT: GREENHILLS ROAD - INDUSTRIAL UNITS FOUNDATION DESIGN	
DRG. NO:	JOB NO:	SHEET NO: 15
DATE:	DESIGN:	

TYPICAL INTERNAL STANCHION



USE BAY WIDTH
2 × 1.5

WALL CLAD LOAD	37 kN/m	- See Page 15
GUTTONS	9.0 kN	say.

APPLIED REACTIONS FROM RAFTER

		VERTICAL	HORIZONTAL
②	DEAD + CLAD	- 156.7 (10% ↓)	- 1.5 (2↓)
③	DEAD + WIND UPLIFT	- 17.5	- 3.3
⑤	DEAD + WIND ON SIDE	~~- 11.4~~ 341.1	- 12.4

Use.

PAD FOUNDATION DESIGN

PROJECT HIBERNIAN IND. ESTATE JOB. NO. E245

PAD REF. TYPICAL INTERNAL STANCHION

PAD LENGTH	L (m)	1.75
BREATH	B (m)	1.25
DEPTH	h (m)	0.525
DEPTH OF OVER BURDEN		0.3
DENSITY OF OVERBURDEN		18
WALL LINE LOAD B		37
OFF SET FROM PAD C.L.		0
LENGTH IN DIRECTION B		1.5
WALL LINE LOAD L		0
OFF SET FROM PAD C.L.		0
LENGTH IN DIRECTION L		0
GROUND BEAM U.D.L		0
GR.BEAM LENGTH SUPP. ON PAD		0
STANCHION OFFSET		0

SERVICE LOADS		VERTICAL	HORIZONTAL
MIN. D+W	Kn	-17.5	-3.3
DEAD+LIVE	Kn	157	-21
DEAD/LIVE RATIO		0.333	

SERVICE MOMENTS

WIND	X	Knm	0
	Y	Knm	0

LOAD CASE D+L MIN. DEAD + W

VERTICAL LOADING

	LOAD Kn.	LEV. ARM m	MOMENT Knm	LOAD Kn.	LEV. ARM m	MOMENT Knm
COLUMN LOAD	157	0.875	137.375	-17.5	0.875	-15.3125
PAD SELF WT.	27.5625	0.875	24.11718	27.5625	0.875	24.11718
OVERBURDEN	11.8125	0.875	10.33593	11.8125	0.875	10.33593
WALL LOAD B	55.5	0.875	48.5625	55.5	0.875	48.5625
WALL LOAD L	0	0.875	0	0	0.875	0
GUTTER/EAVES BEAM	9	0.875	7.875	9	0.875	7.875
SIDE SHEETING	0	0.875	0	0	0.875	0
BL/WK CASING	19	0.875	16.625	0	0.875	0
MEZZANINE FL	0	0.875	0	0	0.875	0
	279.875	0.875	244.8906	86.375	0.875	75.57812

HORIZONTAL LOADING

MOMENT AT BASE OF COL.	0	0

	LOAD Kn	LEV. ARM m	MOMENT Knm	LOAD Kn	LEV. ARM m	MOMENT Knm

TOTAL LOAD	-21	0.525	-11.025	-3.3	0.525	-1.7325
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	-21	0.525	-11.025	-3.3	0.525	-1.7325

BEARING PRESSURE

LEV. ARM OF R	0.835607	0.854942
C.L OF PAD	0.875	0.875
ECCENTRICITY	-0.03939	-0.02005

	R. IS I/S MIDDLE THIRD	R. IS I/S MIDDLE THIRD
p(max)	145.2228	42.20114
p(min)	110.6628	36.77028
Effective Pad Length	1.75	1.75
ALLOWABLE BEARING PRESSURE	150	150
	BEARING PRESS. IS O.K.	BEARING PRESS. IS

OVER TURNING

F.O.S against Overturning	22.21230 -43.6237

SLIDING

Coeff. of Friction	0.45	0.45
F.O.S against Sliding	5.997321	-11.7784

UPLIFT

F.O.S AGAINST UPLIFT	UPLIFT O.K.	5.935714

JOHN MOYLAN & ASSOCIATES TELEPHONE NO. 615337 / 612475 FAX NO. 610255	CONTRACT: INDUSTRIAL UNIT CROOKHILL ROAD. ROOF PURLINS / SHEETING RAILS.
DRG. NO:	JOB NO: 6245. SHEET NO: 18.
DATE:	DESIGN:

ROOF PURLINS

		kN/m²
DESIGN LOADING.	LIVE	0.9
	DEAD	0.20
		1.1

— EXCLUDING STEEL PURLIN & PURLIN SELF WT.

NOMINAL PURLIN SPACING : 1400

DESIGN SPAN 6.0 m.

ULMA Z00 : DOUBLE SPAN — BUTT JOINTED SYSTEM.

Z00/120 1.05 kN 1.5 m SPAN

USE Z00/130 1.14 kN 1.5 m SPAN.

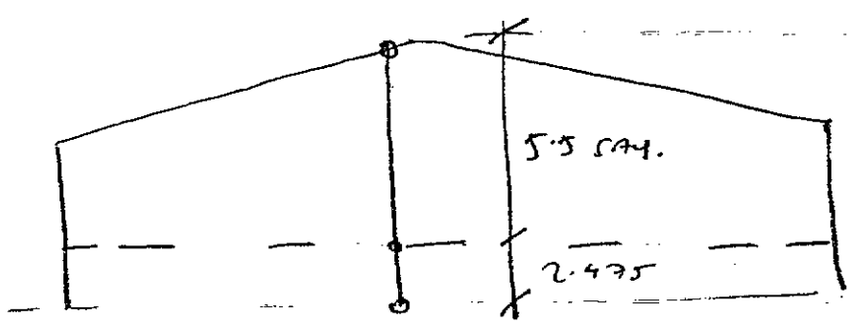
Z00/130 PURLIN

FOR REDUCED CONTINUOUS ADJACENT TO PARAPET AND GABLES TO GUTTER SEE SECTION.

SEE COPY OF ULMA Z00 LOAD SPAN TABLES ATTACHED

VERTICAL SHEETING RAILS.

WIND LOADING 0.6 kN/m².



WITH SIDE RAILS - SINGLE SPAN SYSTEM 170/140 @

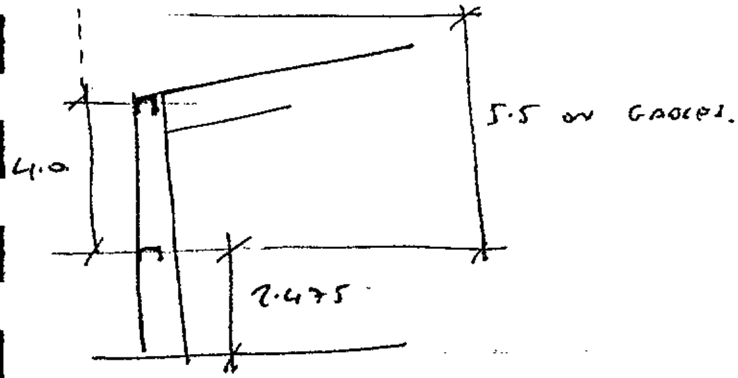
Safe Load
2.0 — 0.88 kN/m

JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337/612475
FAX NO. 610255

CONTRACT: Industrial Unit - Garranhill Road

Steel bay beam to typical elevation.

DRG. NO:	JOB NO:	SHEET NO: 19
DATE:	DESIGN:	



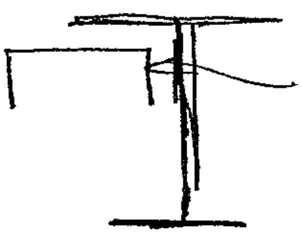
UDL on bay beam $\left(\frac{5.5 + 2.5}{2}\right) \times 0.6$ = 2.4 kN/m run

See common calcs pages 20 & 21

Confirming beam size of 203/76 [

Check restraints under wind suction

Full packing of gap required restrained by blockwork against buckling about Y axis



Ensure restraint against eaves beam at mid span of channel.

STEEL BEAM JOINTS IN TYPICAL EXT. WALL

TYPICAL 6.0 m SPAN

STEEL BEAM DESIGN TO B.S. 449

PROJECT	INDUSTRIAL UNITS GREENHILLS ROAD		
BEAM REF.	~~BEAM MK~~ Y	JOB. NO. E245	
DESIGN SPAN	6 m		
	BENDING	DEFLECTION	
U.D.L	2.4	2.4	KN/m
POINT LOAD	0	0	KN
XP.	0	0	m

	SUPPORT A	SUPPORT B
SHEAR	KN	KN
U.D.L	7.2	7.2
P.L	0	0
TOTAL	7.2	7.2

XM	3 m	
MAX MOMENT	10.8	KNm

ESTABLISH REQUIRED SECTION BY LIMITING DEFLECTION TO AN ACCEPTABLE LEVEL

ALLOWABLE SPAN/DEF. RATIO	360	
MAX ALLOW. DEFLECTION	16.66666	mm
E	210000	N/mm2
MIN. I	1157.142	cm4
MIN. Z	65.45454	cm3
Pcb EST.	165	N/mm2
SECTION SELECTED	229/76 RSC	

SECTION PROPERTIES

I	2610	cm4
Z	228.3	cm3
Rxx	88.7	mm
Ryy	21.9	mm
D/T	20.4	
D (Shear)	228.6	mm
t (Shear)	7.6	mm

DEFLECTION

MAX ALLOW. DEFLECTION	16.66666	mm
ACTUAL DEFLECTION	7.389162	mm

BENDING DESIGN

BENDING STRESS	47.30617	N/mm2
ALLOWABLE BENDING STRESS	130	N/mm2
Lxx	6000	mm
Lyy	3000	mm
Lxx/Rxx	67.64374	
Lyy/Ryy	136.9863	
D/T	20.4	

SHEAR DESIGN

SHEAR STRESS	4.144218	N/mm2
ALLOWABLE SHEAR STRESS	100	N/mm2

STEEL BEAM DESIGN TO B.S. 449

7.0 m span on gables.

PROJECT	INDUSTRIAL UNITS GREENHILLS ROAD		
BEAM REF.	BEAM MK Y	JOB. NO. E245	
DESIGN SPAN	7 m		
	BENDING	DEFLECTION	
U.D.L	2.4	2.4	KN/m
POINT LOAD	0	0	KN
XP.	0	0	m

	SUPPORT A	SUPPORT B
SHEAR	KN	KN
U.D.L	8.4	8.4
P.L	0	0
TOTAL	8.4	8.4

XM	3.5 m
MAX MOMENT	14.7 KNm

ESTABLISH REQUIRED SECTION BY LIMITING DEFLECTION TO AN ACCEPTABLE LEVEL

ALLOWABLE SPAN/DEF. RATIO	360
MAX ALLOW. DEFLECTION	19.44444 mm
E	210000 N/mm2
MIN. I	1837.5 cm4
MIN. Z	89.09090 cm3
Pcb EST.	165 N/mm2
SECTION SELECTED	229/76 RSC

229/76 OK - BUT USE 229/89 ON 7.0 m SPAN ONLY

229/76 ON SPAN 6.33 m SPAN ON GABLES

SECTION PROPERTIES	
I	2610 cm4
Z	228.3 cm3
Rxx	88.7 mm
Ryy	21.9 mm
D/T	20.4
D (Shear)	228.6 mm
t (Shear)	7.6 mm

DEFLECTION

MAX ALLOW. DEFLECTION	19.44444 mm
ACTUAL DEFLECTION	13.68933 mm

BENDING DESIGN

BENDING STRESS	64.38896 N/mm2
ALLOWABLE BENDING STRESS	113 N/mm2
Lxx	7000 mm
Lyy	3500 mm
Lxx/Rxx	78.91770
Lyy/Ryy	159.8173
D/T	20.4

SHEAR DESIGN

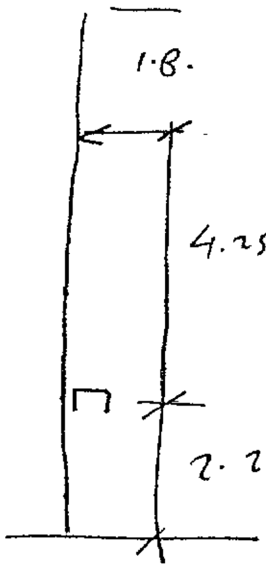
SHEAR STRESS	4.834921 N/mm2
ALLOWABLE SHEAR STRESS	100 N/mm2

JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337/612475
FAX NO. 610255

CONTRACT: Industrial units – Greenhills Road.		
Eaves beam / wind girder :		
DRG. NO:	JOB NO:	SHEET NO: 22
DATE:	DESIGN:	

Design wind load on gable 0.6 kN/m²

Design load on wind girder



(1.8 + 4.25/2) x 0.6 = 2.4 kN/m

Reaction on external gable line 2.4 x 19/2 = 22.8 kN

Max compression in eaves beam 22.8 kN

Consider vertical loads causing bending

Cladding 0.25 x 8 2.0
Gutter 0.5+0.15+0.10 0.75
Self wt. 0.5
3.25 kN/m

Computer calculation on page 23 confirms that 203/133/25 kg UB is OK.

STEEL BEAM DESIGN TO B.S. 449

PROJECT INDUSTRIAL UNITS GREENHILLS ROAD
BEAM REF. TYPICAL EAVES BEAM JOB. NO. E245

DESIGN SPAN 6 m

	BENDING	DEFLECTION	
U.D.L	3.25	3.25	KN/m
POINT LOAD	0	0	KN
XP.	0	0	m

	SUPPORT A	SUPPORT B
SHEAR	KN	KN
U.D.L	9.75	9.75
P.L	0	0
TOTAL	9.75	9.75

XM 3 m
MAX MOMENT 14.625 KNm

ESTABLISH REQUIRED SECTION BY LIMITING DEFLECTION TO AN ACCEPTABLE LEVEL

ALLOWABLE SPAN/DEF. RATIO	360
MAX ALLOW. DEFLECTION	16.66666 mm
E	210000 N/mm2
MIN. I	1566.964 cm4
MIN. Z	88.63636 cm3
Pcb EST.	165 N/mm2

SECTION SELECTED 203/133/25 UB

SECTION PROPERTIES

I	2348 cm4
Z	231.1 cm3
Rxx	85.3 mm
Ryy	29.4 mm
D/T	26.1
D (Shear)	203.2 mm
t (Shear)	5.8 mm
A	3230 mm2

DEFLECTION

MAX ALLOW. DEFLECTION	16.66666 mm
ACTUAL DEFLECTION	11.12268 mm

BENDING DESIGN

BENDING STRESS	63.28429 N/mm2
ALLOWABLE BENDING STRESS	87 N/mm2
	TABLE 3a
Lxx	6000 mm
Lyy	6000 mm
Lxx/Rxx	70.33997
Lyy/Ryy	204.0816
D/T	26.1

SHEAR DESIGN

SHEAR STRESS	8.272807 N/mm2
ALLOWABLE SHEAR STRESS	100 N/mm2

COMPRESSION DESIGN

APPLIED COMPRESSION		23 Kn
l/r		204.0816
COMPRESSION STRESS		7.120743 N/mm2
ALLOWABLE COMPRESSION STRESS		23 N/mm2
		TABLE 17a
EFF. LENGTH	1	Lxx 6000
FACTOR	1	Lyy 6000
		Lxx/Rxx 70.33997
		Lyy/Ryy 204.0816

COMBINED BENDING AND COMPRESSION

$$\frac{fcb.}{pcb} + \frac{fc}{pc} = 1.037003$$

LESS THAN 1.25 O.K

JOHN MOYLAN & ASSOCIATES TELEPHONE NO. 615337 / 612475 FAX NO. 610255	CONTRACT: GROUND FLOOR SLABS.	
DRG. NO:	JOB NO: 6245	SHEET NO: 24.
DATE:	DESIGN:	

DESIGN MOMENT 6.0 m

LOADING LIVE 3.5

DEAD 5.0

2.0 SCREED

2.8 Self wt.

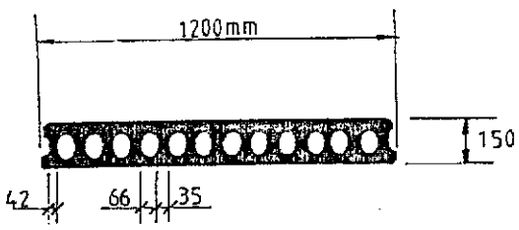
0.2 FINISHES

8.5. TOTAL

5.7 EXCLUDING SLAB Self WEIGHT

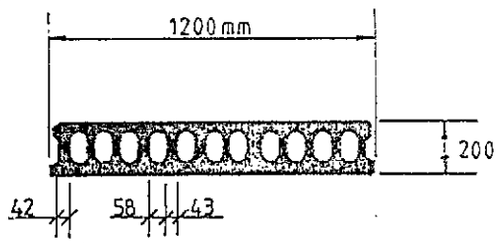
DESIGN LOAD FACTOR FOR CONCRETE FLOOR UNITS CONFIRMS THAT 200 deep SLAB IS MORE THAN OK FOR ABOVE LOADING.

CONCAST
Hollowcore load span tables



SECTION PROPERTIES 150mm deep.

A	119504 sq mm²
I	324714016 mm⁴
Z_t	4154925 mm³
Z_b	4225383 mm³
W	2.34 kN/sq metre



SECTION PROPERTIES 200mm deep.

A	142267 sq mm²
I	629573953 mm⁴
Z_t	6325985 mm³
Z_b	6265781 mm³
W	2.79 kN/sq metre

MATERIALS PROPERTIES 150 & 200mm units.

Concrete
Transfer strength 35 N/ sq mm
Strength at 28 days 50 N/ sq mm
Fire rating 1 hour
Design to CP 110 (1972) Prestressed Concrete Class 11

Steel
Wire diameter 5mm
ApsFpu 34.7 kN

Unit depth.	Structural Screed depth.	* Ultimate bending moment kN-m	* Ultimate Shear force kN	SAFE WORKING LOAD in kN/m² excl. self wt. for spans in metres. SPANS IN METRES														
				4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0
150	none	63.08	92.05	14.3	10.8	8.4	6.5	5.2	4.1	3.2	2.5							
150	50mm	84.23	92.05	19.9	15.3	12.0	9.6	7.7	6.3	5.0	3.8	2.8						
200	none	137.1	157.9			20.3	16.4	13.3	11.0	9.1	7.6	6.3	5.3	4.5	3.7	3.1	1.5	
200	50mm	178.05	155.89			27.3	22.2	18.7	15.2	12.5	10.4	8.6	7.2	6.0	5.0	4.1	3.2	2.7

* Note Ultimate moment and ultimate shear are given per standard unit 1200 wide.
For fire rating greater than that shown above please consult our design department.

CONCAST
Hazelhatch, Newcastle, Co. Dublin.
Telephone: 288055/271138/271346
Telex: 92281 CNCT. EI.

JOHN MOYLAN & ASSOCIATES
TELEPHONE NO. 615337 / 612475
FAX NO. 610255

CONTRACT: GREENHILLS ROAD - TRANSITION WALL
TYPICAL STRIP FOUNDATION - LOADS FROM

ORG. NO: | JOB NO: | SHEET NO: 26

DATE: | DESIGN:

TRANSITION FULL HEIGHT CANTILEVER WALL

LOADS

Self Wt	8.5 x	4.8	40.8
Floor	6.0 x	8.5	51.0
			91.8

91.8 kN/m

WITH AN ALLOWABLE BEARING PRESSURE OF 150 kN/m²

MIN PAD WIDTH 0.612 m

⇒ 700 WIDE FOOTING MINIMUM THICK OK.

John Moylan & Associates
Consulting Engineers
Merrion Square
Dublin 2
Tel : (01) 615337/612475 Fax : (01) 610255

Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 11
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

MasterFrame : General Frame Analysis : Plane Frame

INDUSTRIAL UNITS HIBERNIAN IND. ESTATE
Loading Case 01 : ULTIMATE DEAD PLUS LIVE

NODAL DEFLECTIONS

Node	X-Direction (mm)	Y-Direction (mm)	Z-Rotation (Degree)
1	0.000	0.000	0.552
2	0.000	0.000	0.038
3	0.000	0.000	-0.038
4	0.000	0.000	-0.552
5	-28.569	-0.396	-0.298
6	-5.500	-0.836	0.079
7	5.501	-0.836	-0.079
8	28.571	-0.396	0.298
9	-24.924	-0.428	-0.378
10	-6.351	-0.905	0.083
11	6.353	-0.905	-0.083
12	24.926	-0.428	0.378
13	-15.609	-92.507	0.093
14	0.001	-64.665	0.000
15	15.611	-92.507	-0.093
16	-13.040	-0.428	-0.378
17	13.702	-0.428	0.378

MEMBER FORCES

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
9	59.685	108.066	-321.978	153.350 @	-16.033 @
13	47.357	-9.278	149.847	8.788 m	6.591 m
10	60.579	-116.578	403.290	-149.864 @	-10.351 @
13	48.251	0.766	-149.847	9.457 m	2.197 m
10	57.833	112.564	-387.806	127.911 @	10.556 @
14	45.505	-4.781	126.981	9.170 m	2.197 m
11	57.833	-112.564	387.809	-127.911 @	-10.557 @
14	45.505	4.780	-126.981	9.170 m	2.197 m
11	60.578	116.578	-403.289	149.864 @	10.351 @
15	48.251	-0.766	149.847	9.457 m	2.197 m

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 12
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
12	59.685	-108.066	321.981	-153.350 @	16.032 @
15	47.357	9.278	-149.847	8.788 m	6.591 m
1	113.710	-48.056	-0.000		11.605 @
5	113.710	-48.056	-293.143		3.538 m
5	113.710	-48.068	-293.143		0.100 @
9	113.710	-48.068	-321.983		0.264 m
2	240.259	2.311	0.000		-0.558 @
6	240.259	2.311	14.097		3.538 m
6	240.259	2.308	14.097		-0.005 @
10	240.259	2.308	15.482		0.264 m
3	240.259	-2.310	-0.000		0.558 @
7	240.259	-2.310	-14.093		3.538 m
7	240.259	-2.311	-14.092		0.005 @
11	240.259	-2.311	-15.479		0.264 m
4	113.711	48.057	0.000		-11.605 @
8	113.711	48.057	293.147		3.538 m
8	113.711	48.069	293.147		-0.100 @
12	113.711	48.069	321.988		0.264 m
9	0.000	-0.000	0.000		0.000 @
16	0.000	-0.000	-0.000		1.548 m
12	-0.000	0.000	0.000		-0.000 @
17	-0.000	0.000	0.000		1.139 m

SUPPORT REACTIONS

Node	X-Direction (kN)	Y-Direction (kN)	Z-Z Moment (kN.m)
1	48.056	113.710	0.000
2	-2.311	240.259	0.000
3	2.310	240.259	0.000
4	-48.057	113.711	0.000

97.727 97.738 @ 9.457 m --- m 6.750 @ 2.197 m

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 13
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

MasterFrame : General Frame Analysis : Plane Frame

INDUSTRIAL UNITS HIBERNIAN IND. ESTATE
Loading Case 02 : SERVICE DEAD PLUS LIVE

NODAL DEFLECTIONS

Node	X-Direction (mm)	Y-Direction (mm)	Z-Rotation (Degree)
1	0.000	0.000	0.360
2	0.000	0.000	0.025
3	0.000	0.000	-0.025
4	0.000	0.000	-0.360
5	-18.632	-0.258	-0.194
6	-3.587	-0.545	0.051
7	3.588	-0.545	-0.051
8	18.633	-0.258	0.194
9	-16.255	-0.279	-0.247
10	-4.142	-0.590	0.054
11	4.143	-0.590	-0.054
12	16.256	-0.279	0.247
13	-10.180	-60.331	0.061
14	0.001	-42.173	0.000
15	10.181	-60.331	-0.061
16	-8.504	-0.279	-0.247
17	8.936	-0.279	0.247

MEMBER FORCES

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
9	38.925	70.478	-209.986	100.011 @	-10.456 @
13	30.885	-6.051	97.726	8.788 m	6.591 m
10	39.508	-76.029	263.016	-97.737 @	-6.751 @
13	31.468	0.499	-97.726	9.457 m	2.197 m
10	37.717	73.411	-252.917	83.420 @	6.885 @
14	29.677	-3.118	82.814	9.170 m	2.197 m
11	37.717	-73.411	252.919	-83.420 @	-6.885 @
14	29.677	3.118	-82.814	9.170 m	2.197 m
11	39.508	76.029	-263.014	97.738 @	6.750 @
15	31.468	-0.500	97.727	9.457 m	2.197 m

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 14
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
12	38.924	-70.478	209.987	-100.011 @	10.456 @
15	30.885	6.051	-97.727	8.788 m	6.591 m
1	74.159	-31.341	-0.000		7.568 @
5	74.159	-31.341	-191.180		3.538 m
5	74.159	-31.342	-191.181		0.065 @
9	74.159	-31.342	-209.986		0.264 m
2	156.691	1.507	0.000		-0.364 @
6	156.691	1.507	9.193		3.538 m
6	156.691	1.507	9.193		-0.003 @
10	156.691	1.507	10.097		0.264 m
3	156.691	-1.507	-0.000		0.364 @
7	156.691	-1.507	-9.191		3.538 m
7	156.691	-1.507	-9.191		0.003 @
11	156.691	-1.507	-10.095		0.264 m
4	74.159	31.341	-0.000		-7.568 @
8	74.159	31.341	191.183		3.538 m
8	74.159	31.344	191.184		-0.065 @
12	74.159	31.344	209.990		0.264 m
9	0.000	-0.000	0.000		-0.000 @
16	0.000	-0.000	-0.000		1.224 m
12	-0.000	-0.000	0.000		0.000 @
17	-0.000	-0.000	-0.000		1.649 m

SUPPORT REACTIONS

Node	X-Direction (kN)	Y-Direction (kN)	Z-Z Moment (kN.m)
1	31.341	74.159	0.000
2	-1.507	156.691	0.000
3	1.507	156.691	0.000
4	-31.341	74.159	0.000

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 15
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

MasterFrame : General Frame Analysis : Plane Frame

INDUSTRIAL UNITS HIBERNIAN IND. ESTATE
Loading Case 03 : MAX. WIND UPLIFT

NODAL DEFLECTIONS

Node	X-Direction (mm)	Y-Direction (mm)	Z-Rotation (Degree)
1	0.000	0.000	0.011
2	0.000	0.000	0.011
3	0.000	0.000	0.016
4	0.000	0.000	0.014
5	-0.182	0.029	0.006
6	-0.888	0.060	0.004
7	-1.403	0.060	0.008
8	-2.093	0.030	0.008
9	-0.272	0.031	0.010
10	-0.923	0.065	0.003
11	-1.482	0.064	0.007
12	-2.144	0.033	0.003
13	-0.599	4.017	-0.004
14	-1.202	3.574	-0.003
15	-1.811	4.019	-0.003
16	-0.596	0.031	0.010
17	-2.226	0.033	0.003

MEMBER FORCES

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
9	-12.309	-7.110	20.401	-6.791 @	0.736 @
13	-14.988	1.769	-5.109	7.642 m	6.687 m
10	-12.349	7.494	-24.070	6.139 @	0.584 @
13	-15.029	-1.385	5.109	8.024 m	2.102 m
10	-11.924	-7.192	21.449	-6.378 @	0.591 @
14	-14.604	1.686	-4.849	7.737 m	6.878 m
11	-11.956	7.493	-24.322	5.881 @	0.635 @
14	-14.635	-1.385	4.849	8.024 m	2.197 m
11	-11.487	-7.240	21.377	-6.822 @	0.673 @
15	-14.167	1.638	-5.379	7.833 m	6.782 m

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 16
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
12	-11.518	7.537	-24.211	6.347 @	0.577 @
15	-14.198	-1.342	5.379	8.119 m	2.102 m
1	-8.357	-5.398	-0.000	-5.780 @	0.235 @
5	-8.357	9.974	13.960	2.135 m	2.379 m
5	-8.357	9.975	13.959		-0.005 @
9	-8.357	11.499	20.401		0.270 m
2	-17.142	-0.391	-0.000		0.094 @
6	-17.142	-0.391	-2.386		3.538 m
6	-17.142	-0.391	-2.386		0.001 @
10	-17.142	-0.391	-2.621		0.264 m
3	-17.102	-0.440	0.000		0.106 @
7	-17.102	-0.440	-2.682		3.538 m
7	-17.102	-0.439	-2.682		0.001 @
11	-17.102	-0.439	-2.946		0.264 m
4	-8.699	4.827	0.000	4.587 @	-0.118 @
8	-8.699	-10.667	-17.811	1.891 m	1.952 m
8	-8.699	-10.666	-17.812		0.007 @
12	-8.699	-10.666	-24.211		0.270 m
9	-0.000	-0.000	0.000		-0.000 @
16	-0.000	-0.000	0.000		1.224 m
12	0.000	-0.000	0.000		-0.000 @
17	0.000	-0.000	0.000		1.003 m

SUPPORT REACTIONS

Node	X-Direction (kN)	Y-Direction (kN)	Z-Z Moment (kN.m)
1	5.398	-8.357	0.000
2	0.391	-17.142	0.000
3	0.440	-17.102	0.000
4	-4.827	-8.699	0.000

149.847 149.864 @ 9.457 m ... m 10.351 @ 2.197 m

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 17
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

MasterFrame : General Frame Analysis : Plane Frame

INDUSTRIAL UNITS HIBERNIAN IND. ESTATE
Loading Case 04 : WIND ON SIDE PLUS MIN DEAD ULTIMATE

NODAL DEFLECTIONS

Node	X-Direction (mm)	Y-Direction (mm)	Z-Rotation (Degree)
1	0.000	0.000	-0.338
2	0.000	0.000	-0.250
3	0.000	0.000	-0.383
4	0.000	0.000	-0.317
5	26.402	0.023	-0.114
6	24.443	-0.108	-0.188
7	29.717	-0.093	-0.072
8	27.892	-0.016	-0.170
9	27.520	0.024	-0.103
10	26.377	-0.117	-0.182
11	30.283	-0.101	-0.043
12	29.611	-0.018	-0.160
13	26.957	4.246	0.073
14	28.331	-19.685	0.068
15	29.944	3.426	0.066
16	32.866	0.024	-0.193
17	35.045	-0.018	-0.191

MEMBER FORCES

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
9	19.156	-8.549	48.363		-4.566 @
13	16.476	-3.033	-6.955		3.630 m
10	19.427	-10.609	55.443	6.865 @	-5.905 @
13	16.747	0.457	6.955	9.170 m	4.012 m
10	16.556	16.755	-31.994	32.797 @	-6.252 @
14	13.876	-3.940	29.215	7.737 m	5.636 m
11	17.072	-26.480	101.890		-4.305 @
14	14.393	-0.970	-29.215		2.675 m
11	-3.446	-0.917	15.674		-2.727 @
15	-6.126	-2.355	0.049		4.299 m

-403.289 149.847 .711 @ 9.170 m 149.844 .197 m -10.557 @ 2.10

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
Sheet : 01 18
Made by : PAUL MC GARRY
Date : 12 August 1991 Ver 2.90
Checked :

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
12	-2.822	-5.014	40.979		-5.588 @
15	-5.502	-3.576	-0.049		4.107 m
1	-6.501	22.884	0.000	51.949 @	-3.298 @
5	-6.501	-7.860	45.821	4.514 m	3.294 m
5	-6.501	-7.848	45.821		-0.014 @
9	-6.501	-10.872	40.205		0.258 m
2	30.974	3.500	-0.000		-0.845 @
6	30.974	3.500	21.353		3.538 m
6	30.974	3.516	21.351		-0.007 @
10	30.974	3.516	23.461		0.264 m
3	26.847	17.547	-0.000		-4.237 @
7	26.847	17.547	107.039		3.538 m
7	26.847	17.552	107.041		-0.036 @
11	26.847	17.552	117.572		0.264 m
4	4.692	12.381	-0.000		-2.096 @
8	4.692	0.084	38.019		3.355 m
8	4.692	0.084	38.021		-0.012 @
12	4.692	0.084	38.072		0.258 m
9	-0.000	9.072	-8.165		0.335 @
16	-0.000	0.000	0.000		0.666 m
12	-0.000	3.427	-2.913		0.106 @
17	-0.000	0.000	-0.000		0.629 m

SUPPORT REACTIONS

Node	X-Direction (kN)	Y-Direction (kN)	Z-Z Moment (kN.m)
1	-22.884	-6.501	0.000
2	-3.500	30.974	0.000
3	-17.547	26.847	0.000
4	-12.381	4.692	0.000

-403.289
149.847
9.170 m
-10.557 @
m

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Job Ref : INDUSTRIAL UNITS GREENHILLS R
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MasterFrame : General Frame Analysis : Plane Frame

INDUSTRIAL UNITS HIBERNIAN IND. ESTATE
Loading Case 05 : WIND ON SIDE PLUS MIN DEAD SERVICE

NODAL DEFLECTIONS

Node	X-Direction (mm)	Y-Direction (mm)	Z-Rotation (Degree)
1	0.000	0.000	-0.207
2	0.000	0.000	-0.176
3	0.000	0.000	-0.276
4	0.000	0.000	-0.261
5	17.084	-0.008	-0.100
6	17.118	-0.129	-0.130
7	21.568	-0.119	-0.057
8	21.698	-0.036	-0.103
9	18.109	-0.009	-0.097
10	18.446	-0.139	-0.125
11	22.025	-0.128	-0.036
12	22.699	-0.039	-0.091
13	18.285	-2.713	0.058
14	20.236	-18.077	0.048
15	22.359	-3.298	0.042
16	22.666	-0.009	-0.161
17	25.883	-0.039	-0.113

MEMBER FORCES

Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
9	17.390	0.606	14.547	15.070 @	-3.753 @
13	14.710	-2.743	4.340	1.719 m	4.585 m
10	17.639	-14.819	64.651	-4.382 @	-4.604 @
13	14.959	0.374	-4.340	9.361 m	3.439 m
10	15.418	18.960	-46.940	30.849 @	-4.671 @
14	12.738	-3.111	28.755	8.215 m	6.113 m
11	15.786	-25.906	96.866		-3.711 @
14	13.106	-0.396	-28.755		2.579 m
11	1.301	6.586	-13.853	11.060 @	-2.012 @
15	-1.378	-1.729	9.342	7.546 m	5.731 m

.289 149.847 .170 m 149.864 @ 9.457 -10.557 @ 2.197 m

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Member	Axial force (kN)	Shear force (kN)	Bending moment (kN.m)	Maximum moment (kN.m)	Maximum deflection (mm)
12	1.692	-10.294	49.269		-3.629 @
15	-0.988	-1.978	-9.342		3.343 m
1	2.419	13.361	0.000	24.792 @	-1.641 @
5	2.419	-8.599	14.522	3.721 m	3.233 m
5	2.419	-8.603	14.524		-0.004 @
9	2.419	-10.763	8.714		0.252 m
2	37.048	2.644	0.000		-0.638 @
6	37.048	2.644	16.127		3.538 m
6	37.047	2.648	16.128		-0.005 @
10	37.047	2.648	17.717		0.264 m
3	34.099	12.390	0.000		-2.992 @
7	34.099	12.390	75.581		3.538 m
7	34.099	12.388	75.583		-0.026 @
11	34.099	12.388	83.017		0.264 m
4	10.414	11.829	0.000		-2.217 @
8	10.414	3.045	45.364		3.416 m
8	10.414	3.053	45.364		-0.015 @
12	10.414	3.053	47.196		0.258 m
9	-0.000	6.480	-5.832		0.239 @
16	-0.000	0.000	-0.000		0.666 m
12	-0.000	2.448	-2.081		0.076 @
17	-0.000	0.000	0.000		0.629 m

SUPPORT REACTIONS

Node	X-Direction (kN)	Y-Direction (kN)	Z-Z Moment (kN.m)
1	-13.361	2.419	0.000
2	-2.644	37.048	0.000
3	-12.390	34.099	0.000
4	-11.829	10.414	0.000

103.289
149.847
7.170 m
149.864 m
-10.557 @
2.197 m

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The Data :

INDUSTRIAL UNITS HIBERNIAN IND. ESTATE

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*** Number of Nodes and Number of Members ***
NN 17 NM 16

*** The Nodal Coordinates ***

Node	X (m)	Y (m)	Z (m)	Node	X (m)	Y (m)	Z (m)
1	0.000	0.000	0.000	2	19.000	0.000	0.000
3	38.000	0.000	0.000	4	57.000	0.000	0.000
5	0.000	6.100	0.000	6	19.000	6.100	0.000
7	38.000	6.100	0.000	8	57.000	6.100	0.000
9	0.000	6.700	0.000	10	19.000	6.700	0.000
11	38.000	6.700	0.000	12	57.000	6.700	0.000
13	9.500	7.698	0.000	14	28.500	7.698	0.000
15	47.500	7.698	0.000	16	0.000	8.500	0.000
17	57.000	8.400	0.000				

Loading Case 01 : ULTIMATE DEAD PLUS LIVE

*** The Load Factors ***
LFUT 1.000 LFD1 1.400 LFL1 1.600

*** The Members, their Properties and Loading ***

MH +009 +013 (S1R1) XH 00.000 07.802 SEC 042 DEP 2.000 1.000 (H/D) (406x178 UB 54)
D1 UDLY -002.700 (kN/m) L1 UDLY -005.400 (kN/m)
MH +010 +013 (S1R2) XH 00.000 07.802 SEC 000 β 180 DEP 2.000 1.000 (H/D)
D1 UDLY -002.700 (kN/m) L1 UDLY -005.400 (kN/m)
MH +010 +014 (S2R1) XH 00.000 07.802 SEC 000 DEP 2.000 1.000 (H/D)
D1 UDLY -002.700 (kN/m) L1 UDLY -005.400 (kN/m)
MH +011 +014 (S2R2) XH 00.000 07.802 SEC 000 β 180 DEP 2.000 1.000 (H/D)
D1 UDLY -002.700 (kN/m) L1 UDLY -005.400 (kN/m)
MH +011 +015 (S3R1) XH 00.000 07.802 SEC 000 DEP 2.000 1.000 (H/D)
D1 UDLY -002.700 (kN/m) L1 UDLY -005.400 (kN/m)
MH +012 +015 (S3R2) XH 00.000 07.802 SEC 000 β 180 DEP 2.000 1.000 (H/D)
D1 UDLY -002.700 (kN/m) L1 UDLY -005.400 (kN/m)
M +001 +005 (C1Lo) SEC +0033 (457x191 UB 67)
A 85.5E-4 Ix 29412.6E-8 E 205E6
MH +005 +009 (C1Up) XH 00.000 00.000 SEC 000 DEP 1.000 2.000 (H/D)
M +002 +006 (C2Lo) SEC +0033 (457x191 UB 67)
A 85.5E-4 Ix 29412.6E-8 E 205E6
MH +006 +010 (C2Up) XH 00.000 00.000 SEC 000 DEP 1.000 2.000 (H/D)
M +003 +007 (C3Lo)
MH +007 +011 (C3Up) XH 00.000 00.000 SEC 000 DEP 1.000 2.000 (H/D)
M +004 +008 (C4Lo) SEC +0033 (457x191 UB 67)
A 85.5E-4 Ix 29412.6E-8 E 205E6
MH +008 +012 (C4Up) XH 00.000 00.000 SEC 000 DEP 1.000 2.000 (H/D)
M +009 +016 (P.01) SEC +0108 (178x102 RSJ 21.54)
A 27.4E-4 Ix 1519E-8 E 205E6
M +012 +017 (P.02)

*** Nodal Restraints and Nodal Loading ***

N 001 to 004 step 01 and 000 000 000 000 000 000 000 000 000 000 000 000 000

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```
  R 1 1 0
END
```

Loading Case 02 : SERVICE DEAD PLUS LIVE

*** The Load Factors ***

LFUT 1.000 LFD1 1.000 LFL1 1.000

*** The Members, their Properties and Loading ***

```
MH +009 +013  (S1R1)  XH 00.000 07.802  SEC 042   DEP 2.000 1.000 (H/D) (406x178 UB 54)
 D1 UDLY -002.700              ( kN/m )  L1 UDLY -005.400              ( kN/m )
MH +010 +013  (S1R2)  XH 00.000 07.802  SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )  L1 UDLY -005.400              ( kN/m )
MH +010 +014  (S2R1)  XH 00.000 07.802  SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )  L1 UDLY -005.400              ( kN/m )
MH +011 +014  (S2R2)  XH 00.000 07.802  SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )  L1 UDLY -005.400              ( kN/m )
MH +011 +015  (S3R1)  XH 00.000 07.802  SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )  L1 UDLY -005.400              ( kN/m )
MH +012 +015  (S3R2)  XH 00.000 07.802  SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )  L1 UDLY -005.400              ( kN/m )
M  +001 +005  (C1Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8        E 205E6
MH +005 +009  (C1Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +002 +006  (C2Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8        E 205E6
MH +006 +010  (C2Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +003 +007  (C3Lo)
MH +007 +011  (C3Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +004 +008  (C4Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8        E 205E6
MH +008 +012  (C4Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +009 +016  (P.01)  SEC +0108  (178x102 RSJ 21.54)
 A 27.4E-4             Ix 1519E-8           E 205E6
M  +012 +017  (P.02)
```

*** Nodal Restraints and Nodal Loading ***

```
N 001 to 004 step 01 and 000 000 000 000 000 000 000 000 000 000 000 000 000 000
  R 1 1 0
END
```

Loading Case 03 : MAX. WIND UPLIFT

*** The Load Factors ***

LFUT 1.000 LFD1 1.000 LFW1 1.000 LFW2 1.000

*** The Members, their Properties and Loading ***

```
MH +009 +013  (S1R1)  XH 00.000 07.802  SEC 042   DEP 2.000 1.000 (H/D) (406x178 UB 54)
 D1 UDLY -002.700              ( kN/m )  W1 UDLN +002.880              ( kN/m )
 W2 UDLN +0000.72              ( kN/m )
MH +010 +013  (S1R2)  XH 00.000 07.802  SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )  W1 UDLN +002.880              ( kN/m )
 W2 UDLN +0000.72              ( kN/m )
MH +010 +014  (S2R1)  XH 00.000 07.802  SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )  W1 UDLN +002.880              ( kN/m )
 W2 UDLN +0000.72              ( kN/m )
```

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```
MH +011 +014  (S2R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W1 UDLN +002.880              ( kN/m )
 W2 UDLN +0000.72              ( kN/m )
MH +011 +015  (S3R1)  XH 00.000 07.802   SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W1 UDLN +002.880              ( kN/m )
 W2 UDLN +0000.72              ( kN/m )
MH +012 +015  (S3R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W1 UDLN +002.880              ( kN/m )
 W2 UDLN +0000.72              ( kN/m )
M  +001 +005  (C1Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8       E 205E6
 W1 UDLX -0001.80              ( kN/m )   W2 UDLX -0000.72              ( kN/m )
MH +005 +009  (C1Up)  XH 00.000 00.000   SEC 000  DEP 1.000 2.000 (H/D)
 W1 UDLX -0001.82              ( kN/m )   W2 UDLX -0000.72              ( kN/m )
M  +002 +006  (C2Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8       E 205E6
MH +006 +010  (C2Up)  XH 00.000 00.000   SEC 000  DEP 1.000 2.000 (H/D)
M  +003 +007  (C3Lo)
MH +007 +011  (C3Up)  XH 00.000 00.000   SEC 000  DEP 1.000 2.000 (H/D)
M  +004 +008  (C4Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8       E 205E6
 W1 UDLX +0001.82              ( kN/m )   W1 UDLX +0000.72              ( kN/m )
MH +008 +012  (C4Up)  XH 00.000 00.000   SEC 000  DEP 1.000 2.000 (H/D)
M  +009 +016  (P.01)   SEC +0108  (178x102 RSJ 21.54)
 A 27.4E-4             Ix 1519E-8          E 205E6
M  +012 +017  (P.02)
                  *** Nodal Restraints and Nodal Loading ***
N 001 to 004 step 01 and 000 000 000 000 000 000 000 000 000 000 000 000 000
  R 1 1 0
END
```

Loading Case 04 : WIND ON SIDE PLUS MIN DEAD ULTIMATE

*** The Load Factors ***

LFUT 1.000 LFD1 1.000 LFW3 1.400 LFW4 1.400

*** The Members, their Properties and Loading ***

```
MH +009 +013  (S1R1)  XH 00.000 07.802   SEC 042   DEP 2.000 1.000 (H/D) (406x178 UB 54)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0003.40              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +010 +013  (S1R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0002.16              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +010 +014  (S2R1)  XH 00.000 07.802   SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0001.44              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +011 +014  (S2R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W4 UDLN +0001.08              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +011 +015  (S3R1)  XH 00.000 07.802   SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0001.08              ( kN/m )
 W4 UDLN +0000.72              ( kN/m )
MH +012 +015  (S3R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
```

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 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0001.08              ( kN/m )
 W4 UDLN +0000.72              ( kN/m )
M  +001 +005  (C1Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8       E 205E6
 W3 UDLX +0002.52              ( kN/m )   W4 UDLX +0001.08              ( kN/m )
MH +005 +009  (C1Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
 W3 UDLX +0002.52              ( kN/m )   W4 UDLX +0001.08              ( kN/m )
M  +002 +006  (C2Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8       E 205E6
MH +006 +010  (C2Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +003 +007  (C3Lo)
MH +007 +011  (C3Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +004 +008  (C4Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8       E 205E6
 W3 UDLX +0000.72              ( kN/m )   W3 UDLX +0000.72              ( kN/m )
MH +008 +012  (C4Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +009 +016  (P.01)  SEC +0108  (178x102 RSJ 21.54)
 A 27.4E-4             Ix 1519E-8          E 205E6
 W3 UDLX +0002.52              ( kN/m )   W4 UDLX +0001.08              ( kN/m )
M  +012 +017  (P.02)
 W3 UDLX +0000.72              ( kN/m )   W4 UDLX +0000.72              ( kN/m )
                  *** Nodal Restraints and Nodal Loading ***
N 001 to 004 step 01 and 000 000 000 000 000 000 000 000 000 000 000 000 000 000
  R 1 1 0
END
```

```
            Loading Case 05 : WIND ON SIDE PLUS MIN DEAD  SERVICE
                          *** The Load Factors ***
  LFUT  1.000     LFD1  1.000     LFW3  1.000     LFW4  1.000
                *** The Members, their Properties and Loading ***
MH +009 +013  (S1R1)  XH 00.000 07.802   SEC 042   DEP 2.000 1.000 (H/D) (406x178 UB 54)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0003.40              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +010 +013  (S1R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0002.16              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +010 +014  (S2R1)  XH 00.000 07.802   SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0001.44              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +011 +014  (S2R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W4 UDLN +0001.08              ( kN/m )
 W4 UDLN -0001.08              ( kN/m )
MH +011 +015  (S3R1)  XH 00.000 07.802   SEC 000   DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0001.08              ( kN/m )
 W4 UDLN +0000.72              ( kN/m )
MH +012 +015  (S3R2)  XH 00.000 07.802   SEC 000 ß 180  DEP 2.000 1.000 (H/D)
 D1 UDLY -002.700              ( kN/m )   W3 UDLN +0001.08              ( kN/m )
 W4 UDLN +0000.72              ( kN/m )
M  +001 +005  (C1Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4             Ix 29412.6E-8       E 205E6
 W3 UDLX +0002.52              ( kN/m )   W4 UDLX +0001.08              ( kN/m )
```

-403.289
149.847

.711 @
9.170 m

149.84

-10.557 @
2.197 m

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```
MH +005 +009  (C1Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
 W3 UDLX +0002.52            ( kN/m )   W4 UDLX +0001.08            ( kN/m )
M  +002 +006  (C2Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4           Ix 29412.6E-8       E 205E6
MH +006 +010  (C2Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +003 +007  (C3Lo)
MH +007 +011  (C3Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +004 +008  (C4Lo)   SEC +0033  (457x191 UB 67)
 A 85.5E-4           Ix 29412.6E-8       E 205E6
 W3 UDLX +0000.72            ( kN/m )   W3 UDLX +0000.72            ( kN/m )
MH +008 +012  (C4Up)  XH 00.000 00.000  SEC 000  DEP 1.000 2.000 (H/D)
M  +009 +016  (P.01)  SEC +0108  (178x102 RSJ 21.54)
 A 27.4E-4           Ix 1519E-8          E 205E6
 W3 UDLX +0002.52            ( kN/m )   W4 UDLX +0001.08            ( kN/m )
M  +012 +017  (P.02)
 W3 UDLX +0000.72            ( kN/m )   W4 UDLX +0000.72            ( kN/m )
                  *** Nodal Restraints and Nodal Loading ***
N 001 to 004 step 01 and 000 000 000 000 000 000 000 000 000 000 000 000 000
  R 1 1 0
END
```

-77.847 -77.864 @ 9.457 m 10.351 @ 2.197 m

PROPOSED LIGHT INDUSTRIAL UNIT

AT

HIBERNIAN INDUSTRIAL ESTATE,

GREENHILLS ROAD,

TALLAGHT,

DUBLIN 24.

FOR HIBERNIAN INSURANCE CO. LTD.

CIVIL AND STRUCTURAL SPECIFICATION

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79, Merrion Square,
Dublin 2.

Tel Nos. (01) 615337/612475
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August 1991.

C O N T E N T S

PREAMBLE - GENERAL REQUIREMENTS

1.1. DEFINITIONS.

The following terms whenever used in this specification shall be taken to have the meanings indicated below:

The "Engineer" shall mean

John Moylan & Associates,
79, Merrion Square,
Dublin 2.

"Approved"or "Approval" shall mean approved by the Engineer in writing.

1.2. RESPONSIBILITY

No approval by the Engineer shall in any way relieve the Contractor of his responsibility for the quality of materials and the standard of workmanship in the finished works and for the strength and durability and appearance of the finished concrete works.

1.3. VARIATIONS

No variations to this specification may be made unless approved by the Engineer.

1.4. DEFECTIVE WORK

Where in the opinion of the Engineer any of the finished works or the materials or workmanship in any part of the works do not comply with all the relevant parts of this specification, that part of the works shall be classsed as defective works.

All such work shall be cut out and replaced to the satisfaction of the Engineer.

The extent of the work to be removed and the methods to be used in removal and replacement of this work shall be in accordance with the directions of the Engineer.

1.5. DESIGN

The reinforced concrete works have been designed generally in accordance with the recommendations contained in British Codes of Practice B.S. 8110. In regard to concrete materials, specification and construction, the Contractor shall comply with the recommendations made in section 6 of B.S. 8110 together with Road Note No. 4 prepared by the Department of Scientific and Industrial Research (Design of concrete mixes) unless specifically excluded or modified hereafter.

1.6. WORKS PROGRAMME

The Contractor shall submit a programme of works for the approval of the Engineer. Notwithstanding such approval, the Contractor shall comply with the Engineer's instructions to carry out any part of the works at any time.

1.7. SITE INVESTIGATIONS

Prior to submitting his tender the Contracator shall carry out a thorough examination of the site. He shall satisfy himself as to his ability to complete the Works in accordance with the Contract and ensure that he has made adequate provision in his tender for all supervision, plant, temporary works, etc. necessary for such completion.

The report of the site investigation carried out by the Engineer is included for the information of the Contractor. This report does not relieve the contractor of his obligation to examine the site thoroughly and to include in his tender for all costs necessary for the satisfactory completion of the Works. The site investigation has been carried out for the specific purpose of design of the permanent works. The interpretation of the data for the design and/ or costing of temporary works and/or alternative design submissions is the responsibility of the Contractor.

Notwithstanding the site investigation report or the tender, variations in ground conditions which are of a normal nature and could reasonably be foreseen by competent Contractors experienced with Works of this nature on sites of similar geological formation, shall not form any basis for a claim.

The Contractor shall be at liberty to carry out a separate site investigation to investigate subsoil conditions entirely at his own cost. In this event, the Contractor shall consult with the Engineer, prior to commencement of the investigation, on the proposed scope of work and on the proposed method of operations and of testing. The results of any such investigation shall be made known to the Engineer immediately they become available to the Contractor, firstly during the course of field work and secondly on completion of laboratory testing including the provision of a report and/or conclusions.

1.8. SETTING OUT

The Contractor will be supplied with the information necessary to establish the lines and levels of the works. Where master pegs and /or levels have been

established by the Engineer, the Contractor shall check the accuracy of their position, level and/or alignment and shall immediately notify the Engineer of any discrepancies. The Contractor shall ensure that the position of all master pegs and, where given, master levels can be accurately located by referencing them by measurement and/or level to reference points. At least two independent reference points shall be provided for each master peg. All master pegs and reference points shall be clearly marked and where appropriate bedded in concrete. They shall be adequately protected during the construction of the Works. Where it is necessary to remove a master peg additional reference pegs shall be provided.

Prior to commencing construction the Contractor shall set out centre lines and grid lines in sufficient detail to ensure that the work is fully compatible with existing features and any proposed constructions. The centre lines of the Works shall be perfectly co-ordinated with and shall be continuous with the centre lines of the adjacent works or existing roads. The Contractor shall, when instructed by the Engineer, make any adjustments necessary to satisfy these requirements. Where appropriate, reference points shall be adjusted to take account of the new locations of the master pegs.

The Contractor shall be fully responsible for the setting out of the works and the Engineer accepts no responsibility for replacing any of the master pegs or master levels where these have been given given.

1.9. WATCHING, LIGHTING AND PROTECTION OF PUBLIC

The Contractor shall provide for protection of the works and property and for the protection and convenience of the public,adjacent owners, and occupiers including all necessary watching, lighting, barriers, guard rails, warning notices and for all precautions required by the Engineer.

1.10. NOISE CONTROL

The Contractor shall comply with the general recommendations set out in BS 5228 Code of Practice for Noise Control on Construction and Demolition Sites together with any specific requirements described in the Contract.

1.11. PROTECTION OF WATERCOURSES FROM POLLUTION

The Contractor shall ensure that waste products of whatever description associated with the works shall not enter watercourses, whether normally dry or not, which are adjacent to the works. The Contractor shall be solely liable for any claims for damage, including consequential loss or damage, resulting from such pollution.

1.12. PROTECTION OF EXISTING WORKS AND AMENITIES

The Contractor shall take all necessary precautions to safeguard all existing buildings and works from damage by construction activity, plant operation, ground water movement, ground movement and settlement, and all other activities associated with the execution of the Contract. If, in the opinion of the contractor, damage will, or is likely to be, caused to mains, services or adjacent structures, he shall submit to the Engineer his proposals for making surveys, monitoring movements or vibrations and provision of adequate temporary supports to avoid such damage.

1.13. CONDITION SURVEY

The Contractor shall carry out a condition survey and make all necessary records (Photographic or otherwise) of existing structures and other properties that could be affected by the execution of the works prior to the commencement of construction. The results of the condition survey shall be served on all interested parties and shall be maintained as a permanent record of the condition of existing adjoining properties prior to the commencement of construction.

1.14. EXISTING SERVICES

If any privately owned service for water, electricity, drainage, etc. passing through the Site is affected by the Works, then the Contractor shall locate it and provide a satisfactory alternative service before cutting the existing service.

The positions of Statutory Undertakers' mains and services and Public Authorities' sewers shall be verified by the Contractor who must satisfy himself as to the exact position of such apparatus. The Contractor shall take all measures required by any Statutory Undertaker or Public Authority for the support and full protection of the pipes, cables, and other apparatus during the progress of the Works.

1.15. FACILITIES TO OTHER CONTRACTORS OR UNDERTAKERS

The Contractor shall, during the period of the Contract, afford all reasonable facility to other Contractors or Service Undertakers who may be engaged in authorised work on or adjacent to the site.

1.16. MATERIALS, EQUIPMENT AND WORKMANSHIP

All materials and equipment shall be of the best of their type and to the satisfaction of the Engineer. Materials shall, as far as possible be of Irish manufacture or origin, and shall conform to the appropriate Irish Standard Specification. Where no Irish Standard Specification exists, materials shall comply with the relevant British Standard.

1.17. SAMPLING AND TESTING

Materials and mixtures shall be tested in accordance with the appropriate Standard Specification when directed by the Engineer.

1.18. ALTERNATIVE MATERIALS

Where alternative specified materials are permitted, the Contractor shall inform the Engineer of his choice at least 4 weeks before the material is to be used, or longer if such period is required for testing of the material by the Engineer. The material shall not then be changed without the Engineers approval.

1.19. TIDY SITE ON COMPLETION OF WORK

On completion of the work the Contractor shall leave the site in a neat and tidy condition to the satisfaction of the Engineer. Carriageway and footpath surfaces shall be thoroughly swept and freed from mud and loose chippings. Boundary walls, fences and adjacent properties shall be cleaned of any splashings or dirt which may be attributed to the work on the contract and paintwork shall be touched up where it has been damaged due to the Contractor's activity.

SECTION B

EXCAVATION, AND EARTHWORKS

1.1. Nature of Ground

The Contractor shall visit the site and satisfy himself as to the general nature of the ground. It is assumed that foundations can be founded on suitable ground at depths not exceeding 1500mm below reduced ground level following general excavation of the site.

Only when the actual foundations have been excavated can the foregoing assumptions be confirmed, and it is, of course, possible that the design of the foundations may have to be altered if unexpected ground conditions are met.

1.2. Excavation

Excavation shall be to the dimensions and levels shown on the drawings or to such other dimensions and levels as required by the Engineers. Any excavation in excess of that required shall be backfilled with lean mix concrete or such other material, which may be approved by the Engineers, and compacted to their satisfaction.

Excavations for foundations in positions adjacent to existing buildings, roads, sewers and pathways shall be carried out in such a manner and in a sequence that any any time these buildings, roadways, sewers and pathways are not endangered by the excavation. Hand excavation shall be included for in the rates. All propping, shoring and methods of excavation must be discussed with the Engineers and have their approval prior to commencement of the work. Such approval by the Engineers will not relieve the Contractor in any way of his responsibility to ensure the safety of the workings and of adjacent buildings.

1.3. Additional Excavation

Any additional excavation required to accommodate the temporary support of sides of excavations shall be provided and backfilled at the Contractor's expense.

1.4. Strip Topsoil

Topsoil shall be excavated in the areas and to the depths required. Note that these depths vary over the site. The volume of topsoil to be preserved for re-use shall be stockpiled in temporary spoil heaps where directed. Topsoil shall be kept separate from other materials. Surplus topsoil shall be removed from site and taken either to the Contractors own tip or to an area selected by the Client.

1.5. Classification of Excavation

Excavation shall be classified as:-

(a) Excavation in any material except solid rock.

(2) Excavation in solid rock.

Rock shall mean natural rock formation which can be removed properly only by means of explosives, boring or wedging or some other recognised method of quarrying solid rock. It shall also include solid boulders of 1 cubic metre or more, in volume. The Engineer shall be sole judge as to when the material excavated comes under the heading of rock. Where roc is encountered it will be measured up and included in the amount of ordinary excavation in the tender where it occurs and it will also be measured up and paid for at the EXTRA price over ordinary excavation as scheduled for rock in the tender.

1.6. Use of Explosives

Explosives shall not be used without the permission of the Engineer and then only in the manner and to the extent he may prescribe.

1.7. Obstructions

Any obstructions at or below formation level shall be reported to the Engineers and shall be dealt with as directed by them.

1.8. Formation

To minimise moisture softening the formation shall be exposed for as short a time as possible. The last 250m.m. of excavation shall not be taken out until concrete is almost ready to start. The formation shall be lightly rammed. Before any concrete is placed the Contractor shall call on the Engineers or their representative to inspetct the formation. Formwork and excavation shall be clean and free from water at the time of placing concrete.

1.9. Planking and Strutting

The sides of excavations shall be planked and strutted in accordance with statutory requirements and to the approval of the Engineer.

1.10. Propping and Shoring

The Contractor will be held entirely responsible for the strength, adequacy and stability of any necessary propping, shoring, strutting and the like, and shall be responsible for making good any loss or damage resulting from any failure in this respect.

1.11. Pumping

The Contractor shall provide all pumping equipment and other works necessary to keep the excavation free of water and to prevent the direct access of water to the formation.

Excavation shall be so arranged that any water entering the cut is immediately drained away to a sump or other point from which it can be pumped or otherwise disposed of. Before any pumping takes place, especially near existing structure, the approval of the Engineers shall be sought, but this approval will not absolve the Contractor from his responsibility for the safety of existing structures. If the Contractor pumps or otherwise puts water into a drain, he shall be responsible for seeking all permissions and for removing from the system all deposits caused thereby.

1.12. Filling

Except under foundations, layers of approved filling material consolidated to the satisfaction of the Engineers shall be placed below all ground slabs, on top of which a layer of lean mix shall be placed, all to receive a 1000 g. Visqueen waterproof membrane placed as shown on the drawings. This fill shall be applied only when the formation level is free of mud and slurry, the formation left shall be exposed for as short a time as possible between removing unsuitable soil and applying the fillings. The formation level shall be lightly rammed and generally levelled before filling commences. Backfilling around pads, strip footings and retaining walls shall also be in this approved fill material.

Granular filling where specified shall comprise either of:-

gravels, crushed rock or crushed concrete, to the following gradings (by weight).

SIZE	GRAVELS (% passing)	CRUSHED ROCK/CONCRETE (% passing)
75m.m.	100%	100%
40m.m.	85-100	85-100
10m.m.	45-100	40-70
5m.m.	25-85	25-45
600 Microns	8-45	8-22
75 Microns	0-10	0-2

The Contractor shall supply a grading analysis, done by an independent testing authority, indicating compliance of the proposed filling material with this specification.

The filling shall be deposited in layers not exceeding 250m.m. when compacted and shall be at a moisture level content within the range of 5 -8% for gravel and not exceeding 5% for the crushed stone or concrete.

Each layer shall be compacted to the satisfaction of the Engineers with approved mechanical equipment.

1.13. Underpinning of Existing Walls

The Contractor shall be responsible for ensuring that his operations do not in any way impair the safety or conditions of existing structures or existing supports and shoring to them. He shall provide any temporary supports required for this purpose, and shall carefully inspect the condition of the structure both before and during execution of the work, and immediately inform the Engineer if he considers that any more stringent procedure than that specified is necessary.

Underpinning is to be carried out to the satisfaction of the Engineer and Local Authority in short sections generally not exceeding 1000 m.m. in length, in such a manner that adequate support is at all times maintained to the underside of the wall for at least three-quarters of its length and that sections of work in progress at any one time are separated by a distance of at least 4000 m.m.

Projecting portions of the existing brick and/or concrete footings are to be carefully cut off where directed, and the underside of the footings are to be cleaned and hacked free of any dirt, soil or loose material before underpinning.

The body of the underpinning is to be constructed in mass concrete mix Type A using Rapid Hardening Portland Cement, and is to be cast to the widths and depths shown on the drawings. The bottoms of excavations are to be prepared as specified for foundations generally.

Excavation and concreting of any section of underpinning shall be carried out on the same day.

The mass of the concrete shall be poured to a level which shall be a minimum of 225 m.m. above the underside of existing foundation. The concrete below the existing foundation shall be well compacted with a bent podger or other means so that the concrete penetrates all the gaps of the underside of the existing footing.

Any 'letterboxes' or similar used by the Contractor to place concrete in this fashion shall be removed after one day as may be necessary to achieve a flush outside surface. Such removal shall be effected without damage to the body of the underpinning concrete.

Alternatively -

The mass of the concrete shall be poured to a level 75m.m. below the underside of existing foundation. The concrete shall be well compacted with a bent podger or other means so that the concrete penetrates all the interstices of the underside of the existing footing. When the mass concrete has set, the final pinning up shall be carried out with a damp stiff Grade 30 concrete mix (using REPC) well rammed into the 15m.m. gap.

Excavation to any section of underpinning shall not be commenced until at least 48 hours after completion of any adjacent sections of the work.

The Contractor shall keep a record on site of the sequence and dimensions of underpinning as actually executed, including the dates of starting excavation, casting concret and pinning up for each section.

1.14. Protection

Protect as necessary, all work described in this section during the progress of the works and clean down and leave perfect on completion.

SECTION C.

CONCRETE

1. FORMWORK AND SURFACE FINISH.

1.1. Construction

1 Formwork shall include all temporary or permanent forms required for forming the concrete together with all temporary construction required for their support.

2 All formwork shall be so constructed that there shall be no loss of material from the concrete.
After hardening the concrete shall be in the position and of the shape, dimensions and surface finish described in the Contract.

3 Where internal metal ties are permitted, they or their removable parts shall be extracted without damage to the concrete and the remaining holes filled with mortar. No permanently embedded metal part shall have less than 35mm cover to the finished concrete surface.

1.2. Formed Surfaces - Classes of Finish.

1 The requirements extra to those given in Clause 1.1.to provide the class of finish described in the Contract shall be:

Class F1 Nil

Class F2 The irrigularities in the finish shall be no greater than those obtained from the use of wrought thicknessed square edged boards arranged in a uniformed pattern. The finish is intended to be left as struck but imperfections such as fins and surface discolouration shall, if required, be made good by methods approved by the Engineer.

Class F3 The formwork shall be lined with a material approved by the Engineer to provide a smooth finish of uniform texture and appearance. This material shall leave no stain on the concrete and shall be so joined and fixed to its backing, that it imparts no blemishes. It shall be of the same type and obtained from only one source throughout any one structure. The Contractor shall make good any imperfections in the resulting finish, as required by the Engineer. Internal ties and embedded metal parts will be allowed only with the Engineer's specific approval.

2 The Contractor shall ensure that permanently exposed surfaces to Class F2 and F3 finish are protected from rust marks, spillage and stains of all kinds.

1.3. Preparation of Formwork before Concreting.

1 The inside surfaces of forms shall, except for permanent formwork, or unless otherwise agreed by the Engineer, be coated with an approved material to prevent adhesion of the concrete. Release agents shall be applied strictly in accordance with the manufacturer's instructions and shall not come into contact with the reinforcement or prestressing tendons and anchorages. Different release agents shall not be used in formwork to concrete which will be visible in the finished Works.

2 Immediately before concreting, all forms shall be thoroughly cleaned out.

1.4. Removal of Formwork.

1 The Engineer shall be informed in advance when the Contractor intends to strike any formwork.

2 Attention is drawn to the provisions of Clause 1.4.4

3 The time at which the formwork is struck shall be the Contractor's responsibility, but the minimum periods between concreting and the removal of forms shall be as follows:-

Sides of beams, walls columns and piles	24 hours.
Soffits of beams and slabs.	7 days.

4 The periods stated above are based on a constant surface temperature of the concrete of 16°C and the use of ordinary Portland cement. They shall be increased during cold weather as directed by the Engineer, and may be changed if other types of cement are used, subject to the Engineer's agreement.

5 Formwork shall be constructed so that the side forms of members can be removed without disturbing the soffit forms and, if props are to be left in place when the soffit forms are removed, these props shall not be disturbed during the striking.

6 For prestressed units the side forms shall be eased as early as possible and the soffit forms shall permit deformation of the member when the prestress is applied.

7 All formwork shall be removed without damage to the concrete.

8 Where it is intended that formwork is to be re-used, it shall be cleaned and made good to the satisfaction of the Engineer.

1.5. Unformed Surfaces - Classes of Finish.

1 Class U1 The concrete shall be uniformly levelled and screeded to produce a plain or ridged surface as described in the Contract. No further work shall be applied to the surface unless it is used as the first stage for a Class U2 or Class U3 finish.

2 Class U2 After the concrete has hardened sufficiently, the concrete Class U1 surface shall be floated by hand or machine sufficiently only to produce a uniform surface free from screed marks.

3 Class U3 When the moisture film has disappeared and the concrete has hardened sufficiently to prevent laitance from being worked to the surface, a Class U1 surface shall be steel-trowelled under firm pressure to produce a dense smooth uniform surface free from trowel marks.

1.6. Remedial Treatment of Surfaces.

1 Any remedial treatment to surfaces shall be agreed with the Engineer following inspection immediately after removing the formwork and shall be carried out without delay.

2 Any concrete, the surface of which has been treated before being inspected by the Engineer, shall be liable to rejection.

1.7. Tolerances.

On all setting out dimensions 3.00 metres and over a tolerance of plus or minus 6mm will be allowed. On all setting out dimensions under 3.00 metres a tolerance of plus or minus 3mm will be allowed. A tolerance of plus or minus 3mm will be permitted on the cross-section dimensions of structural members, unless otherwise required by the drawings. Columns and walls shall not be more than 6mm out of plumb in their storey height and not more than 19mm out of plumb in their full height. The Contractor will be responsible for the cost of all corrective measures required by the Engineer to rectify work which is not constructed within the tolerances set out above.

2. STEEL REINFORCEMENT.

2.1. GENERAL

1 Steel reinforcement shall be stored in clean conditions. It shall be clean and free from loose rust and loose mill scale at the time of fixing in position and subsequent concreting.

2.2. BENDING OF REINFORCEMENT.

1 Reinforcement shall be bent to the dimensions given in the Bar Schedules.

2 All reinforcement shall be bent at temperatures in the range of 5°C and 100°C.

3 Cold worked and hot rolled bars shall not be straightened or bent again once having been bent. Where it is necessary to bend mild steel reinforcement already cast in concrete, the internal radius of bend shall not be less than twice the diameter of the bar.

2.3. PLACING OF REINFORCEMENT.

1 Reinforcement shall be placed and maintained in the position shown in the Contract. Unless otherwise permitted by the Engineer all intersecting bars shall be tied together and the end of the tying wire shall be turned into the main body of concrete.

2 No splices shall be made in the reinforcement except where described in the Contract or where approved by the Engineer.

2.4. COVER BLOCKS.

1 Cover blocks required for ensuring that the reinforcement is correctly positioned, shall be as small as possible consistent with their purpose, of a shape acceptable to the Engineer, and designed so that they will not overturn when the concrete is placed, They shall be made of concrete with 10mm maximum aggregate size and the mix proportions shall comply with Table No 1 or 2 of Clause 3.1 to produce the same strength as the adjacent concrete. Wire shall be cast in the block for the purpose of tying it to the reinforcement.

2.5. WELDING OF REINFORCEMENT.

1 Reinforcement in structures shall not be welded except where permitted in the Contract. All welding procedures shall be subject to the prior approval of the Engineer in writing.

2.6. ATTENDANCE OF STEELFIXER.

During concreting a competent steelfixer shall be in continuous attendance on the concreters to adjust and correct the positions of any reinforcement which may be displaced.

2.7. STANDARDS.

All reinforcement shall comply with the current Irish and/or British Standards:

Mild Steel reinforcement	BS 785
Cold Worked square twisted reinforcement	BS 1144
Hard drawn steel wire fabric mesh.	BS 1221

3. CONCRETE

3.1. CONCRETE MIX DESIGN.

1 Mixes for the classes of concrete shown in Table No 1 shall be designed by the Contractor. Alternatively for Classes 30 and 20, the mixes in Table No. 2 may be used. The class of concrete is denoted by the minimum 28 day works cube strength and the maximum size of aggregate.

2 The cement content in any mix shall not exceed 530kg/M^3 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.

3.2. CONCRETE FOR ANCILLARY PURPOSES.

1 Class E concrete shall be composed of ordinary Portland cement and aggregates complying with BS 882 including all-in aggregate within the grading limits of Table 3 of the British Standard.

2 The weight of cement mixed with 0.28M^3 of combined or all-in aggregate shall not be less than 50.0kg. The mix shall be proportioned by weight or by volume.

3 The concrete shall be mixed by machine or by hand to a uniform colour and consistency before placing. The quantity of water used shall not exceed that required to produce a concrete with sufficient workability to be placed and compacted where required.

4 The concrete shall be compacted by hand or by mechanical vibration.

3.3. TRIAL MIXES.

1 No structural concrete shall be placed in the Works until the relevant mix has been approved by the Engineer.

2 When the Contractor designs the mix, he shall, at least 35 days before the commencement of concreting, have trial mixes prepared in a laboratory to be approved by the Engineer.

TABLE NO. 1. DESIGNED MIXES

Class	Minimum cement content in concrete	Minimum compressive strength 28 days after mixing	
		Preliminary test	Works test.
$N/mm^2/mm$	Kg/M^3	N/mm^2	N/mm^2
50/40	390	60.0	50.0
50/20	420	60.0	50.0
50/10	470	60.0	50.0
40/40	340	50.0	40.0
40/20	360	50.0	40.0
40/10	390	50.0	40.0
30/40	310	40.0	30.0
30/20	330	40.0	30.0
30/10	360	40.0	30.0
20/40	280	30.0	20.0
20/20	300	30.0	20.0

TABLE NO. 2 STANDARD MIXES

Class of concrete denoted by 28 day minimum works cube strength	Weight of dry sand per 50 kg. cement	Weight of dry gravel, or crushed rock, coarse aggregate, 50kg.						
N/mm^2	Kg.	Maximum size	Maximum size			Maximum size		
Workability		Low only	Low	Medium	High	Low	Medium	High
Slump (m.m.)		0-6	12-25	25-50	50-120	25-50	50-100	100-175
Compacting Factor		.80-.86	.82-.88	.88-.94	.94-.97	.82-.88	.88-.94	.94-.97
30.0	70	100	150	115	90	180	140	115
20.0	90	Not required	190	160	140	225	190	170

NOTES

1 Cement shall comply with IS 1 or BS 12 or BS 146. Aggregate shall comply with IS 5 or BS 882 or BS 1047. The coarse aggregate shall be graded within the terms of the relevant IS or BS.

2 If the specific gravity of either the coarse or the fine aggregate differs significantly from 2.6, the weight of each type of aggregate should be adjusted in proportion to the specific gravity of the materials.

3 The weights are based on the use of a sand having a grading within the limits of grading Zone 2 in BS 882. See Clause 209e of CP114.

4. If a crushed stone sand or a crushed gravel sand is used instead of sand, the weight of the coarse aggregate should be reduced by at least 12 Kg without alterating the weight of sand.

4 The weight of the fine aggregate should be decreased by at least 12Kg if its grading is within the limits of grading Jone 3 of BS 882 and increased by at least 12Kg if its grading is within the limits of grading Zone 1 of BS 882; the weight of coarse aggregate should be increased or decreased respectively, by the same amount so that the total weight of aggregate remains the same.

TRIAL MIXES - continued

The concrete from each mix shall be tested in accordance with Clause 3.8.and must satisfy the strength requirements of Table No. 1.

3 When the mix has been approved, no variations shall be made in the proportions, the original source of the cement and aggregates or in the type, size and grading zone of the latter without the consent of the Engineer who may require further tests to be made.

4 The Engineer may also require practical tests to be made on the Site by filling trial moulds to confirm the suitability of the mix for the Works. In these tests, the type of plant used for mixing, the method of compaction used, and the formwork face to the mould shall be similar in all respects to those intended for use in the Works.

5 When the Contractor intends to purchase factory- made pre-cast concrete units, the Engineer may dispense with trial mixes and laboratory tests, provided that evidence is given which satisfies him that the factory regularly produces concrete which complies with the Specification. The evidence shall include details of mix proportions, water: cement ratio, workability and strengths obtained at 28 days and 7 days.

3.4. ADMIXTURES.

1 Unless agreed by the Engineer neither admixtures nor cement containing additives shall be used.

3.5. DELIVERY AND STORAGE OF MATERIALS.

1 Cement shall be stored in a dry weather-proof shed with a raised wooden floor or in a silo and shall be delivered in quantities sufficient to ensure that there is no suspension or interruption of the work of concreting at any time. If stored in sheds, each consignment shall be kept separate and distinct.

2 Coarse aggregate, unless otherwise agreed by the Engineer, shall be delivered to the Site in separate sizes (2 sizes when the maximum size is 20mm and 3 sizes when the maximum size is 40mm or more).

3 All aggregate brought upon the Site shall be kept free from contact with deleterious matter and in the case of aggregate passing a 5mm sieve they shall be deposited on the site of mixing for not less than 8 hours before use. Aggregates of different sizes shall be stored in different hoppers, or different stockpiles which shall be separated from each other.

3.6. MIXING CONCRETE.

1 The weighing and water-dispensing mechanisms shall be maintained in good order. Their accuracy shall be maintained within the tolerances described in BS 1305 and checked against accurate weights and volumes when required by the Engineer.

2 The weights of cement and each size of aggregate as indicated by the mechanisms employed shall be within a tolerance of $\pm$ 2 per cent of the respective weights per batch agreed by the Engineer. The weight of the fine and coarse aggregates shall be adjusted to allow for the free water contained in them. The water to be added to the mix shall be reduced by the quantity of the free water contained in the fine and coarse aggregates, which shall be determined by the Contractor by a method approved by the Engineer immediately before mixing begins, and further as the Engineer requires.

3 Unless otherwise agreed by the Engineer, concrete shall be mixed in a batch type mixer manufactured in accordance with BS 1305 or in a batch type mixer, a specimen of which has been tested in accordance with BS 3963 and having a mixing performance within the limits of Table 6 of BS 1305. Where appropriate the batch capacity,method of loading, mixing time and drum speed shall conform to the details furnished in accordance with the requirements of BS 3963 for the mix which corresponds most closely to the mix proportions being used. The mixing blades of pan mixers shall be maintained within the tolerances specified by the manufacturer of the mixer and the blades shall be replaced when it is no longer

possible to maintain the tolerances by adjustment.

4 Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before any fresh concrete is mixed. Unless otherwise agreed by the Engineer, the first batch of concrete through the mixer shall then contain only two thirds of the normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

5 Concrete shall not be mixed when the air temperature in the shade is below 3°C unless special precautions are taken which have been approved by the Engineer. No frozen material or materials containing ice shall be used.

6 During hot weather the Contractor shall ensure that the constituent materials of the concrete are sufficiently cool to prevent the concrete from stiffening in the interval between its discharge from the mixer and compaction in its final position.

3.7. READY-MIXED CONCRETE.

1 Ready-mixed concrete as defined in BS 1926, batched off the Site, may be used only with the agreement of the Engineer and shall comply with all requirements of the Contract.

2 The concrete shall be carried in purpose made agitators, operating continuously, or truck mixers. The concrete shall be compacted and in its final position within 2 hours of the introduction of cement to the aggregates, unless a longer time is agreed by the Engineer. The time of such introduction shall be recorded on the Delivery Note together with the weight of the constituents of each mix.

3 When truck mixed concrete is used, water shall be added under supervision either at the Site or at the central batching plant as agreed by the Engineer but in no circumstances shall water be added in transit.

4 Unless otherwise agreed by the Engineer, truck mixer units and their mixing and discharge performance shall comply with the requirements of BS 4251. Mixing shall continue for the number and rate of revolutions recommended in accordance with item 9 in Appendix B of BS 4251 or, in the absence of the manufacturer's instructions, mixing shall continue for not less than 100 revolutions at a rate of not less than 7 revolutions per minute.

3.8. SAMPLING

Sampling shall be in accordance with the requirements of BS 1881. Cubes for the works tested shall be made by the Contractor at regular intervals in groups of six. The location and time of such samples shall be agreed with the Engineer.

The Cubes shall be tested by the Nominated Testing Authority, three at 7 days and three at 21 days where Portland cement is used.

3.9. TRANSPORT AND PLACING.

1 The method of transporting and placing concrete shall be to the approval of the Engineer. Concrete shall be so transported and placed that contamination , segregation or loss of the constituent materials does not occur.

2 All formwork and reinforcement contained in it shall be clean and free from standing water, snow or ice immediately before the placing of the concrete.

3 Concrete shall not be placed in any part of the structure until the Engineer's approval has been given.

4 If concreting is not started within 24 hours of approval being given, approval shall again be obtained from the Engineer. Concreting shall then proceed continuously over the area between construction joints. Fresh concrete shall not be placed against in-situ concrete which has been in position for more than 30 minutes unless a construction joint is formed in accordance with Clause 311. When in-situ concrete has been in place for 4 hours no further concrete shall be placed against it for a further 20 hours.

5 Concrete when deposited shall have a temperature of not less than 5°C and not more than 32°C. It shall be compacted in its final position within 30 minutes of discharge from the mixer unless carried in purpose made agitators, operating continuously, when the time shall be within 2 hours of the introduction of cement to the mix and within 30 minutes of discharge from the agitator.

6 Except where otherwise agreed by the Engineer, concrete shall be deposited in horizontal layers to a compacted depth not exceeding 450mm where internal vibrators are used or 300mm in all other cases.

7 Unless otherwise agreed by the Engineer, concrete shall not be dropped into place from a height exceeding 1,800mm When trucking or chutes are used they shall be kept clean and used in such a way as to avoid segregation.

8 No concrete shall be placed inflowing water. Underwater concrete shall be placed in position by tremies, or by pipeline from the mixer. Full details of the method proposed shall be submitted in advance to the Engineer and his approval obtained before placing begins. Where the concrete is placed by a tremie, its size and method of operation shall be in accordance with Civil Engineering Code of Practice 'Foundations'. During and after concreting under water, pumping or dewatering operations in the immediate vicinity shall be suspended until the Engineer permits them to be continued.

3.10. COMPACTION OF CONCRETE.

1 All concrete shall be compacted to produce a dense homogeneous mass. Unless otherwise agreed by the Engineer, it shall be compacted with the assistance of vibrators. Sufficient vibrators in serviceable condition shall be on site so that spare equipment is always available in the event of breakdown.

2 Internal vibrators shall be capable of producing not less than 10,000 cycles per minute, and external vibrators not less than 3,000 cycles per minute.

3 Vibration shall not be applied by way of the reinforcement. Where vibrators of the immersion type are used, contact with reinforcement and all inserts shall be avoided, so far as is practicable.

4 Concrete shall not be subjected to vibration between 4 and 24 hours after compaction.

3.11. CONSTRUCTION JOINTS.

1 The position and detail of any construction joints not described in the Contract shall be subject to the approval of the Engineer, and shall be so arranged as to minimise the possibility of the occurrence of shrinkage cracks. The maximum dimension of any pour shall be approx. 9m.

2 The upper surface of lifts of concrete walls and columns shall be horizontal and if the formwork extends above the joint on the exposed face it shall be cleaned of adhering concrete before the next lift is placed. The concrete placed immediately above a horizontal construction joint shall contain only two thirds the normal quantity of coarse aggregate, shall not be the first batch through the mixer and shall be thoroughly compacted and worked against the existing concrete

3 In the case of vertical surfaces, a 1:1 slurry of cement and concreting sand shall, wherever possible, be well worked into them immediately before the fresh concrete is placed.

4 Where sections of the work are carried out in lifts, the reinforcement projecting above the lift being cast shall be adequately supported so as to prevent movement of the bars during the casting and settling of the concrete.

5 Wherever possible laitance and all loose material shall be removed while the concrete is still green and no further roughening shall then be required. Where this is not possible, it shall be removed by mechanical means provided the concrete has been in position for more than 24 hours. The roughened surface shall then be washed with clean water.

6 Where joints occur in waterproof concrete the stop ends shall be removed within 12 hours after pouring and the laitance removed by compressed air and water jet to the satisfaction of the Engineer. In waterproof structures no pour shall exceed 50 sq. m in area.

3.12. CURING OF CONCRETE.

1 Immediately after compaction and for 7 days thereafter concrete shall be protected against harmful effects of weather, including rain, rapid temperature changes, frost and from drying out. The methods of protection used shall be subject to the approval of the Engineer. When elevated-temperature curing is used, the temperature of the concrete shall not exceed 50°C within 2 hours nor 100°C within 6 hours of the concrete being placed; the rise in temperature within any period of 30 minutes shall not exceed 10°C. The rate of subsequent cooling shall not exceed the rate of heating. The method of curing employed shall prevent loss of moisture from the concrete. Details of the method to be used shall be subject to the approval of the Engineer.

3.13. EARLY LOADING

1 Except as specified for prestressed concrete, concrete shall at no time be subjected to loading, including its own weight, which will induce a compressive stress in it exceeding 0.33 of its compressive strength at the time of loading or of the specified 28 day strength.

2 For the purpose of this clause, the assessment of the strength of the concrete and the stresses produced by the loads shall be subject to the agreement of the Engineer.

3.14. WATERPROOF CONCRETE (i.e. BASEMENT RETAINING/WALLS AND FLOORS DESIGNED IN COMPLIANCE WITH CP 102)

When the use of waterproof concrete is specified, it shall be the Contractor's responsibility to ensure that the resulting construction is watertight. The Contractor shall carry out at his own cost all necessary remedial measures which the Engineer requires.

3.15. INSPECTION

Inspection of reinforcement and formwork prior to concreting: no concrete shall be poured until the reinforcement has been checked in its final position in the formwork by the Engineer. Sufficient notice shall be given to allow such inspection to take place. Before starting to pour concrete all the reinforcement for that pour shall be in position and properly fixed.

SECTION D

BLOCKWORK

1.1. General

The work shall be carried out in accordance with the requirements of the current editions of the following code of practice and British Standard together with the instructions of this Specification and any further instructions deemed necessary by the Engineer:-

B.S. 5628 ; Part 1: 1978 "Structural Use of Masonry".

B.S. 5628 : Part 3: 1985 "Use of Masonry"

I.S. 325 : Part 1: 1986 "The Structural Use of Unreinforced Masonry.

The Contractor's attention is drawn to the fact that Architectural details of the walls shall be as shown on the Architect's drawings and in accordance with his specification. The colour of bricks or blocks to be used shall be selected by the Architect.

1.2. Materials and Properties

1.2.1. Blocks and Bricks

The minimum standards of concrete blocks concrete bricks and clay bricks are set out in clauses 1.2.2., 1.2.3. and 1.2.4. Reference shall be made to the drawings and to table 13 of B.S. 5628 : Part 3: 1985 for higher standard of bricks and blocks required for particular elements of construction as indicated.

1.2.2. Concrete Blocks - Solid and Hollow for General Use.

Concrete blocks shall be of approved manufacture to I.S.S. 20. All blocks, shall hav a minimum guaranteed crushing strength of $5N/mm^2$. Sample blocks shall be tested at a laboratory to be approved by the Engineer. Blocks must be left at least 28 days after casting before being used. All blocks shall be well compacted and true and square in shape.

1.2.3. Concrete Bricks for General Use.

Concrete bricks shall be of approved manufacture to I.S.S. 189. All bricks shall have a minimum guaranteed crushing strength of 15N/mm^2. Sample bricks shall be tested at a laboratory to be approved by the Engineer. Bricks must be left at least 28 days after casting before being used. All bricks shall be well compacted and true and square in shape.

1.2.4. Clay Bricks for General Use.

Clay bricks shall be of approved manufacture of ordinary quality to I.S.S. 91. They shall have a water absorption of not greater than 12% and a minimum guaranteed crushing strength of 15N/mm^2.

1.2.5. Mortar

1.2.5.1. General

The mixing and use of mortars shall be in accordance with the recommendations given in B.S. 5390

1.2.5.2. Material for Mortar

a) Cement - The cement used in the mortar shall be in accordance with I.S.S.I. The use of high alumina cement is not permitted.

b) Lime - Lime used in mortars shall be non-hydraulic limes to conform to the requirements of I.S.S.8.

c) Sand - The sand shall be free from deleterious substances and shall comply with the requirement for quality and grading of sand for mortar given in .B.S.S. 1200.

d) Water - Water shall be free from impurities that are harmful to the mortar. Obtain approval from the Engineer of the source of water supply if the supply is not obtained from a public mains supply.
Where the quality of supply is doubtful the water shall be tested in accordance with B.S. 3148 or equivalent.

e) Admixture - Admixtures may be used subject to the Engineer's written approval.

f) Colouring Compounds - Colouring compounds shall be added to the mortar as required by the Architect.

1.2.5.3. Preparation of Mortars

a) Mix Proportions - The following cement-lime mortar shall be used for all walling constructed using masonry units to clauses 1.2.2., 1.2.3. and 1.2.4.

Mix	Cement	Non-hydraulic lime	Clean Washed Siliceous Sand
1:1:6	50kg.	50kg.	0.213 cu.m

Reference shall be made to tables 13 and 15 of B.S. 5628: Part 3 1985 for mortar mixes to be used in conjunction with higher standard bricks and blocks.

b) Batching of Mortars

The materials for the mortar shall be measured accurately to conform with the above specified mix proportions either by weight batching or by use of gauge boxes. The proportions of sand are based upon the use of dry sand. Adjust the proportions of sand for bulking due to moisture content. If admixtures are used, the proportions should be further adjusted in accordance with the manufacturer's written instructions.

c) Mixing of Mortars

The mortar shall be mixed by machine. Clean the mixer before starting to mix. Mortars containing cement shall be used within one hour of the mixing of the cement and water and any mortar not then used shall be discarded and not retemptered.

d) Ready Mixed Mortar

Ready mixed sand-lime mortar shall comply with the requirements of B.S. 4721 or equivalent.

1.2.6. Reinforcement, Wall Ties and Bonding Ties

a) Bed Joint Reinforcement (Provisional)

Bed joint reinforcement where shown shall be either of expanded metal complying with the requirements of B.S. 405 or of the "tramline" or truss type (such as Brickforce, Dur-O-Wal or similar approved by the Engineer) made from hard drawn steel wire with an effective diameter of between 3 and 5m.m. The reinforcement shall be galvanised if it is to be used in a wall exposed to the weather i.e. outer leaf of cavity wall. The type of reinforcement to be used shall be indicated on the drawings.

b) Cavity Wall Ties

Cavity wall ties shall be vertical twist ties made from austenitic stainless steel strip complying with the requirements of B.S. 1449 : Part 2 and B.S. 970: Part 4, minimum 18/8 composition and excluding free machining specifications with split end anchorage or their equivalent subject to the Engineer's approval and shall conform to the requirements of the Irish Standard for Wall Ties for Cavity Wall construction and/or B.S. 1243, 1978. The Contractor shall supply the Engineer with written evidence from an approved testing authority to show that the wall ties meet the above specification.

c) Bonding Ties

Metal strips for bonding blockwork and brickwork to concrete shall be austenitic stainless steel (material specification as f cavity wall ties) dovetail slot and anchor ties or their equivalent subject to the Engineer's approval. Metal strips for bonding blockwork and brickwork to structural steelwork shall be austenitic stainless steel (material specification as for cavity wall ties) vertical twist ties with one end split and the other end turned down. The turned down end shall be pre-drilled to suit a shot fixing. The type of

shot fixing shall be approved by the Engineer. The ties shall be 2.5M x 20mm min. size. Metal strips for bonding brick to brick or block to block shall be flat austenitic stainless steel (material specification as for cavity wall ties) 2.5mm x 20mm. min long.

1.2.7. Damp Proof Courses

Damp proof courses shall be used in accordance with the latest edition of the British Standard Code of Practice CP 102.

D.P.Cs shall be laid on a smooth bed of fresh mortar. Materials for damp proof courses shall be in accordance with I.S. 57: 1972. In laterally loaded walls subject to wind loading only, a"non -slip" type damp proof course shall be used at the base of the wall.

The details and arrangement of the damp proof courses shall be obtained from the Architect.

1.2.8. Handling and Storage of Materials.

a) Cement

Cement shall be stored in such a manner as to ensure that it is not affected by damp and shall be used in the order of delivery.

b) Lime

Store under weatherproof conditions on a raised floor or in suitable silos.

c) Sand

Sands shall be stored separately according to type so that they will not be contaminated. They shall be stored on a hard self drained area.

d) Metals

Reinforcement and ties shall be protected from becoming contaminated, and reinforcement shall be free from loose mill scale and rust.

e) Blocks

Blocks shall be carefully unloaded so as to avoid damage to the units. All blocks shall be stacked on prepared level areas to ensure that the stack is stable and blocks used for fairfaced work shall be protected to prevent the exposed faces from becoming stained or marked. It is essential that blocks are protected from the rain and sun by covering with a suitable protecting membrane.

1.2.9. Testing

Blocks shall be tested by an approved testing authority. A sum of money shall be provided in the Bill of Quantities for such testing. This sum is provisional and at the disposal of the Engineer.

1.3. Workmanship

1.3.1. General

a) Dimensions

All walling shall be set out and built to the correct dimensions, thickness and heights shown on the drawings.

b) Uniformity

All perpends, quoins, joints etc., shall be kept strictly true and square, and other angles shall be plumbed and the whole properly bonded or tied together and the bed joints levelled as the work proceeds. Build walling in level lifts. Where the walling is raked back no part shall rise more than 1.2m above the general level.

c) Bond

The brickwork and blockwork shall be built to the bond indicated on the Architect's drawings. Where no bond is indicated, the units shall be laid in stretcher bond. Where possible the coursing shall be arranged to allow a full block to be positioned directly beneath a lintel bearing. Leave toothing

to provide for the bonding of future work. Where shown on the drawings, form toothing in existing work to provide adequate bond for new work.

d) Cutting

Blocks used for facing shall be cut with a masonry saw. Where it is necessary to cut the blocks wet they shall be allowed to dry before being built into the wall.

e) Chases, Ducts, Openings etc.

The positions and size of the chasings shall be as indicated on the drawings and shall be carried out neatly using a chasing tool. Form ducts, openings etc. in the walling as the work proceeds.

f) Colour Variaition

Distribute evenly throughout any facing work bricks and blocks of verying shades of the same colour. MIx deliveries which vary in colour to avoid contrast between adjoining lifts.

g) Weather

No block laying shall be carried out when the temperature is at or below $3^{o}C$ unless precautions are taken to ensure a minimum temperature of $4^{0}C$ in the work when laid and thereafter to maintain the temperature above freezing point until the mortar has hardened. Should any walling be damaged by front it shall be pulled down and made good at the Contractor's expense. Keep dry each lift including the top surfaces until the commencement of the next-left or other superimposed work. It is essential that internal blockwork walling be protected from rain until such time as the building has been weathered.

h) Laying

Each block and brick shall be laid and adjusted to its final position while the mortar is still plastic. The maximum height of wall built in any one day shall not exceed 1.5m

1.3.2. Mortar Joints

a) Bedding

All blocks shall be laid on a full mortar bed. Vertical joints shall be filled. All joints are to be nominally 10m.m. thick

b) Excess Mortar

Any mortar which extrudes from the joint of fairfaced units shall be cut away and on no account is mortar to be smeared onto the face of the block .

c) Exposed Joints

Details of the type of finish required in all permanently exposed joints shall be obtained from the Architect.

1.3.3. Control Joints

Control joints shall be constructed as indicated on the Engineer's drawings. Joints need not be continued below the ground floor D.P.C. level. The vertical joints between panels or between a panel and another feature should be straight and be produced by terminating alternative courses in full and half units bedded in the normal way. The subsequent sawing of walling to form a contraction or expansion joint will not be allowed. If the walling is finished with a thick applied finish such as plaster or render, the edge of same shall be either chamfered or alternatively the joint may be covered with an architrave or other strip material, care being taken that the cover strip is fixed to the wall on one side of the joint only to allow relative movement to occur at the joint.

The joint sealing compound shall be an approved polysulphide based sealant such as "Thioflex 600" by Expandide or equal and shall be used strictly in accordance with the manufacturer's recommendations bearing in mind gap width, joint location etc.

Long runs of walling of clay bricks shall be provided with a 10mm wide vertical expansion joint about every 12m or as indicated on

the Engineer's drawings. The stability of the wall at an expansion joint shall be achieved as indicated on the Engineer's drawings without the use of metal ties across the joint. Expansion joints shall be cleaned out to ensure that mortar does not bridge the joint. The gap shall subsequently have a fully compressible material (not fibre-board) inserted into the joint and be pointed up with a joint sealing compoind as described above.

1.3.4. Double Leaf (Cavity) Walls.

a) Wall Ties

The walls shall be built with cavities of the width shown on the drawings and tied together with ties embedded in the mortar at least 50mm. Unless otherwide detailed the ties shall be staggered in alternate courses and spaced in accordance with the following table.

Least leaf thickness (mm)	Cavity width (mm)	Spacing of ties	
		Horizontally (mm)	Verticall (mm)
65-90	50-75	450	450
90 or more	50-150	900	450

The spacing may be varied provided that the number of ties per unit area is maintained.

Additional ties shall be provided in every course within 225mm of opening and on each sie of control joints. Ties shall be laid falling to the external leaf.

b) Cavities

The cavity and ties shall be kept clear and clean of mortar droppings or other materials during construction and only extruding mortar shall be struck off flush. No cavity shall be sealed off until inspected and approved by the Architect.

c) Weepholes (cavity walls)

Weepholes 10mm wide by 75mm high, spaced at centres not exceeding 900mm and extending through the vertical mortar joints of the outer leaf, shall be provided at ground level and at positions where the cavity is bridged or at alternative locations indicated on the Architect's drawings.

1.3.5. Partition Walls

Partition walls shall not be built on suspended slabs until after the props have been removed. These walls shall be built in accordance with the details shown on the Engineer's drawings.

1.3.6. Reinforcement

a) Bed Joint Reinforcement

Bed joint reinforcement shall have an effective side cover of mortar of not less than 20mm and shall be continuous except at control joints, or where otherwise indicated. Bed joint reinforcement is to be positioned as shown on the drawings. Sufficient mortar shall be used in the joints in which the reinforcement is bedded to ensure that the whole surfaee of the steel is in contact with mortar to provide adequate bond and protection against corrosion.

1.3.7. Protection

a) Stability

Ensure the stability of walling during erection. Precautions shall also be taken to ensure stability of walls during backfilling and concreting operations.

b) Finished Work

The tops of constructed walls shall be protected from rain and in addition fairfaced work shall be protected against staining from construction activities.

1.3.8. Making Good

At the completion of the work all temporary holes in mortar joints of fairfaced work shall be filled with mortar and suitably tooled. Any damaged walling shall be repaired with approved materials or

replaced to the satisfaction of the Architect.

1.3.9. Tolerances

The permissible deviation for walls shall be as follows:-

a) Level: ± 10mm for dimensions to any nominally horizontal surface measured from the nearest reference level.

b) Position on Plan : ± 10mm for dimensions to any nominally vertical surface at the lower edge measured horizontally from the nearest reference line.

c) Plumbness : ± 5mm in any 1 meter not more than 20mm for plumbness floor to floor.

d) Straightness: ± 10mm measured horizontally

e) Joint Thickness (i) Horizontal joints - joint thickness ± 3mm

(ii) Vertical joints - joint thickness ± 3mm

SECTION E

SPECIFICATION FOR PRE-CAST CONCRETE FLOORS

INDEX

1.0. GENERAL

1.1. PRECAST CONCRETE

In addition to the following requirements the manufacture of all precast concrete units shall be in accordance with the requirements of the General Concrete Works unless specifically stated otherwise.

References in brackets in clause headings in this Specification are to clauses or sub-clauses of B.S. 8110 'Structural use of Concrete.' Unless modified by this Specification Precast Concrete work shall comply with the requirements and recommendations of B.S. 8110. In cases of conflict, this Specification takes precedence over B.S. 8110.

2. DESIGN

2.1. TYPES OF FLOOR

This specification applies to proprietary flooring systems supplied only or supplied and erected by specialist manufacturers which are of the following types:-

Reinforced or prestressed hollow slab.

Reinforced or prestressed beam and infill block.

Reinforced or prestressed solid slab and insitu topping.

The contractor shall prvide the system most suited to the contract, unless any of the above types have been deleted.

2.2. DESIGN RESPONSIBILITY

The constractor shall be responsible for all aspects of the design of the floor and shall satisfy himself that adequate bearing for the units has been provided in the supporting structure. Where the specialist is a Nominated Supplier or Sub-Contractor under the JCT form of contract, he shall indemnify the Main Contractor against design errors and defects.

2.3. COMPLIANCE WITH STANDARDS

The design of the floor shall be in accordance with British Standard BS 8110: Part 1: 1985 "Structural Use of Concrete".

2.4. DRAWINGS

Sufficient Engineers and Architects drawings will be supplied to the contractor to enable the floor to be designed. The contractor shall prepare arrangement drawings of the floor which should include the following information:-

Layout of units and spans.
Unit profiles
Support and edge conditions.
Insitu make up areas and reinforcement.
Pre-formed holes and permissable sizes cut on site.
Loading.
Fire resistance.
Temporary support requirements.

The drawings should be submitted to the Engineer or Architect for approval prior to manufacture.

2.5 CALCULATIONS

The contractor shall provide structural calculations for the floor, which may be manually prepared or in the form of a computer print-out. In either case the information shall be sufficient for submission to checking authorities and should include:-

Service and Ultimate Loading
Section Properties
Material Strengths
Moment and Shear
Span/Deflection Ratio.
Predicted Upward Camber.

A copy of the calculations should be submitted to the Engineer for approval.

2.6. LOADING

The floor shall be capable of supporting the following loads in addition to its self weight:-

Superimposed	kn/m2	
Partitions (Distributed Load)	kn/m2	as noted
Finished	kn/m2	on
Ceiling	kn/m2	the
Services	kn/m2	drawings

Allowances shall be made for block partitions as shown on the drawings. The density of the partitions can be taken as 21 kg/m3. The floor shall be capable of withstanding loads in accordance with British Standard BS 6399: Part 1: 1984 "Design Loading for Buildings."

2.7. FIRE RESISTANCE

The fire resistance of the completed floor slab is to be confirmed in accordance with Tables 4.9 BS 8110 or as determined in tests by the Fire Research Station. The level of fire rating is to be in accordance with the Architects requirements.

2.8. APPROVAL

Approval by the Architect or Engineer indicates correct interpretation of their respective requirements and does not affect the Contrctor's responsibility for the structural and dimensional adequacy of the floor.

3.0. MANUFACTURE

3.1. MATERIALS

All materials used in the manufacture of the floor shall be stable, of suitable quality and in accordance with the appropriate British Standards. The contractor shall be responsible for maintaining adequte quality control in the works and shall be requested by the Engineer or Architect, to provide test data or samples to demonstrate this. No High Alumina Cement is to be used in the concrete. No additives which may be harmful or reduce the durability of the concrete will be permitted.

3.2. SURFACE FINISH

Moulds and equipment shall be capable of producing a clean hard surface finish to the concrete, free of honeycombing or voids. Special finish requirements will be indicated on the drawings and should be in accordance with Clause 6.10.3 of BS 8110.

3.3. TOLERANCES

Unless otherwise stated on the drawings all dimensions of units shall be within the tolerances defined in Clause 6.11.3 of BS 8110.

3.4. SOLID ENDS

Where solid ends to Hollowcone Units have been specified on the drawings weep holes in each core at the ends of the unit are to be provided.

4.0. ERECTION

4.1. HANDLING AND STORAGE

The contractor responsible for erection shall ensure that equipment and storage facilities are adequate to prevent damage or deterioration of the units on site. The contractor shall provide all necessary lifting equipment and shall be deemed to have satisfied himself that adequate access is available to erect the units.

4.2. PROPPING

Temporary propping is to be carried out in accordance with the drawings and minimum times for removal of props should be adhered to.

4.3. JOINTING

The contractor is to carry out all filling of joints and insitu making up, using concrete of minimum characteristic strength 30 N/mm2 at 28 days. All insitu concrete is to be vibrated.

4.4. HOLES

Holes shown on the drawings which are not formed in the works are to be neatly cut on site without impairing the strength of the floor. Holes through lightweight infill blocks are to be formed by removal of a block and replacement with insitu concrete.

4.5. BEDDING

To ensure uniform bearing for the precast units an approved bedding mortar layer consisting of a low water content 3 to 1 sand cement mix is to be provided on all supports over the full area of the support.

SECTION F STRUCTURAL STEELWORK

INDEX

INDEX (CONTD)

1. PREAMBLE

1.0. DEFINITION OF TERMS

1.0.1. The Engineer shall mean John Moylan Associates.

1.0.2. The Steelwork Contractor shall mean the steelwork firm appointed by the main contractor to supply, fabricate, deliver and erect the structural steelwork as shown on the contract drawings and as directed in this Specification.

1.0.3. The Main Contractor shall mean the firm appointed to carry out the building work under the main contract.

1.1. DESCRIPTION OF WORK.

1.1.1. The steelwork contract includes the supply, fabrication, delivery to the site and erection of the structural steelwork as shown on the steelwork contract drawing and as described in this Specification. This includes all holes, drilling for fixing of patent glazing where applicable connections, stiffeners, supports, bases, bolts, brackets etc., all to the satisfaction of the Engineer.

1.2. PLANT

1.2.1. The steelwork contractor shall provide all equipment necessary for the handling, erection and completion of the steelwork.

1.3. DESIGN

1.3.1. The structural steelwork has been designed in accordance with B.S. 449 Part 2 : 1969 specification for the "The Use of Structural Steel in Building".

1.3.2. The Engineer will supply to the Steelwork Contractor with drawings that will also show all working dimensions and other necessary particulars.

1.4. PROGRAMME

1.4.1. On his appointment the Steelwork Contractor shall produce a programme for the production of workshop and erection drawings. The Steelwork Contractor shall be required to agree with the Engineer a final date for submission of these drawings for approval.

1.5. WEIGHTS

1.5.1. All weights and variations or otherwise will be based on the listed weights or members and no allowance made for rolling margins. All steel sections shall be of "full profile" with no appreciable loss of material through corrosion or deficient rolling. If it is found that any steel weights less than 97½% of the listed weights the steelwork contractor shall replace it with a satisfactory section.

contd/.....

1.6. QUALITY OF STEELWORK.

1.6.1. The quality of the materials, fabrication, and erection of the steelwork in this contract shall comply entirely with the requirements set in the following British Standard and all other Standards therein referred to, except for all clauses dealing with the training and certification of welders. The date of issue of each standard shall be that listed below, or the most recent date of issue. All amendments to the Standards shall be deemed to be parts of the relevant Standards:

BS 4 Part 1 1962	Structural Steel Sections
BS 4 Part 2 1965	Ditto
BS 449 : 1959	Use of Structural Steel in Building.
BS 639 : 1964	Covered Electrodes.
BS 709 : 1971	Methods of testing fusion welded joints and weld metal in steel.
BS 938 : 1962	Metal Arc Welding of Tubes.
BS 968 : 1962	High Yield Stress Steel.
BS 1719 : 1963	Classification of covered Electrodes.
BS 1768 : 1963	Unified Precision Hexagon Bolts & Nuts.
BS 1775 : 1964	Steel Tubes for Structural Engineering Purposes.
BS 1856 : 1964	Metal Arc Welding of Mild Steel.
BS 2451 : 1963	Chilled iron shot and grit.
BS 2521 & 2523 :1966	Lead based priming paints.
BS 2642 : 1955	Matal Arc Welding of Steel to BS 968
BS 2708 : 1956	Unified Black Square and Hexagon Bolts and Nuts.
BS 2994 : 1958	Cold rolled steel sections.
BS 3139 : 1959	High Strength Friction Grip Bolts
BS 3294 : 1960	Use of High Strength Friction GripBolts
BS 3410 : 1961	Metal Washers
BS 3692 : 1967	I SO Metric precision hexagonal bolts, screws and nuts.
BS 4190 : 1967	I SO metric black hexagon bolts, screws and nuts.
BS 4232 : 1967	Surface finish of blast cleaned steel for painting.

contd/.....

BS 4360 : 1972 Weldable Structural Steels

BS 4395 : High strength friction grip bolts and associated nuts and washers for structural engineering.

Part 1 : 1969 General Grade.

Part 2 : 1969 Higher Grade bolts and nuts and general grade washers.

Part 3 : 1973 Higher Grade bolts (waisted Shank) nuts and general grade washers.

The Steelwork Contractor shall keep a copy of each of the above standards in his shop for reference.

2. MATERIALS

2.0. STEEL

2.0.1. The steel for this contract is to be mild steel, grade 43C, in accordance with B.S. 4360:1972 "Specification for Weldable Structural Steels".

2.1. BOLTS.

2.1.1. Unless specified otherwise, all bolts and nuts shall be ISO metric black hexagon and conform to the requirements of B.S. 4190 : 1967 "ISO Metric Black Hexagon Bolts$crews and Nuts."

2.2. TEST CERTIFICATES.

2.2.1. Manufacturer's test certificates for all steel used for the work shall be supplied to the Engineer. Copies of rolling mill orders shall also be provided.

2.3. HIGH SIRENGTH FRICTION GRIP BOLTS.

2.3.1. Where high strength friction grip bolts are used, they shall be of the load indicating bolt type or have load indicating washers and the torque method or part turn method of tightening shall not be allowed. Reference must be made to the Manufacturer's instructions on the method of tightening and assessing the value of the applied load. The Engineer's approval must be obtained for the type of friction grip bolt to be used. The areas of metal directly under the washers must be clean and free of any paint or similar material. Matching surfaces of connections made with friction grip bolts must be thoroughly cleaned and be free from any paint primer or other foreign matter.

3. FABRICATION

3.0. FABRICATION DRAWINGS

3.0.1. The Steelwork Contractor will be required to prepare his own shop details in accordance with B.S. 449: Part 2: 1969 These drawings shall be supplied in duplicate to the Engineer for approval before fabrication.

Should these shop details be insufficient or unsatisfactory the Engineer may require fresh details to be submitted.

3.0.2. On receiving the Engineer's approval in writing of such detailed drawings, two further copies are to be supplied. Details are to be submitted at least five working days before approval is required and no work is to be put in hand until such approval has been obtained.

3.1. CORRECINESS OF DIMENSIONS.

3.1.1. The Steelwork Contractor will be held responsible for the correctness of dimensions and details, fitting and workmanship and for the strength of all connections, notwithstanding the approval of the Engineer of the detailed drawings, and for all parts of the various structures coming together correctly for assembling in position.

3.1.2. In event of any connection being found unsatisfactory before or after erection or due to errors arising in fabrication, the Steelwork Contractor shall submit to the Engineer his proposals as to the method to be adopted in making good. The Steelwork Contractor shall abide by the ngineer's decision and in the event of replacements being required, the teelwork Contractor shall be responsible for all costs involved.

3.2. STIFFENERS.

3.2.1. Where specified, fitted stiffeners shall be accurately ground over their full bearing faces to fit tightly the angle or section stiffened.

3.3. SUB-LETTING

3.3.1. The Steelwork Contractor shall not sub-let any fabrication or erection without the permission of the Engineer.

3.4. IDENTIFICATION

3.4.1. All steelwork delivered to site are to be clearly marked with their numbers, together with the number of the members onto which they frame at both ends.

3.5. CAMBER

3.5.1. In the absence of any specified camber, all lattice girders and beams of spans greater that seven metres shall have an upward camber of 0.1% of the span at midspan.

4. WORKMANSHIP

4.0. GENERAL

4.0.1. The workmanship throughout the work shall be to the standards of B.S. 449: Part 2.

4.1. BOLTS

4.1.1. All threads on bolts shall be clean and the nuts shall closely fit the bolts so that they can only just be fitted with washers under the nuts. Tampered washers shall be used on tapered sections and flanges to ensure true bearing of the bolt head or nut. Two clear threads shall show beyond the nut on a fully tightened bolt.

4.2. CUTTING

4.2.1. Thermal cutting by hand will be permitted only for wall ends of beams and filler joists and for notching.

4.3. DRILLING

4.3.1. All holes drilled shall be in compliance with B.S. 449: Part 2.

4.3.2. Generally holes, shall be drilled with a maximum of 2mm allowance for black bolts or high strength friction grip bolts.

4.3.3. For close Tolerance Bolts with holes not drilled in one operation the procedure shall be:-

1) Holes to be aligned with diameter equal to nominal size of hole - 0 + 0.15 mm

2) Ream first hole, fit close tolerance bolt, and tighten before reaming second hole.

3) Repeat for each hole.

4) Re-tighten all bolts after last bolt is fitted.

4.3.4. Where hollow sections are drilled, spacer tubes must be welded in position to permit through bolting.

4.4. EXAMINATION AND TESTING

4.4.1. The Engineer or his representative shall at all reasonable times be permitted access to the steelwork contractor's works for purposes of progressing and examination and testing of welded structural components.

4.4.2. The Steelwork Contractor when required shall provide and send sample pieces, carriage paid, to such testing stations as may be directed. Sample pieces shall be 500 mm x 100 mm for plates or as that as practicable.

contd/

4.4.2. Contd.
and 500 mm long of full section for structural shapes, rods, etc. The sample pieces shall be selected by the Engineer and despatched to the testing station where test pieces will be made and tested.

4.4.3. If non-destructive tests are to be carried out on welded joints the Steelwork Contractor shall provide facilities for the Engineer or his representative to carry out these tests.

4.4.4. The Steelwork Contractor shall be held responsible for the costs and fees involved in the testing of welds which are found to be unsatisfactory.

4.4.5. The Employer shall be held responsible for the costs and fees involved in the testing of welds which are found to be satisfactory.

4.4.6. All areas of defective welding shall be cut out and made good to the entire satisfaction of the Engineer and all remedial measures shall be borne by the Steelwork Contractor. The remedial work shall be deemed to include radio-graphical or other suitable examination to verify the acceptance of the repair.

5. WELDING

5.0. DESIGN

5.0.1. The design of all welds shall comply with the requirements of B.S.: 499 1969.

5.1. WORKMANSHIP

5.1.1. The welding of all mild steel sections and plates shall be carried out to the requirements of B.S. 5135 metal arc welding of carbon and carbon manganese steels.

5.1.2. The welding of all structural hollow section shall be carried out to the requirements of B.S. 5135 metal arc welding of carbon and carbon manganese steels.

5.1.3. Evidence of qualification of welders will be required by the Engineers and in cases where recent test certificates or other acceptable proof is not available the Engineer will require welder approval tests to be carried out in accordance with B.S. 4872 "Fusion Welding of Steel"
The test shall be carried out under the supervision of the Engineer and to his satisfaction. The extent of qualification thereby attained shall be in conformity with the recommendation of B.S. 449 Part 2 1969.

6. ERECTION

6.0. GENERAL

6.0.1. The method of transport, handling and erection of materials shall be to the satisfaction of Engineer and in accordance with the drawings or as directed. These operations shall be carried out in such a manner as will not injure, overstress or disfigure any part of the structure. Any member injured, overstressed or damaged in any way shall be rectified as directed by the Engineer.

6.0.2. Site joints and connections shall not be finally bolted until sufficient of the structure is properly plumbed, levelled and aligned and no straining into position will be allowed subsequently.

6.0.3. The Steelwork Contractor is to take all necessary precautions to ensure the stability and safety of the steelwork structure during erection and shall maintain any special temporary guying or other supports until the structure is completed. The steelwork Contractor shall be entirely responsible for any accidents which may arise from lack of suitable precautions.

6.0.4. The Steelwork Contractor will be held responsible for any damage to existing work or buildings or their contents, roads, walls, etc. adjoining or upon the site, arising from the off-loading and erection of steelwork.

6.1. TOLERANCES

6.1.1. Tolerances for erected steelwork shall be as follows:-

1.	Position of first erected column	± 10mm
2.	Linear dimensions: up to 8 m	± 10mm
	from 8 m to 15 m	± 15mm
	from 15 m to 25 m	± 20mm
	over 25 m	± 25mm
3.	Plumb of columns in 30 m height:	± 15mm
4.	Level of base of first erected column	± 5mm
5.	Level of beam at junction with column measured from transferred bench mark.	± 15mm
6.	Level of beam at junction with column measured from transferred bench mark of storey in which beam is located.	± 10mm
7.	Levels of upper or lower surfaces of two or more beams meeting *at a column*	± 5mm

6.1 TOLERANCES (CONT'D)

8. Difference in level of ends of a beam:

up to 8m long	+- 5mm
from 8m to 15m long	+- 10mm
from 15m to 25m long	+- 15mm
over 25m long	+- 20mm

6.2 BRACING

Bracing is provided to stabilise the completed building. The Steel Contractor shall be responsible for the provision of any extra steelwork considered necessary for the alignment and temporary stability of the steelwork. The cost of this additional steelwork should be included in the contact price.

6.3 HOLDING DOWN BOLTS

The Steelwork Contractor is to supply to the Building Contractor all the necessary holding down bolts or anchorage devices for the Building Contractor to cast into the foundations. The Steelwork Contractor must satisfy himself prior to erection that the foundations have been properly formed and, in particular, that the holding-down bolts have been accurately set and have the full amount of play required.

7. SPECIFICATION FOR CORROSION PROTECTION SYSTEM TO STRUCTURAL STEELWORK.

7.1. PREPARATION

Shot blast to Swedish Standard SIS055900 to give surface quality Sa 2½ and / or B.S. 4232 Second Quality. Remove all traces of loose rust, grit etc. by compressed air hose or careful clean dry brushing. Inspect for laminations and remove by careful grinding leaving a smooth surface. Dust off and within 2 hours of shot-blast apply 'Blast Primer'.

7.2. BLAST PRIMER

Apply by airless spray:-

1-coat 2-pack Epoxy Zinc Rich Primer to a D.F.T. of 20 microns. (This D.F.T. accords to B.S. 5493: 1977 for 'blast primers'). Allow to dry. Then fabricate as necessary.

7.3. PREPARATION AND SPOT-PRIMING AFTER FABRICATION

After fabrication carefully remove all weld flux and spatter, rough edges, etc. by scraping, chipping and grinding to a smooth surface. Remove any unsound 'scorched' primer around weld areas; also, all dust, dirt, grease, etc. (Wash with White Spirit where necessary). Allow to dry overnight.

7.4. SITE- HOLDING PRIMER.

Apply by airless spray to the clean dry surface:-

1-coat 2-pack Epoxy High Build Zinc Phosphate Primer, to a dry film thickness of 50 microns. Allow 7 days to achieve maximum through hardness before despatch to site.

7.5. SITE TREATMENT

PREPARATION AND SPOT-PRIMING AFTER ERECTION.

After erection all damaged areas (including boltheads etc.) must be thoroughly prepared and carefully spot-primed with primer. Allow to dry overnight.

NOTE: THIS ITEM IS PROVISIONAL

8. SPECIFICATION FOR FIRE PROTECTION SYSTEM TO STRUCTURAL STEELWORK.

The Hamron Fire Protection system is specified. The tenderer may submit similar systems for approval to the Engineer.

8.1. GENERAL

1 hour fire resistance to structural steel in accordance with B.S. 476 Part 8 (1972)

Prepare surface as already described; apply - First coat Hamron SP 81241 (Yellow) to a loading of 1kg/m^2;

Second coat Hamron SP 81280 (Light blue) to a loading of 1 kg/m^2.

Third coat Hamron SP 81314 (White) to a loading of 150-200 gms/m^2.

Total dry film thickness approx. 1900 microns.

All in accordance with the manufacturers printed instructions.

8.2. COMPATIBILITY AND ADHESION TESTING.

Apply by brush approximately 500 gms Hamron SP 81314 or 81241 in one coat to approximately 0.5 m^2 of the surface to be tested and allow 45 minutes drying time. If bubbles, cracks or crinkles appear this indicates the existing surface is unsuitable. In the absence of these phenomenon apply a blow-lamp or suitable burner to the edge of the treated area until the primer adjacent to this area is charred or obviously discoloured or until the Hamron SP 81314 has foamed or become very discoloured. During this test neither the primer or the Hamron SP Coating should run or bubble. Flaming or burning of the coating at this stage can be ignored, as solvents are still present due to the short drying time.

8.3. METHOD OF APPLICATION.

Conventional and airless spraying, brushing and rolling.

Stir all coating materials thoroughly before and during use. (Electrical whisk stirrers of approx. 1500 RPM are suitable).

ROOF PURLINS AND CLADDING RAILS

General :

The following clauses cover the requirements for the design fabrication, galvanising of the roof purlin and side cladding rail system.

The design of the roof purlins and cladding rails shall be in accordance with B.S. 5950, Part 5 as amended.

Materials :

The dimensions and tolerances of cold formed sections shall comply with B.S. 2994.

Material shall conform with B.S. 2989 and shall be Z35 grade steel with a minimum yield stress of 350 N/mm2.

All roof purlins, cladding rails and their components, say bars, bracing, etc. shall be galvanized. All galvanizing shall be hot dip in accordance with B.S. 729 with an average thickness of 20 micrometers.

Storage:

Components which are stored prior to being transported or erected shall be stacked clear of the ground and arranged such that the water cannot accumulate. They shall be kept clean and supported in such a manner as to avoid permanent distortion.

Erection:

Components shall be erected such that they are not bent, twisted or damaged. Any damaged members may be rejected by the Engineer at the Contractors cost.

Members shall be erected to the following tolerances:-

Plan bow: Span /1000

Camber : Span /1000

Out of squareness of flanges : 3 m.m.

Purli n Alignment : + - 5 m.m. relative to adjacent purlin.

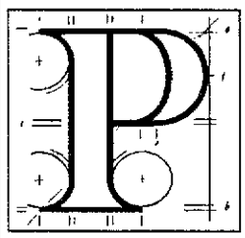
Purlin level : + - 3 m.m. relative to adjacent purlin.

214

Our Ref: PL 6/5/86454
P.A. Reg. Ref: 91A/0794

PL

An Bord Pleanála



Floor 3 Blocks 6 & 7
Irish Life Centre
Lower Abbey Street
Dublin 1
tel (01) 728011

The Secretary,
Dublin County Council,
Planning Department,
Block 2,
Irish Life Centre.

21/11

Date: 14th November 1991.

See Previous Letter DATED 23/10/91 FROM A.B.P.

Appeal re: Light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills, Tallaght, County Dublin.

Dear Sir/Madam,

The above-mentioned appeal under the Local Government (Planning and Development) Acts, 1963 to 1990, has been withdrawn.

Yours faithfully,

Suzanne Lacey

Suzanne Lacey

BP 302

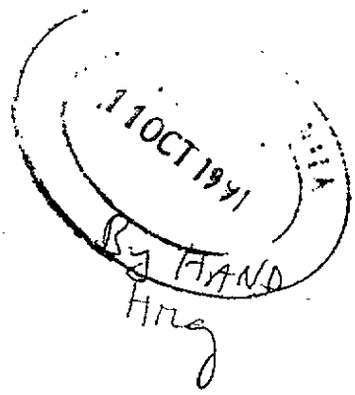
18 NOV 91

MICHAEL O'MEARA
Architectural & Planning Consultant

4 Eagle Terrace,
Dundrum, Dublin 14.

Tel: 01-985722
Fax: 01-985722

An Bord Pleanala,
Blocks 6 & 7
Irish Life Centre
Lr Abbey Street
Dublin 1.



8 October 1991

Re: Proposed Light Industrial Unit at Hibernian Industrial Estate, Greenhills Road, Tallaght. Reg. No. 91A/0794 Ref. No. 6/5/864 54

Dear Sirs,

I refer to the appeal concerning the above development and your letter of 9th August 1991. This appeal was specifically in relation to condition No. 9 of the Dublin County Council Planning Decision which requested a financial contribution of £21,153.00 towards the cost of provision of public services in the area.

Dublin County Council has now informed me that it does not propose to collect this financial contribution referred to in Condition 9 as the contribution previously paid under Permission RA/243 related to the entire site including the proposed development.

Accordingly, I now wish to withdraw this appeal and I enclose a copy of the Council's letter for your information.

Yours faithfully,

Michael O'Meara

MICHAEL O'MEARA

COPY TO Dublin Co. Co.

DATE 23/10/91

Encl.

...n 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

Date: 3 October 1991.

Our Ref: CN 9533 DB/SOB

Michael O'Meara,
Architectural & Planning Consultant,
4, Eagle Terrace,
Dundrum,
Dublin 14.

Re: Proposed light industrial unit at Hibernian Industrial Estate, Greenhills Road, Tallaght. Register Reference 91A/0794.

Dear Sir,

I refer to your letter dated 29.07.91 regarding the financial contribution in the sum of £21,153. required by condition No. 9 of the Councils decision to grant No. P/3057/91 dated 03.07.91 (Register Reference 91A/0794) and I am to inform you that as the financial contribution towards the cost of public services has already been paid in respect of the overall site under RA/243, the Council does not propose to collect the financial contribution referred to in the said condition No. 9.

Yours faithfully,

For Principal Officer.

Our Ref: PL 6/5/86454
P.A. Reg. Ref: 91A/794

An Bord Pleanála

Floor 3 Blocks 6 & 7
Irish Life Centre
Lower Abbey Street
Dublin 1
tel (01) 728011

DUBLIN COUNTY COUNCIL
PLANNING DEPT.
RECEIVED
30/10

The Secretary,
Dublin County Council,
Planning Section,
Block 2,
Irish Life Centre,
Dublin 1.

Date: 23rd October 1991

Appeal re: Light industrial/warehouse unit at Hiberian Industrial Estate, Greenhills, Tallaght, Co. Dublin.

DEVELOPMENT CONTROL
OCT 1991

Dear Sir/Madam,

The above-mentioned appeal under the Local Government (Planning and Development) Acts, 1963 to 1990, has been withdrawn.

Yours faithfully,

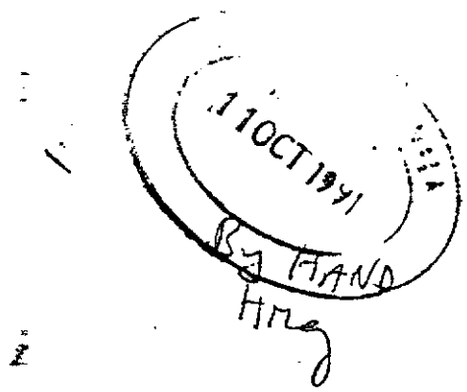
Patricia Tobin
Patricia Tobin

BP 302

MICHAEL O'MEARA
Architectural & Planning Consultant

4 Eagle Terrace,
Dundrum, Dublin 14.

Tel: 01-985722
Fax: 01-985722



An Bord Pleanala,
Blocks 6 & 7
Irish Life Centre
Lr Abbey Street
Dublin 1.

8 October 1991

Re: Proposed Light Industrial Unit at Hibernian Industrial Estate, Greenhills Road, Tallaght. Reg. No. 91A/0794
Ref. No. 6/5/864 54

Dear Sirs,

I refer to the appeal concerning the above development and your letter of 9th August 1991. This appeal was specifically in relation to condition No. 9 of the Dublin County Council Planning Decision which requested a financial contribution of £21,153.00 towards the cost of provision of public services in the area.

Dublin County Council has now informed me that it does not propose to collect this financial contribution referred to in Condition 9 as the contribution previously paid under Permission RA/243 related to the entire site including the proposed development.

Accordingly, I now wish to withdraw this appeal and I enclose a copy of the Council's letter for your information.

Yours faithfully,

Michael O'Meara

MICHAEL O'MEARA

Encl.

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

Date: 3 October 1991.

Our Ref: CN 9533 DB/SOB

Michael O'Meara,
Architectural & Planning Consultant,
4, Eagle Terrace,
Dundrum,
Dublin 14.

Re: Proposed light industrial unit at Hibernian Industrial Estate, Greenhills Road, Tallaght. Register Reference 91A/0794.

Dear Sir,

I refer to your letter dated 29.07.91 regarding the financial contribution in the sum of £21,153. required by condition No. 9 of the Councils decision to grant No. P/3057/91 dated 03.07.91 (Register Reference 91A/0794) and I am to inform you that as the financial contribution towards the cost of public services has already been paid in respect of the overall site under RA/243, the Council does not propose to collect the financial contribution referred to in the said condition No. 9.

Yours faithfully,

For Principal Officer.

COMHAIRLE CHONTAE ATHA CLIATH

Tel.: 724755
Ext. 268/269

Planning Department,
Irish Life Centre,
Lr. Abbey Street,
Dublin 1.

Your Ref.: PL6/5/ 86454 22.08.'91

Our Ref.: 91A.794

An Bord Pleanala,
Blocks 6 and 7,
Irish Life Centre,
Lr. Abbey Street,
Dublin 1.

LOCAL GOVERNMENT (PLANNING AND DEVELOPMENT) ACTS, 1963 TO 1983

Proposal: Light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills Road, Tallaght

Applicant: Hibernian Insurance Co. Ltd.

Dear Sir,

With reference to your letter dated 09.08.'91 I enclose herewith:-

(1) & (2) A copy of the application which indicated the applicant's interest in the land or structure.

(3) A copy of the public notice given, i.e

IRISH PRESS 14.05.'91.

(4) The plan(s) received from the applicant on 17.05.91.

(6) & (7) A certified copy of Manager's Order P/3054/91,

DATED, 03.04.'91 together with technical reports in connection with the application.

(8)

Yours faithfully,

M Murtagh
for Principal Officer.
Encls.

Our Ref: PL 6/5/86454
Your Ref: 91A/794

DEVELOPMENT
14 AUG 1991
CONTROL

The Secretary,
Dublin County Council,
Planning Department,
Block 2,
Irish Life Centre.

12 AUG 91

An Bord Pleanála

Floor 3 Blocks 6 & 7
Irish Life Centre
Lower Abbey Street
Dublin 1
tel (01) 728011

Date: 9th August 1991.

Planning authority decision re: Light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills, Tallaght, County Dublin.

Dear Sir/Madam,

Enclosed is a copy of an appeal under the Local Government (Planning and Development) Acts, 1963 to 1990, in relation to the above-mentioned decision. So that consideration of the appeal may proceed, you are requested to forward to the Board <u>within two weeks</u>:

(1) The application made to the planning authority.
(2) Particulars of the applicant's interest in the land or structure, as supplied to the planning authority.
(3) A copy of the public notice, whether published in a newspaper or on the site.
(4) Any drawings, maps, particulars, information, evidence or written study received or obtained from the applicant, including the ordnance survey number.
(5) Copies of requests (if any) to the applicant for further information relating to the application under appeal and copies of reply and documents (if any) submitted in response to such requests.
(6) A <u>certified copy</u> of the relevant Manager's Order.
(7) Copies of any technical or other reports relevant to the decision on the application.
(8) Particulars and relevant documents relating to previous decisions affecting the same site or relating to applications for similar development close by.

DEVELOPMENT
14 AUG 1991
CONTROL

An Bord Pleanála

Floor 3 Blocks 6 & 7
Irish Life Centre
Lower Abbey Street
Dublin 1
tel (01) 728011

Please note that the other party/parties to the appeal are being notified that copies of the planning authority documents relevant to the decision which gave rise to the above-mentioned appeal will be available for inspection at your offices after the expiration of a period of fourteen days from the date of this letter. It would be appreciated if parties could be facilitated in this regard.

Copies of the representations or observations made to the planning authority in relation to the application should not be sent to the Board. It is assumed that the planning authority has notified observers of the decision made and of the right of appeal.

The planning authority may make to the Board, in writing, such observations on the appeal as it thinks fit. Where practicable, any such observations should be submitted with the documents listed above but the furnishing of the documents should not be held up until observations are available. In any event, to ensure that they will be taken into account in the determination of the appeal, any such observations should be furnished **within one month** of the date of this letter.

Please quote the above appeal reference number in any further correspondence.

Yours faithfully,

Suzanne Lacey

Suzanne Lacey

Encl.

BP 005

MICHAEL O'MEARA
Architectural & Planning Consultant

4 Eagle Terrace,
Dundrum, Dublin 14.

Tel: 01-985722
Fax: 01-985722

An Bord Pleanala,
Blocks 6 & 7
Irish Life Centre
Lr Abbey Street
Dublin 1.

2 August 1991.

Re: Proposed Light Industrial Unit at Hibernian Industrial Estate, Greenhills Road, Tallaght. Reg. No. 91A/0794

Dear Sirs,

I wish to appeal, on behalf of Hibernian Insurance Co. Ltd., the decision of Dublin County Council to grant Permission for the above, subject to conditions and now enclose a copy of same. This appeal is specifically in relation to Condition No.9 and the grounds are set out hereunder.

Condition No. 9 stipulates that a financial contribution of £21,153.00 be paid to Dublin County Council towards the cost of provision of public services in the area of the proposed development.

However, a financial contribution of £10,500 was requested and paid in 1979 when the original permission for the total development was granted. The site on which it is proposed to erect the light industrial unit was also part of that permission and development. The total development of the roads, sewers, watermains etc. was carried out and completed at that stage.

Subsequent to that contribution being paid another contribution of £10,755.00 was requested when permission was granted for Warehouse Unit D (Reg. Ref. No. TA 243). However, when the matter was raised with the Council, a payment of £255.00 was agreed as per enclosed letter.

From the foregoing, it would be reasonable to assume that the financial contribution towards the cost of provision of public services in the area of the proposed development has already been discharged with the total payment of £10,755.00.

/.....

6/8/91
£100 chq
B24240

As the original permission related to all of the industrial estate and the development works were completed at that stage, it is unreasonable that the Council should now request a further contribution.

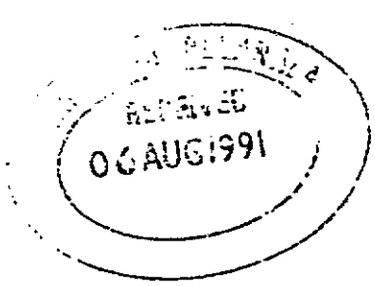
Enclosed please find cheque in the sum of £100.00 in respect of the appeal fee.

Yours sincerely,

Michael O'Meara.

MICHAEL O'MEARA.

Encl.



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/ 3057 /91 Date of Decision : 3rd July 1991

Register Reference : 91A/0794 Date Received : 17th May 1991

Applicant : Hibernian Insurance Co. Ltd.

Development : Construction of a light industrial/warehouse unit

Location : Hibernian Industrial Estate, Greenhills Road, Tallaght

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:- ....9....ATTACHED.

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

Date: 4/7/91.....

Michael O'Meara, Architect,
4 Eagle Terrace,
Dundrum,
Dublin 14

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

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 Sanitary Services Department be ascertained and strictly adhered to in the proposed development.

03 REASON: In order to comply with the Sanitary Services Acts, 1878-1964.

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

05 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.

06 That no advertising sign or structure be erected except those which are exempted development, without prior approval of Planning Authority.
REASON: In the interest of the proper planning and development of the area.

07 That off-street car parking facilities and parking for trucks be provided in accordance with the Development Plan Standards.
REASON: In the interest of the proper planning and development of the area.

08 That details of landscaping and boundary treatment be submitted to and agreed in writing by Planning Authority and work thereon completed prior to occupation of units.
REASON: In the interest of amenity.

9 10 That a financial contribution in the sum of £ 21,153. be paid by the proposer to the Dublin County Council towards the cost of provision of public services in the area of the proposed development and which facilitate this development; this contribution to be paid before the commencement of development on the site.
REASON: The provision of such services in the area by the Council will facilitate the proposed development. It is considered reasonable that the developer should contribute towards the cost of providing the

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

services.

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/0794

Date : 17th May 1991

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

Dear Sir/Madam,

DEVELOPMENT : Construction of a light industrial/warehouse unit

LOCATION : Hibernian Industrial Estate, Greenhills Road, Tallaght

APPLICANT : Hibernian Insurance Co. Ltd.

APP. TYPE : PERMISSION

With reference to above, I acknowledge receipt of your application received on 17th May 1991.

Yours faithfully,

.....

PRINCIPAL OFFICER

Michael O'Meara, Architect,
4 Eagle Terrace,
Dundrum,
Dublin 14

Dublin County Council
Comhairle Chontae Atha Cliath

Planning Application Form/ Bye - Law Application Form

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

1. Application for Permission [✓] Outline Permission [ ] Approval [ ] 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 HIBERNIAN INDUSTRIAL ESTATE.
(If none, give description sufficient to identify) GREENHILLS RD, TALLAGHT.

3. Name of applicant (Principal not Agent) HIBERNIAN INSURANCE Co. LTD
Address HADDINGTON HSE, HADDINGTON RD DUBLIN 2 Tel. No

4. Name and address of person or firm responsible for preparation of drawings MICHAEL OMEARA ARCHITECT
4 EAGLE TERRACE, DUNDRUM. D14 Tel. No 985722

5. Name and address to which notifications should be sent MICHAEL OMEARA, ARCHITECT.
4 EAGLE TERRACE, DUNDRUM, D.14.

6. Brief description of proposed development LIGHT INDUSTRIAL UNIT DIVISIBLE IN THREE UNITS.

7. Method of drainage MAINS 8. Source of Water Supply 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. BYE LAW APPLICATION N/L
(b) Proposed use of each floor

Irish Permanent 17/5/91

10 Does the proposal involve demolition, partial demolition or change of use of any habitable house or part thereof?

11.(a) Area of Site 6000 m² Sq. m.
(b) Floor area of proposed development 2472 Sq. m.
(c) Floor area of buildings proposed to be retained within site Sq. m.

FEE PAID £4721.50 1715
RECEIPT NO. N 39646

Co. DUBLIN full planning permission sought for the construction of a light industrial/warehouse unit at Hibernian Industrial Estate, Greenhills Road, Tallaght for Hibernian Insurance Company Ltd.

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

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

14.Please state the extent to which the Draft Building Regulations have been taken in account in your proposal:
Generally Adhered to in so far as possible.

15.List of documents enclosed with application. LOCATION MAP, BLOCK PLAN, GROUND FLOOR PLAN, FIRST FLOOR PLAN, SECTIONS, ELEVATIONS (4 COPIES)
NEWSPAPER NOTICE + COVER LETTER. (1 COPY)

16.Gross floor space of proposed development (See back) 2738 m² Sq. m.

No of dwellings proposed (if any) Class(es) of Development 4

Fee Payable £ 4721.50 Basis of Calculation 2738 m² x 1.75

If a reduced fee is tendered details of previous relevant payment should be given

Signature of Applicant (or his Agent) Michael OMeara Date 15 MAY 1991

FOR OFFICE USE ONLY 17/5

Application Type P
Register Reference 91A/0794
Amount Received £ 2.24.0
Receipt No 22-5
Date

RECEIVED
17 MAY 1990
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 accordance 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 m² (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 m² (min. £70.00)
D	Agricultural Buildings/Structures	£1.00 per m² 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.

RECEIPT CODE

COMHAIRLE CHONTAE ÁTHA CLIATH

PAID BY — DUBLIN COUNTY COUNCIL
46/49 UPPER O'CONNELL STREET
DUBLIN 1.

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

N - 39646

CASH
CHEQUE ✓
M.O.
B.L.
I.T.

L

£4791.50

Received this 17th day of May 1991

from Hibernian Insurance Co. Ltd.,
Haddington Rd.,
D.4

the sum of four thousand, seven hundred + ninety one Pounds
fifty Pence, being fee for
planning application at Greenhills Rd.

Noeleen Daane Cashier

S. CAREY
Principal Officer

Class 4

MICHAEL O'MEARA
Architectural & Planning Consultant

The Studio,
'Carraig Airt',
Sandyford,
Co. Dublin.

Tel: 01-953799
Fax: 01-953799

Please note change of address
to: No. 4 Eagle Terrace
Dundrum, Dublin 14.
Telephone No.985722

Planning Dept.
Dublin County Council
Irish Life Centre
Lr. Abbey Street
DUBLIN 2.

RECEIVED
17 MAY 1991
91A/0794.
Reg. Sec.

15 May 1991

Re: Proposed Light Industrial Unit at
Hibernian Industrial Estate, Greenhills Rd. Tallaght

Dear Sirs,

I wish to apply for full planning permission for the erection of a light industrial facility at the above location on behalf of Hibernian Insurance Co. Ltd.

This site of 1.5 acres is the remaining area of this Industrial Estate to be developed and as such it will complete this particular development. The building is designed to be sub-divided into three units each with their own office accommodation on two floors.

The existing building line on the main access road will be maintained at 15.6m. However, the building line to the estate road will be 20.5m to facilitate truck loading access. Car parking has been allowed for at 3/100 sq.m. for factory/warehouse area and 4/100 sq.m. for office areas. The future users of this building are not known at present. However, the general usage would be anticipated as 50% light industrial and 50% warehousing.

Enclosed with this application please find the following documentation:-

4 copies each	Drg. No. 916/9	Site block plan
	10	Ground floor plan
	11	First floor plan
	12	Sections
	13	Elevations
	14	Location map.

1 copy of newspaper notice and application form and cheque for planning fees in the sum of £4,791.50.

Yours faithfully,

Michael O'Meara.

MICHAEL O'MEARA.