REF. NO.: 91A/0515 CERTIFICATE NO.: 14525B

PROPOSAL: Extension to warehouse & lorry wash

LOCATION: Ullercross Estate, Ballymount Rd, Walkinstown

APPLICANT: Johnson Bros Ltd

	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 2189.0m²	@ £1.50 per M² or £70	2761.50	7659.04	~~2.46~~	Not sought ~~assigned~~ ~~transferred~~ to ~~Accounts~~	
D	Building or other structure for purposes of agriculture	@ £1.00 per M² in excess of 300 M² Min. £70					
E	Petrol Filling Station	@ £200					
F	Dev. of prop. not coming within any of the foregoing classes	£70 or £9 per .1 hect. whichever is the greater					

Column 1 Certified: Signed: [signature] Grade: D/TE Date: 10/4/91

Column 1 Endorsed: Signed: Grade: Date:

Columns 2,3,4,5,6 & 7 Certified: Signed: [signature] Grade: S.O Date: 9/4/91

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

Register Reference : 91A/0515 Date : 10th April 1991

Dear Sir/Madam,

Development : Extension to warehouse and build lorry wash

LOCATION : Uppercross Estate, Ballymount Road, Walkinstown

Applicant : Johnson Brothers Ltd

App. Type : PERMISSION/BUILDING BYE-LAW APPROVAL

Date Recd : 5th April 1991

Your application in relation to the above was submitted with a fee of £3794.53.

On examination of the plans submitted it would appear that the appropriate amount should be £3930.75.

I should be obliged if you would submit the balance of £136.22 as soon as possible as a decision cannot be made on this application until the correct fee is received.

Yours faithfully,

.....

PRINCIPAL OFFICER

Christopher S. Pringle,
Glenview,
Monaghan.

REF.: 91A/0515 CERTIFICATE NO: 24843

PROPOSAL: Extension to warehouse + workshop

LOCATION: Unicross Estate, Ballymount Road, Walkinstown

APPLICANT: Johnson Bros Ltd

CLASS	1 DWELLINGS/AREA LENGTH/STRUCT	2 RATE	3 AMT. OF FEE REQ.	4 AMOUNT LODGED	5 BALANCE DUE	6 BALANCE DUE	7 DATE/ RECEIPT NO
	Dwellings	££32					
		££16					
		£50p per M² in excess of 300M² Min.£40					
	metres² 2189.0m²	£1.75 per M² or £40	£3830.75	3694.53	£136.22		
	x .1 hect.	£25 per .1 hect. or £250					
	x .1 hect.	£25 per .1 hect or £40			136.22 24/4/91 N35354		
	x .1 hect 0.0016 HA.	£25 per .1 hect. or £100	£100	£100			
		£100					
	x metres²	£10 per m² or £40					
	x1,000m²	£25 per 1,000m² or £40					
	x .1 hect. 0.009 HA.	£5 per .1 hect. or £40					

Column 1 Certified: Signed: [signature] Grade: D.H.L. Date: 10/4/91

Column 1 Endorsed: Signed: Grade: Date:

Columns 2,3,4,5,6 & 7 Certified Signed: [signature] Grade: S.O Date: 9/4/91

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

Re. Car Parking Contribution.

Roads requirement is based on 25% site coverage and at £25,000 per acre.

If one take 45% Site Coverage i.e. Max. permissible in Development Plan, then:-

$$\frac{2168\ m^2 \times 100}{45} \simeq 1.2\ ac.\ @ £25,000$$

per acre = £30,000 Roads Contribution.

R. Cummins 27-5-91

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

ASSESSMENT OF FINANCIAL CONTRIBUTION

REG. REF.: 91A/515

CONT. REG.:

SERVICES INVOLVED: WATER/FOUL SEWER/SURFACE WATER

AREA OF SITE: 4.8 Ac 28-5-91

FLOOR AREA OF PRESENT PROPOSAL: 23,563 FT²

MEASURED BY: J.J. 10/4/91.

CHECKED BY:

METHOD OF ASSESSMENT:

TOTAL ASSESSMENT

MANAGER'S ORDERED NO: P/ /
DATED

ENTERED IN CONTRIBUTIONS REGISTER:

(i) Standard
nil.

(iii) Roads.
Planning
assesses
Contribution
at £30000.
If we use rate
used by Planning
Dept and Acreage
calculated by We
Planning contribution
should be 1.2 @ 10,000 = £12,000

DEVELOPMENT CONTROL ASSISTANT GRADE

SSt CMO

DUBLIN COUNTY COUNCIL

PLANNING AND BUILDING CONTROL DEPARTMAENT

Senior Engineer,
Sanitary Services Dept.

Register Reference : 91A/0515 Date : 8th April 1991

Development : Extension to warehouse and build lorry wash

LOCATION : Uppercross Estate, Ballymount Road, Walkinstown

Applicant : Johnson Brothers Ltd

App. Type : PERMISSION/BUILDING BYE-LAW APPROVAL

Planning Officer :

Date Recd. : 5th April 1991

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

Date received in Sanitary Services .....

DUB... COUNCIL
16 APR 1991
SAN SERVIC...

DUBLIN CO. C...
SANITARY SERVICES
24 MAY 1991
Returned.

FOUL SEWER

No foul sewer requirements indicated, except that lorry wash should be connected to foul sewer.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 27:05:91
Time 4:30

SURFACE WATER

Refusal recommended.

1. Applicant indicates a connection from the lorry wash to the surface water sewer. This should be connected to the foul sewer.

2. Applicant has not lodged details of the grit trap and oil interceptor for the lorry wash.

T Sullivan 20/5/91.

J.Q. 22/5/91

Register Reference : 91A/0515 Date : 8th April 1991

ENDORSED ______________________ DATE ______________

WATER SUPPLY Water available for yard use 24 hours storage to be provide

Note:- it is not acceptable to build an extension over an existing 6" watermain this will have to be Re Routed at applicants expense also topping waste to be metered by Co Co at applicants expense

Refer to C.F.O.

ENDORSED [signature] DATE 17/4/91

Endorsed: J. Rice 22/5/'91
for S.E.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
27.05.91
4:30

M-8

DUBLIN COUNTY COUNCIL

REG. REF: 91A/515.

LOCATION: Uppercross Estate, Ballymount Rd, Walkinstown.

APPLICANT: Johnston Brothers Ltd.

PROPOSAL: Ext. to warehouse.

DATE LODGED: 5.4.91.

This application is for full permission for extension to warehouse at Walkinstown.

The extension to floor area of 2168.3m^2 requires 65 additional car spaces while the applicant has adequate space to provide for this addtional parking quota, no details of existing and proposed parking numbers is provided.

Roads require additional information showing existing parking layout and provisions for the 65 spaces required.

An additional floor area of 2168m^2 would represent an overall site area of 4x2168m^2 or 8600m^2 i.e. 2.1 acres (based on 25% site coverage).

Roads contribution of £25,000 applies in the Ballymount area a contribution of £52,500 towards the improvement of road network in the area.

MA/BMcC
23.5.91.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 23-5-91
Time 4.00

SIGNED: _____ ENDORSED: E. Foddy

DATE: _____ DATE: 23rd May 91

M. 2

EASTERN HEALTH BOARD

P.C. _____ Reg. Ref: 91A/0515

Proposed: Ext. to warehouse and build lorry wash.

At: Upperccross Estate, Ballymount Rd. Walkinstown

For: Johnson Brothers ltd.

Plans lodged: 5/4/91

Architect: _____

Observations and recommendations of Env. Health Officers and/or Supervising Env. Health Officer.

I have no objections to this proposal, subject to compliance with the 1) Food Hygiene Regulations 1950-89 and 2) Health Safety + Welfare at work Act 1989.

Jackie Kelly
EHO
7/6/91.

pca Devine
for John O'Reilly SEHO
7/6/91.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 11.06.91
3.20

John K.

PLANNING DEPARTMENT

BOOK FOLIO

(1) Date Lodged

5-4-'91

LOCATION: Uppercross Est, Ballymount Rd, Walkinstown,

REG. REF. 91A/515

APPLICANT: Johnson Bros. Ltd.

PROPOSAL: Extension to warehouse and build lorry wash

(2) Date Referred:

DUBLIN CO. COUNCIL

(3) Rec'd San. Ser.
14 JUN 1991

SAN. SERVICES

(4) Returned from San. Services.
- 8 JUL 1991

Returned

(5) Date to Planning

FOUL SEWER

Insufficient information;

The applicant has indicated the Lorry Wash discharging to the surface water system. This is unacceptable.

The applicant must resubmit indicating the lorry wash discharging through ① a mud trap ② a petrol/oil interceptor to the foul sewer. ③ ~~Gas~~

The applicant must submit details of ~~the his~~ the licence existing licence to discharge to the public.

SURFACE WATER

Refusal recommend.

The proposal to discharge the ... to the surface water is not acceptable; See above.

(6) Date to Planner

(7) D.P.C. report to be submitted before

(8) D.P.C. report submitted to S.A.C.:

[signature]
2.7.91

J.K.
3/7/91

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 11.07.91
Time 9.35

(9) Decision due:

ENDORSED DATE

4

PLANNING DEPARTMENT BOOK FOLIO

1) Date Lodged 5-4-'91

LOCATION: Uppercross Est. Ballymount Rd. Walkinstown, REG. REF. 91A/515

APPLICANT: Johnson Bros. Ltd,

PROPOSAL: Extension to warehouse and build lorry wash

WATER SUPPLY

Available for zoned use 24 hour storage to be provided

N.B.

Applicant shows proposed extension to be over existing 150ϕ water main - this is unacceptable applicant to consult & agree location & diversion of this watermain with Sanitary Services Dept

J Rafferty A/SBE. 17/6/91

ENDORSED: [signature] DATE 4/7/91

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 11.07.91
Time 9.35

PLANNING DEPARTMENT BOOK FOLIO

(1) Date Lodged

5-4-'91

LOCATION: Uppercross Est, Ballymount Rd, Walkinstown

REG. REF. 91A/515

APPLICANT: Johnson Bros. Ltd

PROPOSAL: Extension to warehouse and build lorry wash

(2) Date Referred:

FOUL SEWER

Insufficient information;

The applicant has indicated the lorry wash discharging to the surface water system. This is unacceptable.

The applicant must resubmit indicating the lorry wash discharging through
(1) A mud trap (2) A petrol/oil interceptor to the foul sewer. (3) ~~...~~
The applicant must submit details of ~~the~~ ~~...~~ the ~~licence~~ existing licence to discharge to the public.

DUBLIN Co. COUNCIL

(3) Rec'd San. Ser. 14 JUN 1991

SAN. SERVICES

(4) Returned from San. Services. -8 JUL 1991

Returned

(5) Date to Planning

SURFACE WATER

Refusal recommend.

The proposal to discharge the lorry wash to the surface water is unacceptable, See above.

(6) Date to Planner

(7) D.P.O. report to be submitted before:

(8) D.P.O. report submitted to S.A.O.:

[signature] 2.7.91

J.K. 3/7/91

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 10:07:91
Time 12.15

(9) Decision due:

ENDORSED DATE

PLANNING DEPARTMENT BOOK FOLIO

1) Date Lodged
5-4-'91

LOCATION: Uppercross Est, Ballymount Rd, Walkinstown.
REG.REF. 91A/515

APPLICANT: Johnson Bros. Ltd

PROPOSAL: Extension to warehouse and build lorry wash.

WATER SUPPLY

Avail able for zoned use 24 hour storage to be provided

N.B.

Applicant shows proposed extension to be over exist 150ϕ water main - this is unacceptable applicant to consult & agree location of diversion of this water main with Sanitary Services Dept

J Hardy A/SEE.
17/6/91

ENDORSED: [signature] DATE 4/7/91

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 10:07:91
Time 12:15

Order No. P/3592/91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown for Johnson Brothers Ltd.

Christopher S. Pringle,
Glenview,
Co. Monaghan.

Reg. Ref. 91A/0515
COMP. REC'D: 06.06.1991

Report of the Dublin Planning Officer, dated 26 June 1991.

This is a submission for COMPLIANCE with Condition No. 3 of decision to Grant Permission by Order No. P/2424/91, dated, 30th May, 1991, in connection with the above. Condition 3 Stated : " That all external finishes to be agreed with the Planning Authority prior to the commencement of development "
The application was for an extension to an existing warehouse development. The applicant should be advised that the compliance is satisfactory, provided the external finishes for the extension all harmonise in colour and texture with the existing premises.

Endorsed:- _____ for Principal Officer

_____ For Dublin Planning Officer

Order:- Applicant to be informed as set out in the above report.

Dated: ~~June~~ July, 1991.

_____ Approved Officer

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

CN2216F
New file

Order No. P/2424/91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

CONT:	
Standard	N/A None
	in full
Roads	~~£30,000~~
S. Sers	~~17,000~~
Open Space:	—
Other:	
SECURITY:	
Bond / C.I.E.:	
Cash:	

Proposed to erect extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown for Johnson Brothers Ltd.

Christopher S. Pringle,
Consulting Engineer,
Glenview,
Monaghan.

Reg. Ref.	91A-0515
App. Recd:	05.04.1991
Floor Area:	2,168.3 sq. m.
Site Area:	16,997 sq. m.
Zoning:	

Report of the Dublin Planning Officer, dated 27 May 1991

This is an application for **PERMISSION** for extension to warehouse and a lorry wash at Johnson Brothers Ltd., Uppercross Estate, Ballymount Road, Walkinstown.

The site area is stated to be 4.2 acres. The floor area of the proposed development is 2,168.3 sq. m. It is proposed to retain a total of 6,395 sq. m. on the site.

By decision order PA/1947/81, Reg. Ref. WA 1247, planning permission was granted subject to ten conditions for warehouse and offices at Greenhills Road for Johnson Brothers Ltd.

The site is at the end of a long narrow undeveloped cul de sac road and backs onto the Greenhills Road. Extension is to the north of the existing building. The lorry wash is located in an area where there is an existing oil tank and pump house and generator.

The Roads Department report that the proposal requires and additional 65 car spaces. A contribution of £52,500 towards the improvement of road network in the area is required, assuming a site coverage of 25%. However, I consider it would be more reasonable for the purpose of the calculation to assume the max. permissible site coverage of 45%. * Sanitary Services Department has not reported on this application.

I recommend that a decision to **GRANT PERMISSION** be made under the Local Government (Planning and Development) Acts, 1963-1990 subject to the following (7) conditions:-

* This results in a Roads contribution requirement of £30,000 rather than £52,000

(Continued)

Order No. P/2424/91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Proposed to erect extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown for Johnson Brothers Ltd.

CONDITIONS	REASONS FOR CONDITIONS
1. 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.	1. To ensure that the development shall be in accordance with the permission and that effective control be maintained.
2. That before development commences, approval under the Building Bye-Laws be obtained, and all conditions of that approval be observed in the development.	2. In order to comply with the Sanitary Services Acts, 1878-1964.
3. That all external finishes to be agreed with the Planning Authority prior to the commencement of development.	3. In the interest of visual amenity.
4. That no advertising sign or structure be erected, except those which are exempted development, without prior approval of the Planning Authority.	4. In the interest of the proper planning and development of the area.
5. That the requirements of the Chief Fire Officer be ascertained and strictly adhered to in the development.	5. In the interest of safety and the avoidance of fire hazard.
6. That the requirements of the Supervising Environmental Health Officer be ascertained and strictly adhered to in the development.	6. In the interest of health.
7. That the requirements of the Sanitary Services Department be ascertained and strictly adhered to in the development.	7. In order to comply with the Sanitary Services Acts, 1878-1964.
8. That a financial contribution in the sum of £37,500 be paid by the proposer to the Dublin County Council towards the cost of the improvement of the road network 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.	8. In the interest of the proper planning and development of the area.

R. Cousins

Order No. P/2424/91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Proposed to erect extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown for Johnson Brothers Ltd.

CONDITIONS	REASONS FOR CONDITIONS
~~9. That a financial contribution in the~~ sum of £ 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.	9. 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.

NOTE: Compliance with one or more of the conditions of this permission may result in material alterations to the development as initially proposed and, accordingly, may require the submission of a further planning application.

Order No. P/2424/91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Proposed to erect extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown for Johnson Brothers Ltd.

(Continued)

(MD/DK)

Endorsed:- _____
for Principal Officer

Richard Cremins SEP
For Dublin Planning Officer
27.5.91

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 (7) conditions set out above is hereby made.

Dated: 30 May, 1991.

K. O'Sullivan
ASSISTANT CITY & COUNTY MANAGER

to whom the appropriate powers have been delegated by Order of the Dublin City and County Manager, dated 26 April, 1991.

M.D.

DUBLIN COUNTY COUNCIL

REG. REF: 91A/515.

LOCATION: Uppercross Estate, Ballymount Rd, Walkinstown.

APPLICANT: Johnston Brothers Ltd.

PROPOSAL: Ext. to warehouse.

DATE LODGED: 5.4.91.

This application is for full permission for extension to warehouse at Walkinstown.

The extension to floor area of 2168.3m^2 requires 65 additional car spaces while the applicant has adequate space to provide for this addtional parking quota, no details of existing and proposed parking numbers is provided.

Roads require additional information showing existing parking layout and provisions for the 65 spaces required.

An additional floor area of 2168m^2 would represent an overall site area of 4x2168m^2 or 8600m^2 i.e. 2.1 acres (based on 25% site coverage).

Roads contribution of £25,000 applies in the Ballymount area a contribution of £52,500 towards the improvement of road network in the area.

MA/BMcC
23.5.91.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 23-5-91
Time 4.00

SIGNED: _____ ENDORSED: E Madden

DATE: _____ DATE: 23rd May 91

Mr. Christopher S. Pringle,
Glenview,
Co. Monaghan.

Reg. Ref. 91A-0515

2 July 1991

Re: Extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown for Johnson Brothers Ltd.

Dear Sir,

I refer to your submission received on 6th June, 1991, to comply with condition No. 3, of decision to grant permission by Order No. P/2424/91, dated 30th May, 1991, in connection with the above.

In this regard, I wish to inform you that the compliance is satisfactory, providing the external finishes for the extension all harmonise in colour and texture with the existing premises.

Yours faithfully,

for Principal Officer.

COMHAIRLE 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

18th June, 1991

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

LOCATION: **Uppercross Estate, Ballymount Road, Walkinstown**

PROPOSED DEVELOPMENT: **Extension to warehouse and build lorry wash**

APPLICANT: **Johnson Brothers Ltd.**

PLANNING REG.REF.: **91A/0515**

DATE OF RECEIPT OF SUBMISSION: **6th June, 1991**

A Chara,

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

Compliance with Conditions

Mise, le meas

A. Smith

PRINCIPAL OFFICER

Christopher S. Pringle,
Glenview,
Monaghan,
Ireland

CHRISTOPHER S. PRINGLE,
B.A., B.A.I., C.Eng., Eur.Ing., M.I.E.I., M.Cons.E.I.
Chartered Civil Engineer.

GLENVIEW
MONAGHAN
IRELAND
Tel. 047 - 82268
82844
Fax 047 - 82680

CSP\BH\3616\91

5th June, 1991.

The Planning Department,
Dublin County Council,
Block 2,
Irish Life Centre,
Lr. Abbey Street,
DUBLIN. 2

Dear Sir,

re: **Johnson Brothers Ltd; Extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road,. Walkinstown.**

Decision Order: P/2424/91 - 30.5.91.
Register Reference No. 91A-0515.

I enclose herewith copy of the above Notification of Decision to grant Planning Permission for the above, together with set of drawings.

In accordance with Condition No. 3, could you please let me have your requirements; I should be grateful for an early reply as it is hoped to commence work as soon as the Permission is granted.

Should you have any queries, please contact me.

Yours faithfully,

CHRISTOPHER S. PRINGLE.

91A/0515
1.6.0
Lond

06 JUN 91

DUBLIN COUNTY COUNCIL

Tel. 724755 (ext. 262/264)

PLANNING DEPARTMENT,
BLOCK 2,
IRISH LIFE CENTRE,
LR. ABBEY STREET,
DUBLIN 1.

Notification of Decision to Grant Permission/[redacted]

Local Government (Planning and Development) Acts, 1963-1983

To Mr. Christopher S. Pringle,
Consulting Engineer,
Glenview,
Monaghan.

Decision Order Number and Date: P/2424/91 - 30.05.1991

Register Reference No.: 91A-0515

Planning Control No.:

Application Received on: 05.04.1991

Applicant: Johnson Brothers Ltd.

Floor Area: 2,168.3 sq. m.

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/[redacted] for:-

extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown.

SUBJECT TO THE FOLLOWING CONDITIONS

CONDITIONS	REASONS FOR CONDITIONS
1. 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.	1. To ensure that the development shall be in accordance with the permission and that effective control be maintained.
2. That before development commences, approval under the Building Bye-Laws be obtained, and all conditions of that approval be observed in the development.	2. In order to comply with the Sanitary Services Acts, 1878-1964.
3. That all external finishes to be agreed with the Planning Authority prior to the commencement of development.	3. In the interest of visual amenity.
4. That no advertising sign or structure be erected, except those which are exempted development, without prior approval of the Planning Authority.	4. In the interest of the proper planning and development of the area.
5. That the requirements of the Chief Fire Officer be ascertained and strictly adhered to in the development.	5. In the interest of safety and the avoidance of fire hazard.

(Continued)

Signed on behalf of the Dublin County Council

For Principal Officer

Date: 30.05.1991

IMPORTANT: Turn overleaf for further information

DUBLIN COUNTY COUNCIL

Tel. 724755 (ext. 262/264)

PLANNING DEPARTMENT,
BLOCK 2,
IRISH LIFE CENTRE,
LR. ABBEY STREET,
DUBLIN 1.

Notification of Decision to Grant Permission/[redacted]

Local Government (Planning and Development) Acts, 1963-1983

To Mr. Christopher S. Pringle,
Consulting Engineer,
Glenview,
Monaghan.

Decision Order Number and Date: P/2424/91 - 30.05.1991
Register Reference No.: 91A-0515
Planning Control No.:
Application Received on: 05.04.1991

Applicant: Johnson Brothers Ltd. Floor Area: 2,168.3 sq. m.

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/[redacted] for:-

extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown.

SUBJECT TO THE FOLLOWING CONDITIONS

CONDITIONS	REASONS FOR CONDITIONS
1. 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.	1. To ensure that the development shall be in accordance with the permission and that effective control be maintained.
2. That before development commences, approval under the Building Bye-Laws be obtained, and all conditions of that approval be observed in the development.	2. In order to comply with the Sanitary Services Acts, 1878-1964.
3. That all external finishes to be agreed with the Planning Authority prior to the commencement of development.	3. In the interest of visual amenity.
4. That no advertising sign or structure be erected, except those which are exempted development, without prior approval of the Planning Authority.	4. In the interest of the proper planning and development of the area.
5. That the requirements of the Chief Fire Officer be ascertained and strictly adhered to in the development.	5. In the interest of safety and the avoidance of fire hazard.

(Continued)

Signed on behalf of the Dublin County Council

For Principal Officer

Date: 30.05.1991

IMPORTANT: Turn overleaf for further information

(Continued) CONDITIONS	REASONS FOR CONDITIONS
6. That the requirements of the Supervising Environmental Health Officer be ascertained and strictly adhered to in the development.	6. In the interest of health.
7. That the requirements of the Sanitary Services Department be ascertained and strictly adhered to in the development.	7. In order to comply with the Sanitary Services Acts, 1878-1964.

NOTE: Compliance with one or more of the conditions of this permission may result in material alterations to the development as initially proposed and, accordingly, may require the submission of a further planning application.

NOTE:

If there is no appeal to An Bord Pleanala against this decision PERMISSION/APPROVAL will be granted by the Council as soon as may be after the expiration of the period for the taking of such appeal. If every appeal made in accordance with the Acts has been withdrawn, the Council will grant the PERMISSION/APPROVAL after the withdrawal.

An appeal against the decision may be made to An Bord Pleanala. The applicant may appeal within one month from the date of receipt by him of this notification. ANY OTHER PERSON may appeal within twenty-one days beginning on the date of the decision.

An appeal shall be in writing and shall state the subject matter and grounds of the appeal. It should be addressed to:—

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

(1) An appeal lodged by an applicant or his agent with An Bord Pleanala will be invalid unless accompanied by a fee of £36 (Thirty-six Pounds). (2) A party to an appeal making a request to An Bord Pleanala for an Oral Hearing of an appeal must, *in addition* to (1) above, pay to An Bord Pleanala a fee of £36 (Thirty-six Pounds). (3) A person who is not a party to an appeal must pay a fee of £10 (Ten Pounds) to An Bord Pleanala when making submissions or observations to An Bord Pleanala in relation to an appeal.

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

FUTURE PRINT LTD.

RECEIPT CODE

COMHAIRLE CHONTAE ÁTHA CLIATH

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 35354

Balance

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

£ 136.22

Received this 24th day of April 1991

from Invicta Engineering Ltd

the sum of one hundred and thirty six Pounds

twenty two Pence, being balance

of fee on 91A/515

Class 4

Cashier

S. CAREY
Principal Officer

DUBLIN COUNTY COUNCIL

Tel. 724755 (ext. 262/264)

PLANNING DEPARTMENT,
BLOCK 2,
IRISH LIFE CENTRE,
LR. ABBEY STREET,
DUBLIN 1.

Notification of Decision to Grant Permission/[redacted]

Local Government (Planning and Development) Acts, 1963-1983

To Mr. Christopher S. Pringle,
Consulting Engineer,
Glenview,
Monaghan.

Decision Order Number and Date P/2424/91 - 30.05.1991
Register Reference No. 91A-0515
Planning Control No.
Application Received on 05.04.1991

Applicant Johnson Brothers Ltd.

Floor Area: 2,168.3 sq. m.

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/[redacted] for:-

extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown.

SUBJECT TO THE FOLLOWING CONDITIONS

CONDITIONS	REASONS FOR CONDITIONS
1. 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.	1. To ensure that the development shall be in accordance with the permission and that effective control be maintained.
2. That before development commences, approval under the Building Bye-Laws be obtained, and all conditions of that approval be observed in the development.	2. In order to comply with the Sanitary Services Acts, 1878-1964.
3. That all external finishes to be agreed with the Planning Authority prior to the commencement of development.	3. In the interest of visual amenity.
4. That no advertising sign or structure be erected, except those which are exempted development, without prior approval of the Planning Authority.	4. In the interest of the proper planning and development of the area.
5. That the requirements of the Chief Fire Officer be ascertained and strictly adhered to in the development.	5. In the interest of safety and the avoidance of fire hazard.
(Continued)	

Signed on behalf of the Dublin County Council [signature]
for Principal Officer

Date 30.05.1991

IMPORTANT: Turn overleaf for further information

(Continued) CONDITIONS	REASONS FOR CONDITIONS
6. That the requirements of the Supervising Environmental Health Officer be ascertained and strictly adhered to in the development.	6. In the interest of health.
7. That the requirements of the Sanitary Services Department be ascertained and strictly adhered to in the development.	7. In order to comply with the Sanitary Services Acts, 1878-1964.
NOTE: Compliance with one or more of the conditions of this permission may result in material alterations to the development as initially proposed and, accordingly, may require the submission of a further planning application.	

NOTE:

If there is no appeal to An Bord Pleanala against this decision PERMISSION/APPROVAL will be granted by the Council as soon as may be after the expiration of the period for the taking of such appeal. If every appeal made in accordance with the Acts has been withdrawn, the Council will grant the PERMISSION/APPROVAL after the withdrawal.

An appeal against the decision may be made to An Bord Pleanala. The applicant may appeal within one month from the date of receipt by him of this notification. ANY OTHER PERSON may appeal within twenty-one days beginning on the date of the decision.

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

FUTURE PRINT LTD.

CHRISTOPHER S. PRINGLE,

B.A., B.A.I., C.Eng., M.I.E.I., M.Cons.E.I.

Chartered Civil Engineer.

GLENVIEW
MONAGHAN
Tel. 047 - 82268
Fax 047 - 82680

CSP/BH/3616/91

Register Reference : 91A/0515.

22nd April, 1991.

Dublin County Council,
Planning Department,
Block 2,
Irish Life Centre,
Lower Abbey Street,
DUBLIN. 1.

Dear Sirs,

re: **Johnston Bros, Uppercross Estate, Ballymount Road, Walkinstown. - Warehouse Extension.** (91A/515),

Further to your letter of 10th April, 1991, I enclose herewith cheque for £136.22, as requested.

Receipt No. N 35354 to M. O'Hare

I also enclose two copies of Calculations and two copies of Certificate as requested by Mr. Eugene McDonough, Building Control Section.

Yours faithfully,

CHRISTOPHER S. PRINGLE.

91A/0515

2.0.0.1

Mrs A.1

23 APR 91

CHRISTOPHER S. PRINGLE,
B.A., B.A.I., C.Eng., M.I.E.I., M.Cons.E.I.
Chartered Civil Engineer.

GLENVIEW
MONAGHAN
Tel. 047 - 82268
Fax 047 - 82680

CSP/BH/3616/91

Register Reference : 91A/0515.

22nd April, 1991.

Mr. Eugene McDonough,
Building Control Section,
Liffey House,
24 - 26 Tara Street,
DUBLIN. 2.

RECEIVED
23APR1991
REG. SEC 91A/0515

Dear Mr. McDonough,

re: **Johnston Bros, Uppercross Estate, Ballymount Road, Walkinstown. - Warehouse Extension.**

I hereby certify that the Warehouse Extension referred to above has been designed by me in accordance with the following:-

1. British Standard 449. Part 1.
2. CP3 Chapter V. Parts 1 & 2.
3. CP 110.
4. CP 114.
5. CP 111.

As a result of tests carried out by the I.I.R.S. an allowable bearing pressure of 150 KN/m².

Signed.....

CHRISTOPHER S. PRINGLE.

JOHNSON BOWS

MAY. 1981.

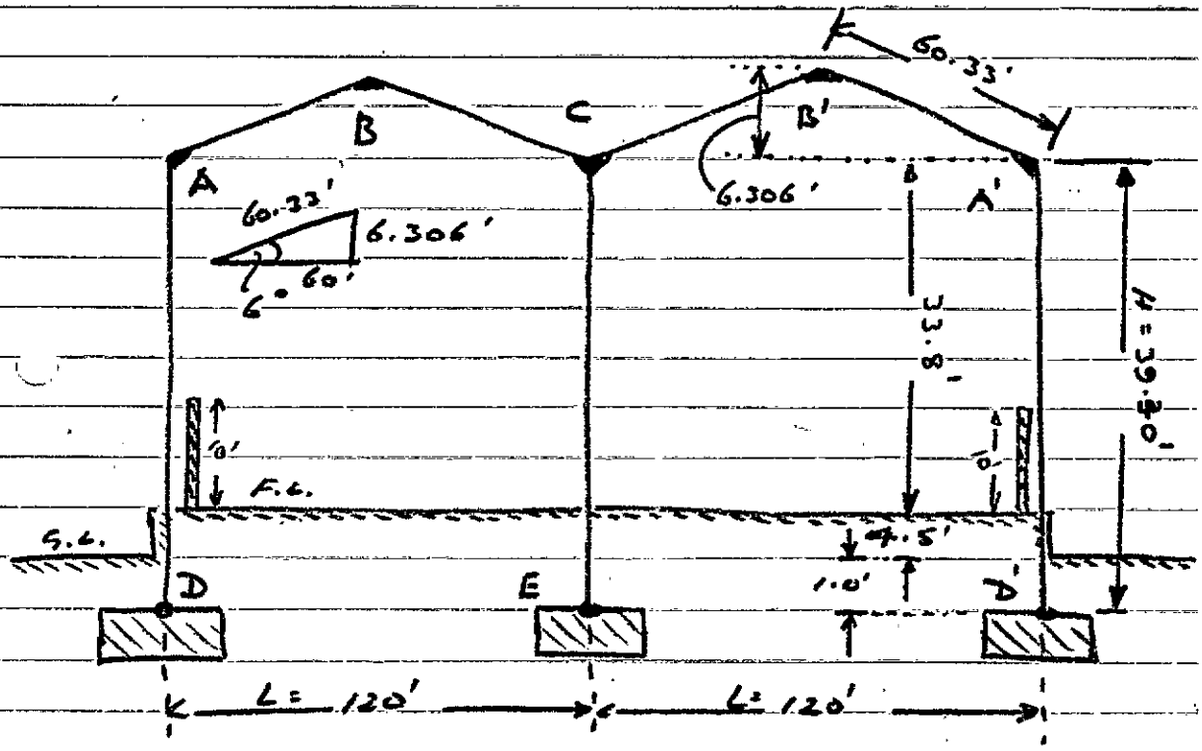
&

JAN. 1991

C.S. PRINGLE BA. BAI. C.ENG. MIEI. MCIBSE.
CONSULTING ENGINEER
GLENVIEW. MOATE

JOHNSON BROS LTD - GREENHILLS RD

WAREHOUSE – PORTAL FRAME DESIGN.



Frames @ 24.6' c/c.

DEAD LOAD: [Per 24.6' BAY].

(a) ROOF SHEETING

T.N.R. 35"x0.7mm : 7.26
50mm FIBREGLASS. : 1.00.
T.N.R. 25x07mm : 6.99
= 15.25 Kg/m² = 3.13 lb./ft².
Laps etc = 0.07
3.20 lb/ft².

(b) PURLINS : (@ 2400 c/c)

MULTIBOOM. Ref: 80088 : 4.553 lb/Lm. ft. Allow: 4.6 lb/ft.

(c) RAFTERS : Assume : 110 lb/ft.

(d) STANCHIONS / SIDE SHEETING : Stanchions : Assume 120 lb/ft.
Side Sheeting + Rails : 4.0 lb/ft².

Dead load - Per 24.6 Bay, 240' span.

(a) Roof: — 3.20 lb/ft^2

Area of Roof: 60.33 × 4 × 24.6 = 5936.5 ft^2

∴ Total load (roof) = 5936.5 × 3.20

= 18,997 lb.

(b) Purlins — 4.6 lb/lin. ft.

4 × 9 = 36 Runs × 24.6' = 885.6'

Wt/ft = 4.6 lb ∴ Total load (purlins) = 4,074 lb

(c) Rafters — 110 lb/L.ft.

Total length/frame: 60.33 × 4 = 242'
Haunches: 66' ÷ 2 = 33'
275'

275' × 110 lb = 30,250 lb.

∴ Total load (a)+(b)+(c) = 53,312 lb
= 23.80 tons.
∴ Total UDL per 240' = 23.8 Tons = 0.10 Tons/ft.

(d) Stanchions/Side sheeting (per stanchion DA + D'A')
Eaves beams = 24.6 × 100 = 2460 lb.
Stanchion = 39.3 × 150 lb. = 5895 lb.
S/sheeting = (39.3 − 10) × 24.6 × 4 = 2883 lb.
11,238 lb = 5.01 tons.
say 5.0 tons

(d)(Cont)

RE CENTRE STANCHION [CE].

(assume : 120 lb/ft.)

120 × 39.3 = 4716 lb = **2.11 TONS.**

LIVE LOAD.

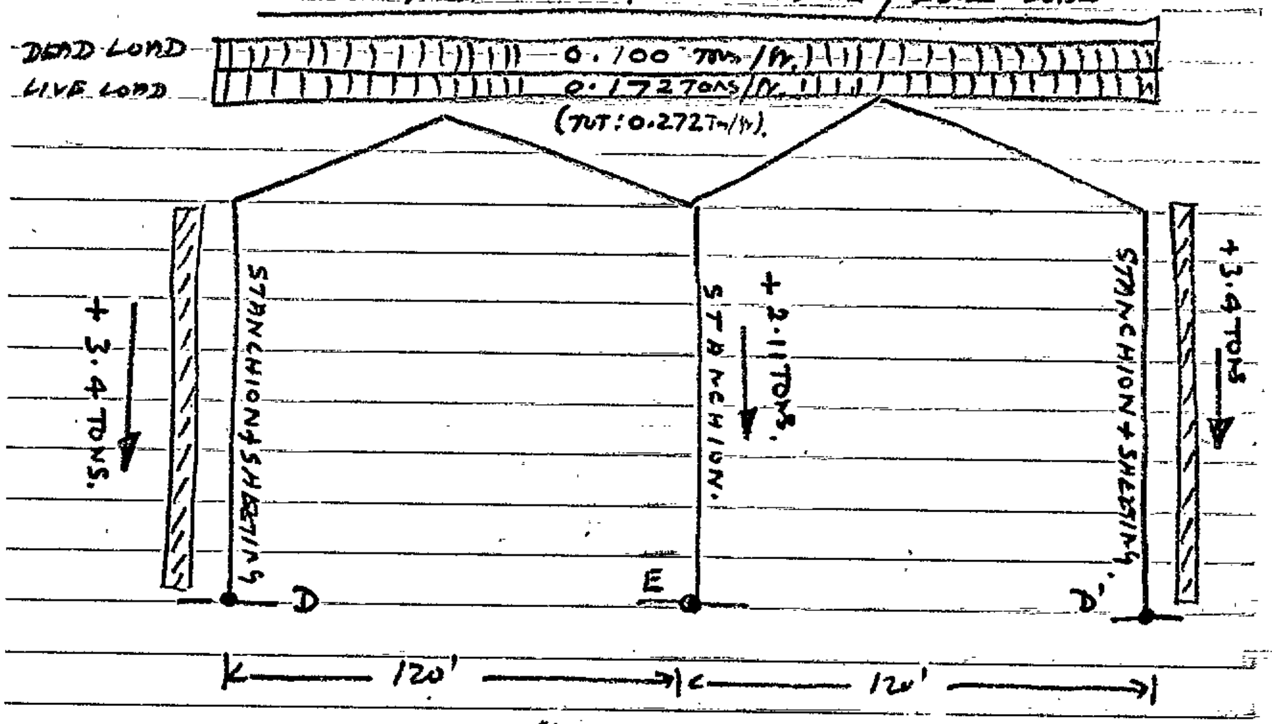
15.6 lb/ft², Normal to roof.

∴ TOTAL LIVE LOAD/BAY: 15.6 × 60.33 × 4 × 24.6
= 92609 lb

= 41.35 Tons.

∴ **U.D.L. Live Load, on 240' = 0.172 Tons/ft.**

LOADING SUMMARY – LIVE LOAD / DEAD LOAD



WIND LOAD

[In Accordance with CP 3, Ch III V, Part 2. 1972].

$V_S = V \cdot S_1 S_2 S_3$.

$V = 46 m/sec = 103$ MPH.

$S_1 = 1.1$.

$S_2 = 0.94$ (Class C. (1). 15m.)

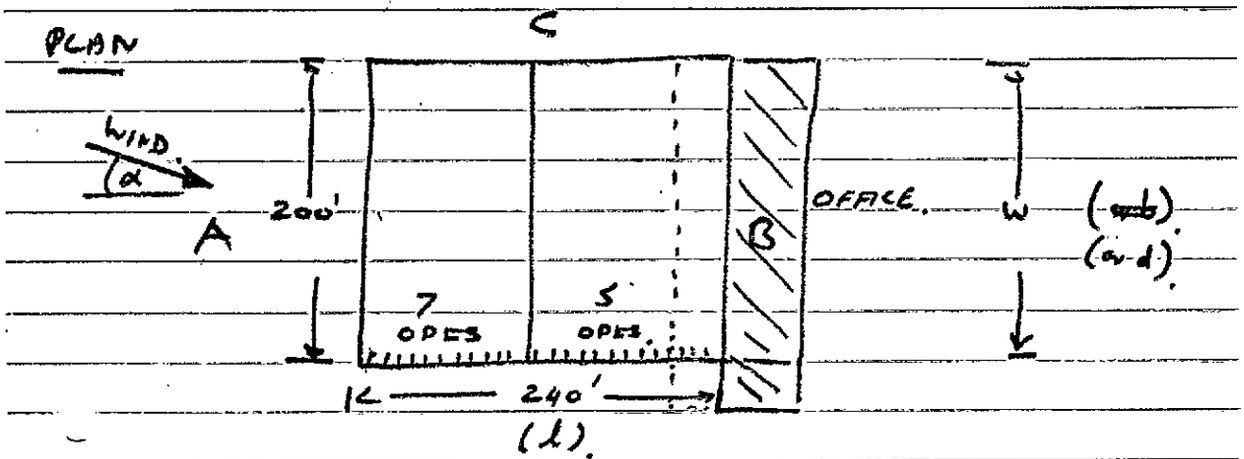
$S_3 = 1.00$. ($S_3 = 0.77$ during Construction).

$\therefore V_{S_1}$ [Calculated Stress] $= 106.5$ MPH. $\therefore q_1 = 29 lb/ft^2$

V_{S_2} [Under Construction] $= 82$ MPH. $\therefore q_2 = 17.2 lb/ft^2$.

WIND LOAD - CONT'D.

PLAN



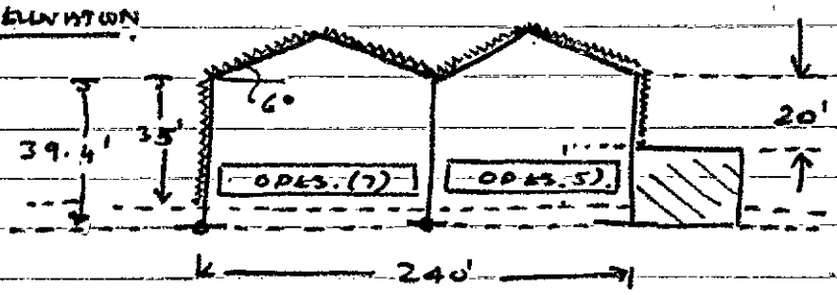
OPES: $10' \times 10' \times 12 = 1200\ ft^2$

GABLE AREA (about C.L.):

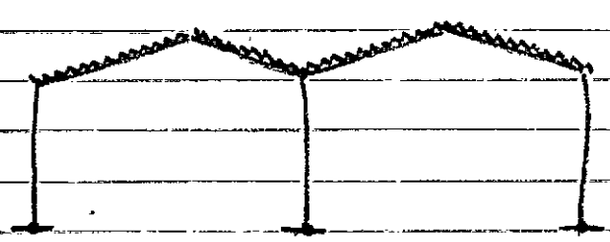
$34 \times 240 + 120 \times 6.3 = 8916\ ft^2$.

$\therefore$ % OPES : 13%.

END ELEVATION

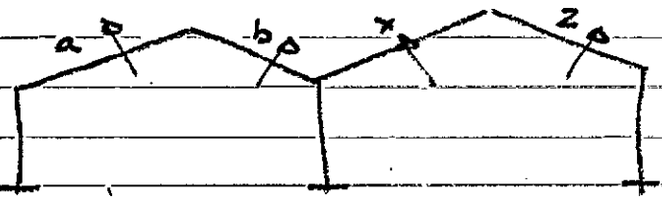


CANOPY ROOF (DURING CONSTRUCTION)



WIND LOAD – CONTD. [C.P. 3. CH. V. PART 2: 1972]

ROOF (CONSTRUCTED)



$b = 240'$
$d = 200'$

Cpe

WIND ⊥	a	b	x	z
0° :	−1.0	−0.6	−0.3	−0.3

90° : VALUES : −0.8 TO −0.2,

DESIGNING INTERNAL PRESS: TAKE −0.6

FRICTIONAL DRAG.

$h < b$ ROOF WALLS

$\therefore F' = C_f' q\, b\,(d - 4h) + C_f' q\, 2h\,(d - 4h)$.

Take $C_f' = 0.02$. $\alpha = 90°$

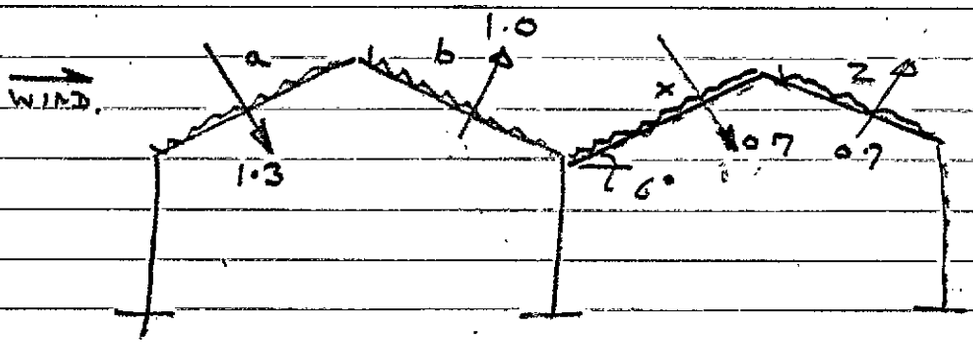
$\therefore F' = 0.02 \times 29 \times 240(2w - 160) + 0.02 \times 29 \times 80(2w - 160)$

$= 2 \times 5.5 \cdot 68$ lb. $+ 2 \times 185$ C lb.

$F' =$ 5.0 TONS (ROOF) + 1.7 TONS. (WALLS.)

ROOF (DUAL CONSTRUCTION)

Cp

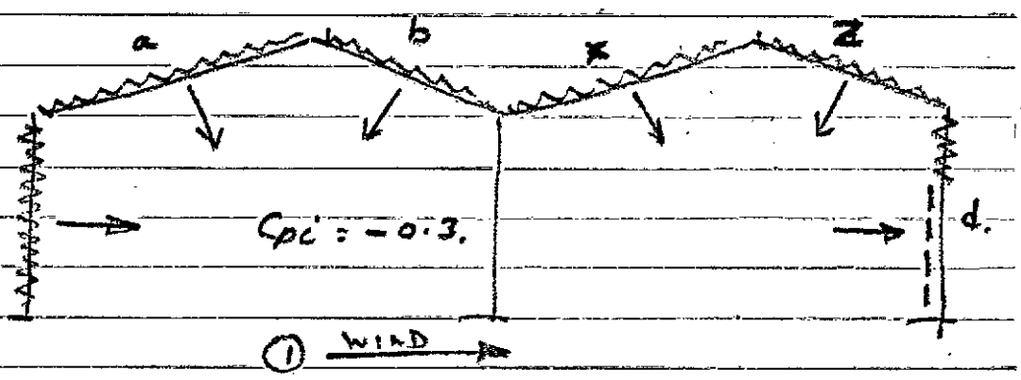


a : $C_p = +1.3\,w - 0.7$.

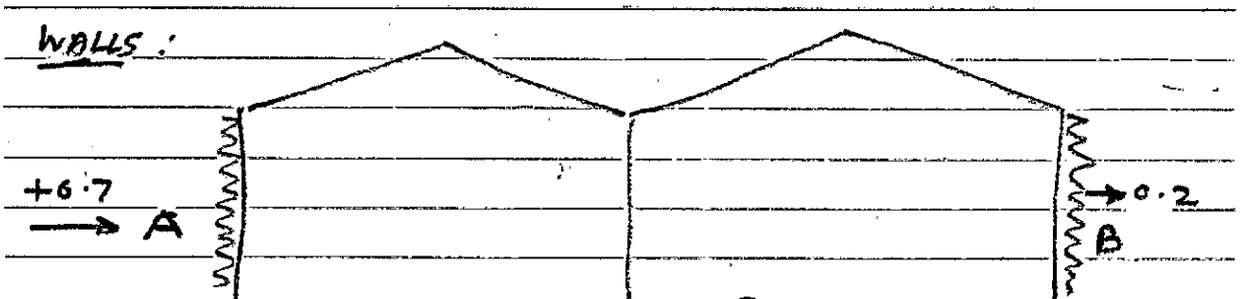
b : $C_p = -1.0$.

CONSTRUCTED

INTERNAL PRESSURE (C_{pi}).



WALLS :



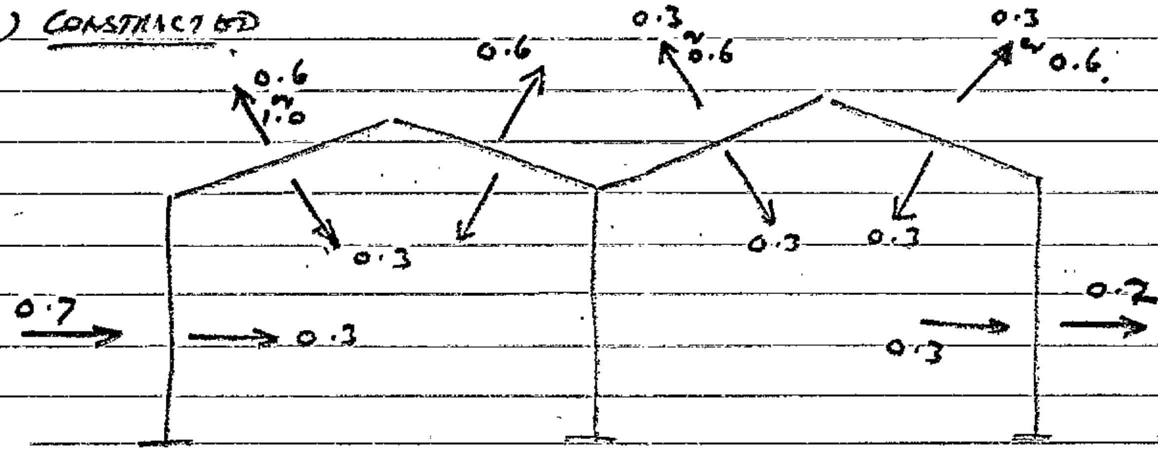
$\frac{h}{w} = \frac{40}{20} = 1\frac{1}{2}$.

$\frac{d}{w} = \frac{240}{20} = 3\frac{1}{2}$

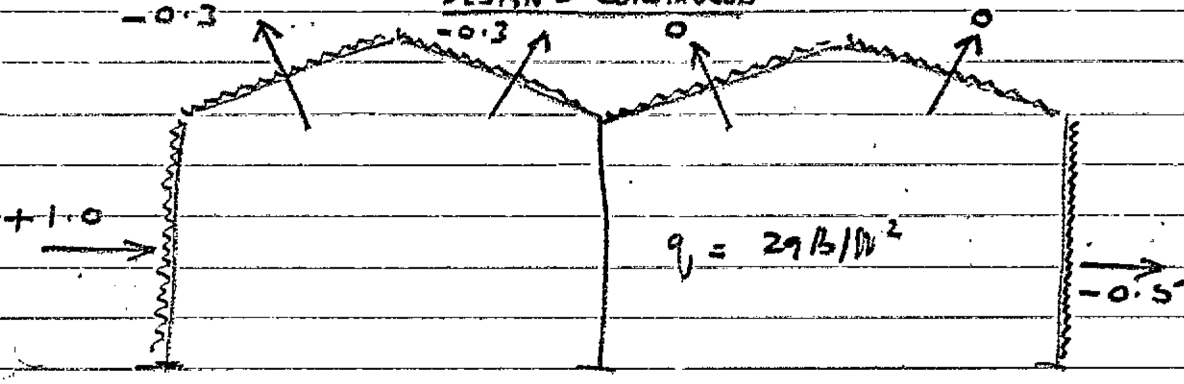
	C_{pe} A	B.
$\theta = \alpha = 0$:	+0.7	−0.2
$\theta = \alpha = 90$	−0.5	−0.5

WIND - SUMMARY (Cp).

(a) CONSTRUCTED

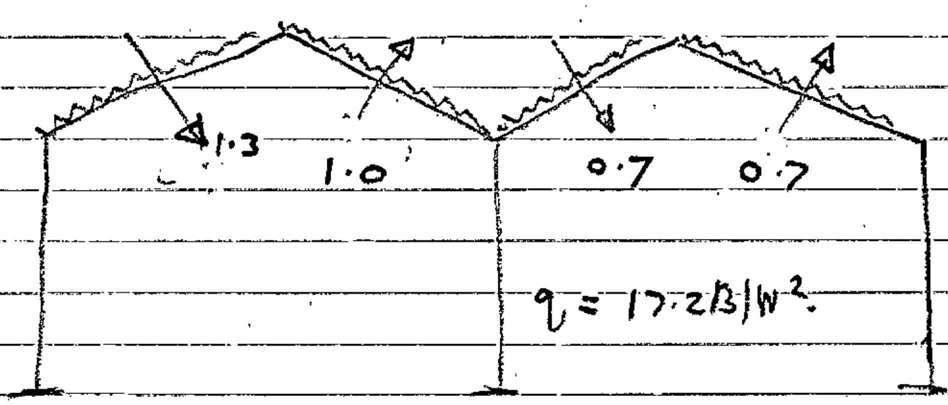


DESIGN - CONSTRUCTED



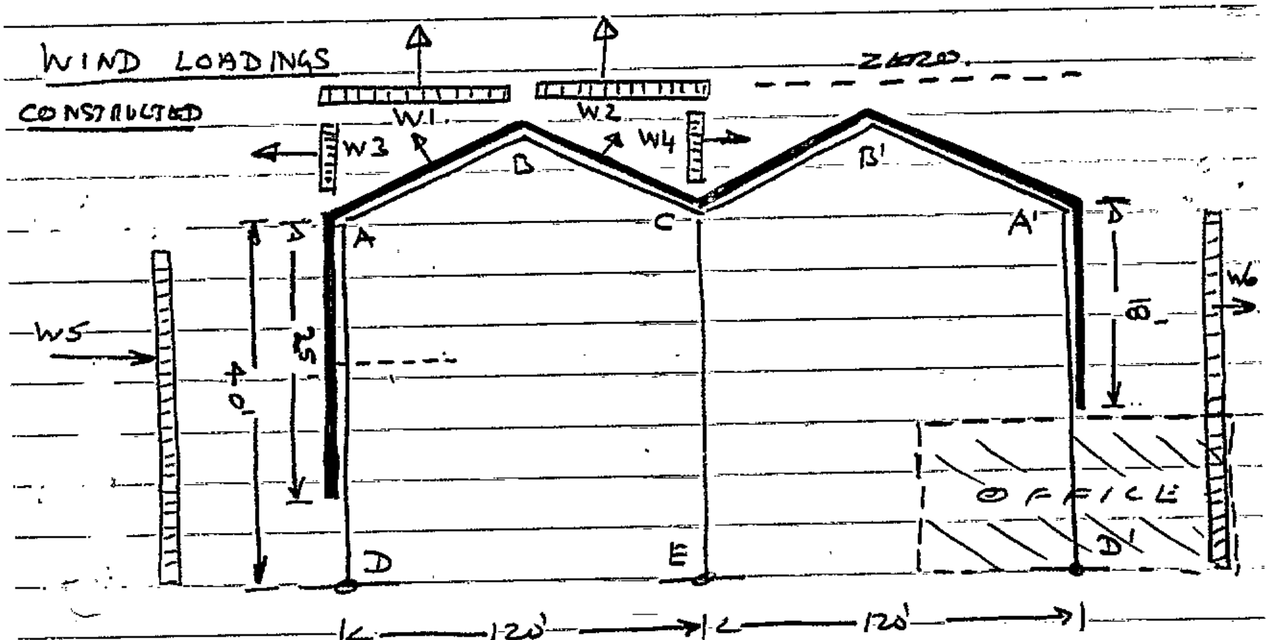
[For Cd Drag Stability]

DESIGN - DURING CONSTRUCTION



WIND LOADINGS

CONSTRUCTED



q = 29 lb/ft² Frames @ 24.6' c/c

W5 = 1.0 × 29 × $\frac{24.6}{2240}$ × 25 = 7.9 Tons.

DISTRIBUTED OVER 40' = 0.20 TONS/FT – SAY : 0.20 Tons/ft

W6 = 0.5 × 29 × $\frac{24.6}{2240}$ × 18 = 2.86 TONS.

DISTRIBUTED OVER 40' = 0.072 Tons/ft – SAY : 0.10 Tons/ft

W1 & W3 Normal to Roof:

= 0.3 × 29 × 24.6 × 60.33 = 5.76 TONS.

VERTICAL : 5.76 × Cos 6 = 5.73 TONS = 0.10 Tons/ft.

HORIZONTAL : 5.76 × Sin 6 = 0.60 Tons = 0.10 Tons/ft.

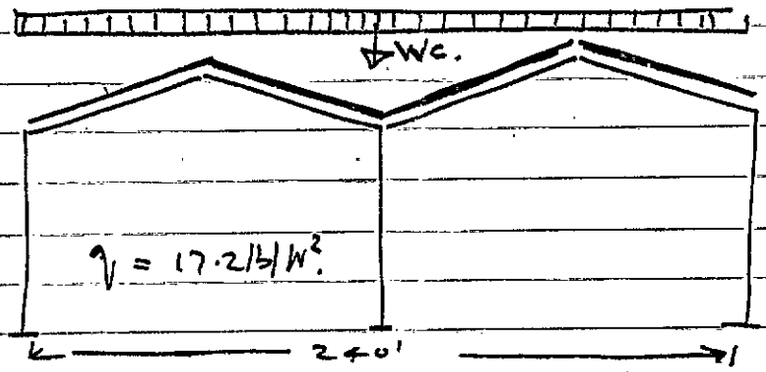
W2 & W4 : VERTICAL : 0.10 TONS/FT.

HORIZONTAL : 0.10 Tons/ft.

① DESIGN SITUATIONS — WIND — SUMMARY

DURING CONSTRUCTION

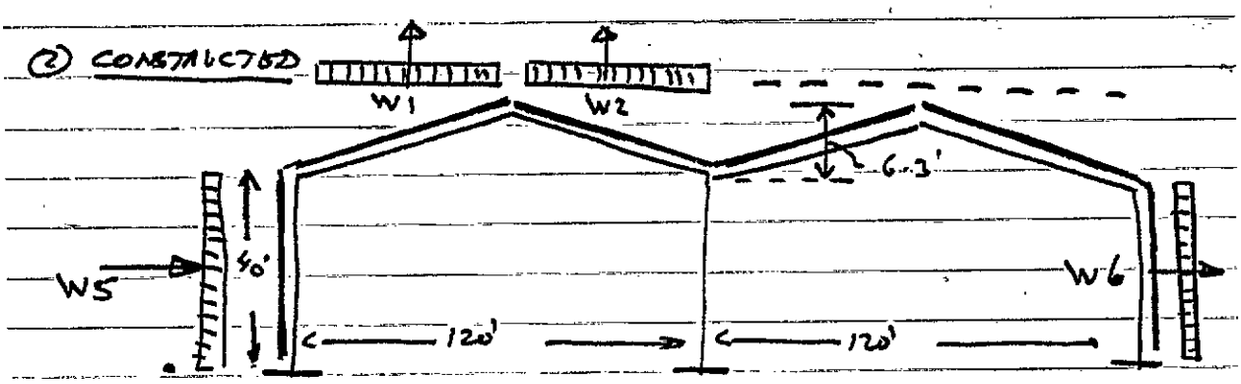
Refering to P. ⑧, it will be assumed that a Cp of 0.4 (Sachs) will apply, uniformly distributed across the 2 Spans, with a resultant q of 17.2 lb/ft².



$$W_c = \frac{0.4 \times 17.2 \times 24.6 \times 240}{2240} = 18.13 \text{ Tons}$$

$$W_c = 0.08 \text{ Tons/ft.}$$

② CONSTRUCTED



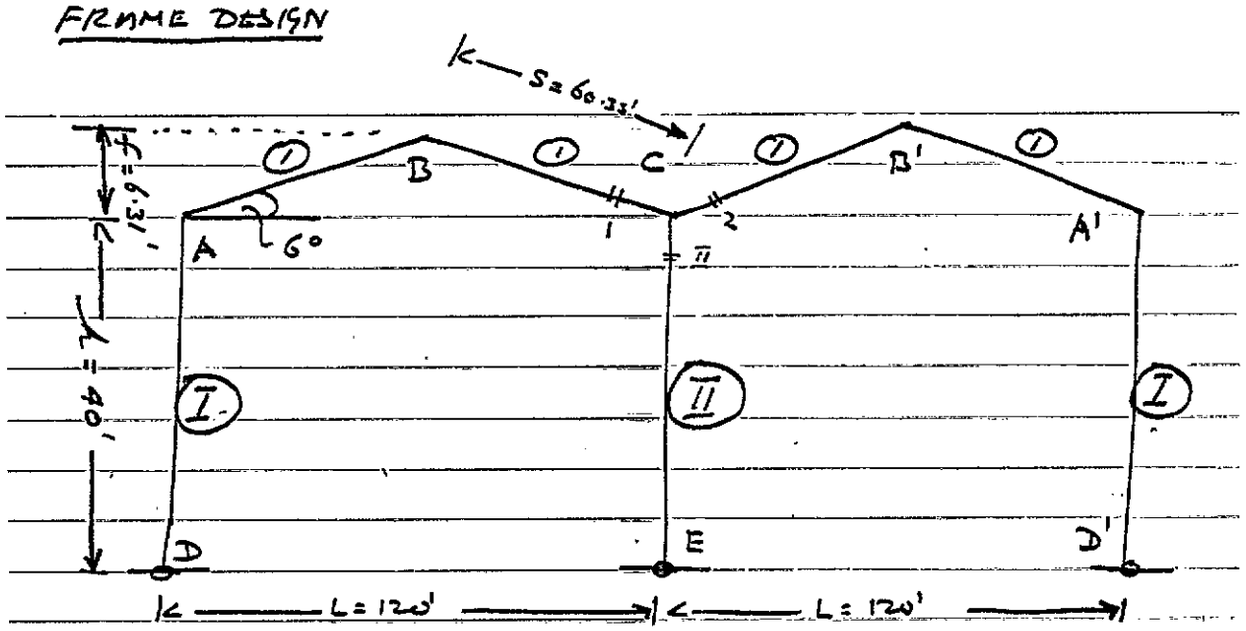
$W_1 = W_2 = 0.10$ Tons/ft. $L = 120'$.

$W_5 = 0.20$ Tons/ft over $h = 40'$

$W_6 = 0.10$ Tons/ft over $h = 40'$

[Note: Shall neglect W_5 & W_6; Ignore W_3 & W_4.] P. 9.

FRAME DESIGN



FRAME DESIGN (6) AS FRAME VIII. P. 332. STEEL DESIGNERS MANUAL. 4th. EDITION.

(6) B.S. 449: PART 1: 1970.

(c) SECTIONS TO B.S. 4. PART 1. (B.S.C.).

(d) GRADE 43 STEEL.

RATIO OF MOMENTS OF INERTIA: II : 1.0. I : 5.0 ① : 4.0.

CONSTANTS.

$$\phi = \frac{f}{h} = \frac{6.31}{40} = 0.1578.$$

$$x_1 = \frac{I_① h}{I_I S} = \frac{4 \times 40}{5 \times 60.33} = 0.5304. \qquad 0.44$$

$$x_{II} = \frac{I_① h}{I_{II} S} = \frac{4 \times 40}{1 \times 60.33} = 2.6521. \qquad 5.30.$$

$\cos\theta = \cos 6° = 0.9945.$ $\quad \sin\theta = 0.1045$

$$N_1 = 8x_1 + 12(1+\phi) + 7\phi^2 = 8 \times 0.5304 + 12(1.1578) + 7 \times 0.1578^2$$
$$= 4.2432 + 13.8936 + 0.1743$$
$$N_1 = 18.3111.$$

$$N_2 = 2x_1 + 12(1+\phi) + 4\phi^2 + 4x_{II} = 2 \times 0.5304 + 12(1.1578) + 4 \times 0.1578^2 + 4 \times 2.654$$
$$= 1.0608 + 13.8936 + 0.0996 + 10.6084$$
$$N_2 = 25.6624$$

INFLUENCE COEFFICIENTS

$$m_{11} = \frac{2}{N_1} = \frac{2}{18.311} = 0.1092$$

$$m_{12} = m_{21} = \frac{2+3\phi}{2N_1} = \frac{2+3\times 0.1578}{2\times 18.311} = 0.0675$$

$$m_{22} = \frac{x_1+2+3\phi+2\phi^2}{N_1} = \frac{0.5304+2+3\times 0.1578+2\times 0.1578^2}{18.311} = 0.1668$$

$$L_1 = \frac{2+5\phi}{4N_1} = \frac{2+5\times 0.1578}{4\times 18.311} = 0.0381$$

$$C_1 = \frac{6+7\phi}{4N_1} = \frac{6+7\times 0.1578}{4\times 18.311} = 0.0970$$

$$y_{11} = 2\phi C_1 = 2\times 0.1578\times 0.0970 = 0.0306$$

$$L_2 = \frac{2x_1+2-\phi-2\phi^2}{4N_1} = \frac{2\times 0.5304+2-0.1578-2\times 0.1578^2}{4\times 18.311}$$

$$= \frac{1.0608+2-0.1578-0.0498}{4\times 18.311}$$

$$= 0.0389$$

$$C_2 = \frac{6x_1+6+\phi}{4N_1} = \frac{6\times 0.5304+6+0.1578}{4\times 18.311}$$

$$= \frac{3.1824+6.1578}{4\times 18.311} = 0.1275$$

$$y_{12} = 2\phi C_2 = 2\times 0.1578\times 0.1275 = 0.0402$$

$$\cdot m = \frac{1}{2N_2} = \frac{1}{2\times 25.6624} = 0.0194$$

$$\cdot L' = \frac{1+\phi}{2N_2} = \frac{1+0.1578}{2\times 25.6624} = 0.0226$$

$$\cdot C = \frac{3+2\phi}{2N_2} = \frac{3+2\times 0.1578}{2\times 25.6624} = 0.0646$$

$$r = \frac{1}{N_2} = \frac{1}{25.6624} = 0.0389$$

$$y_{13} = \frac{6 + 9\phi + 4\phi^2 + 4\alpha_{11}}{2N_2}$$

$$= \frac{6 + 9 \times 0.1578 + 4 \times 0.1578^2 + 4 \times 2.6521}{2 \times 25.6624}$$

$$= \frac{6 + 1.4202 + 0.09960 + 10.6084}{2 \times 25.6624} = 0.3532$$

$$y_{23} = \frac{6 + 3\phi + 4\alpha_{11}}{2N_2}$$

$$= \frac{6 + 3 \times 0.1578 + 4 \times 2.6521}{2 \times 25.6624}$$

$$= \frac{6 + 0.4734 + 10.6084}{2 \times 25.6624} = 0.3328$$

$$y_{14} = \frac{2\alpha_1 + 6 + 3\phi}{2 \times 25.6624}$$

$$= \frac{2 \times 0.5304 + 6 + 3 \times 0.1578}{2 \times 25.6624}$$

$$= \frac{1.0608 + 6 + 0.4734}{2 \times 25.6624} = 0.1468$$

$$y_{24} = \frac{2\alpha_1 + 6 + 9\phi + 4\phi^2}{2N_2}$$

$$= \frac{2 \times 0.5304 + 6 + 9 \times 0.1578 + 4 \times 0.1578^2}{2 \times 25.6624}$$

$$= \frac{1.0608 + 6 + 1.4202 + 0.0996}{2 \times 25.6624} = 0.1672$$

$$[y_{13} + y_{14} = 0.5 \quad y_{23} + y_{24} = 0.5].$$

COMPOSITE INFLUENCE COEFFICIENTS

$S_1 = m_{11} + L_1 = 0.1092 + 0.0381 = +0.1473$

$S_1' = -L_1 + m_{21} = -0.0381 + 0.0675 = +0.0294$

$r_1 = -m_{11} + m_{21} = -0.1092 + 0.0675 = -0.0417$

$S_2 = +m_{12} - L_2 = +0.0675 - 0.0389 = +0.0286$

$S_2' = +L_2 + m_{22} = +0.0389 + 0.1668 = +0.2057$

$r_2 = -m_{12} + m_{22} = -0.0675 + 0.1668 = +0.0993$

$S' = L' + m = 0.0226 + 0.0194 = +0.0420$

$r = 2m = 2 \times 0.0194 = +0.0388$

$m_1 = \frac{+S_1 - S_1'}{2} = \frac{0.1473 - 0.0294}{2} = +0.05895$

$= L_1 - \frac{r_1}{2} = 0.0381 + \frac{0.0417}{2} = +0.05895$

$m_2 = \frac{-S_2 + S_2'}{2} = \frac{-0.0286 + 0.2057}{2} = +0.08855$

$= L_2 + \frac{r_2}{2} = 0.0389 + \frac{0.0993}{2} = +0.08855$

$y_3 = y_{23} + c\phi = 0.3328 + 0.0646 \times 0.1578 = +0.3430$

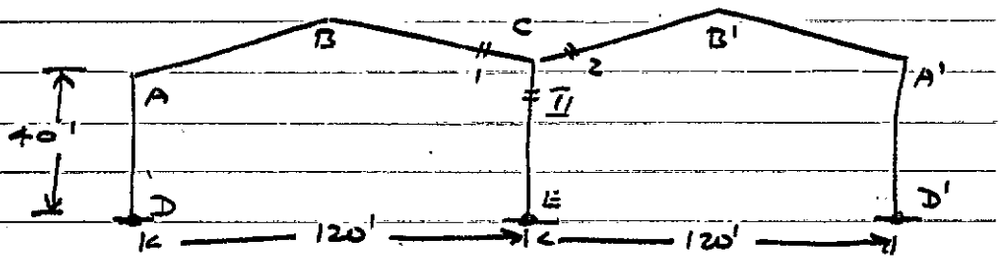
$y_{13} - y_{23} - 2c\phi = 0.3532 - 0.3328 - 2 \times 0.01019 = 0$

$y_4 = y_{24} - c\phi = 0.1672 - 0.01019 = +0.1570$

$y_{14} - y_{24} + 2c\phi = 0.1468 + 2 \times 0.01019 - 0.1672 = 0$

BENDING MOMENTS

① LIVE LOAD & DEAD LOAD : $w = 0.272$ Tons/ft. [LL+DL]



$$M_A = M_{A'} = -\frac{wL^2}{4}(m_1 + 2c_1)$$

$$= -\frac{0.272 \times 120^2}{4}(0.05895 + 2 \times 0.0970)$$

$$= -248 \text{ ft-Tons.}$$

$$M_{C1} = M_{C2} = -\frac{wL^2}{4}(m_2 + 2c_2)$$

$$= -\frac{0.272 \times 120^2}{4}(0.08855' + 2 \times 0.1275')$$

$$= -337. \text{ ft-Tons.}$$

$$M_{CII} = 0.$$

$$M_B = M'_B = +\frac{wL^2}{8} + \frac{M_A(1+2\phi) + M_{C1}}{2}$$

$$= +\frac{0.272 \times 120^2}{8} - \frac{248(1+2\times0.1578) - 337}{2}$$

$$= 490 - 331 = +159 \text{ ft-Tons.}$$

$$H_D = H_{D'} = +\frac{M_A}{40} = -\frac{248}{40} = -6.20 \text{ Tons.}$$

$$H_E = 0. \qquad V_D = V_{D'} = +16.32. \qquad V_E = +32.64.$$

$$\frac{wL^2}{32} = \frac{0.272 \times 120^2}{32} = 122 \text{ ft-lbs } (w\,S/2).$$

(2) WIND LOAD

(a) DURING CONSTRUCTION $[\omega = 0.08 \text{ Tons/ft}]$

$0.08 \simeq 0.294 \times DL + LL$. $[\omega, DL/LL = 0.272]$

BY PROPORTION :-

$M_A = M'_A = -248 \times 0.294 = -73$ ft-Tons

$M_{C1} = M_{C2} = -337 \times 0.294 = -100$ ft-Tons

$M_{C11} = 0 = 0$

$M_B = M'_B = +159 \times 0.294 = +47$ ft-Tons

$H_D = H'_D = -6.2 \times 0.294 = -1.9$ Tons

$H_E = 0 = 0$

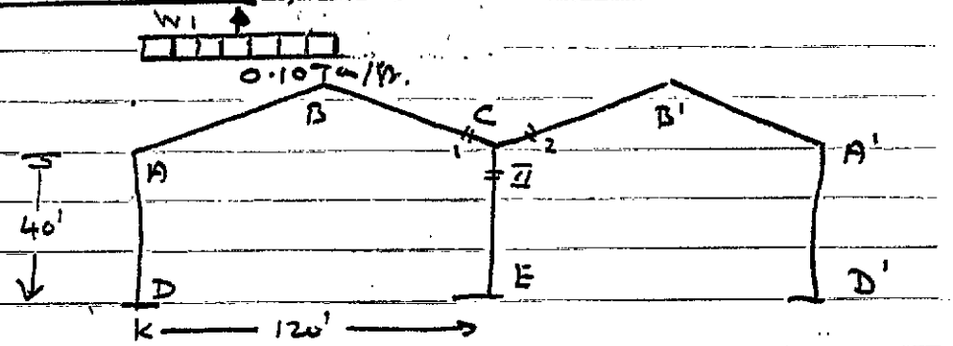
$V_D = V'_D = +16.32 \times 0.294 = +4.8$ Tons

$V_E = +32.64 \times 0.294 = +9.6$ Tons

$\frac{\omega L^2}{32} = 122 \times 0.294 = 35.9$ ft-Tons

WIND - ON CONSTRUCTED BUILDING

(A) W1



$M_A = -\frac{wL^2}{16}(-S_1 - S' - 2C_1 - 2C)$ (0.1392, 0.194)

$= \frac{0.1 \times 120^2}{16}(-0.1473 - 0.0420 - 2 \times 0.0970 - 2 \times 0.0646)$

$= +47$ ft-Tons.

$M_A' = -\frac{wL^2}{16}(-S_1 + S' - 2C_1 + 2C)$

$= \frac{0.1 \times 120^2}{16}(-0.1473 + 0.0420 - 2 \times 0.0970 + 2 \times 0.0646)$

$= +14.4$ ft-Tons.

$M_{C1} = -\frac{wL^2}{16}(+S_2 - S' - 2C_2 - 2C)$ (0.255, 0.1392)

$= -\frac{0.1 \times 120^2}{16}(+0.0286 - 0.0420 - 2 \times 0.1275 - 2 \times 0.0646)$

$= +36.7$ ft-tons

$M_{C2} = -\frac{wL^2}{16}(+S_2 + S' - 2C_2 + 2C)$

$= \frac{0.1 \times 120^2}{16}(0.0286 + 0.0420 - 2 \times 0.1275 + 2 \times 0.0646)$ (0.255, 0.1392)

$= +4.1$ ft-Tons.

$$M_{CII} = +\frac{wL^2}{8}(s' + 2c)$$

$$= +\frac{0.1 \times 120^2}{8}(0.0420 + 2 \times 0.0646)$$

$$= +30.8 \text{ ft-Tons}$$

$$M_B = -\left[\frac{wL^2}{16}\right] + \frac{M_A(1+2\phi) + M_{C1}}{2}$$

$$= -\left[\frac{0.1 \times 120^2}{16}\right] + \frac{47(1+2\times 0.1578) + 36.7}{2}$$

$$= -[90] + 49.3$$

$$= -40.7 \text{ ft-Tons}$$ CHECK

$$M'_B = -\left[\frac{M_{C2} + M'_A(1+2\phi)}{2}\right]$$

$$= -\left[\frac{4.1 + 14.4(1+2\times 0.1578)}{2}\right]$$

$$= -11.5 \text{ ft-Tons}$$

$$H_D = +\frac{M_A}{40} = +\frac{47}{40} = +1.2 \text{ TONS}$$

$$H_D' = +\frac{M'_A}{40} = +\frac{14.4}{40} = +0.4 \text{ TONS}$$

$$H_E = +\frac{M_{CII}}{40} = +\frac{30.8}{40} = +0.8 \text{ TONS}$$

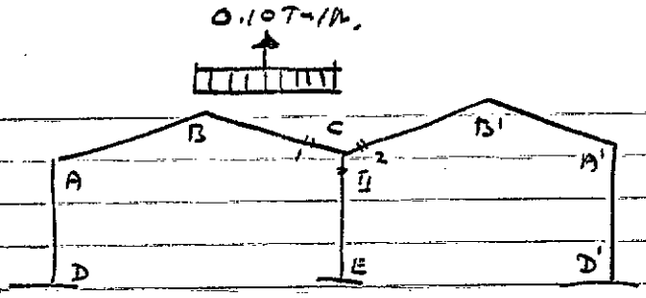
(See P. 399): [W = 6 TONS. $h/L = 0.33$.]

$$V_D = -0.8 \times W = -4.8 \text{ TONS}$$

$$V_D' = -0.02 \times W = -0.1 \text{ TONS}$$ Also: $\frac{wl^2}{32}$; 45° ft-T

$$V_E = -0.2 \times W = -1.2 \text{ TONS}$$ 25½

(b) W2



$$M_A = -\frac{wL^2}{16}\left(+S_1' - S' - 2C_1 - 2C\right)$$

$$= -\frac{0.1\times 120^2}{16}\left(+0.0294 - 0.0420 - 2\times 0.0970 - 2\times 0.0646\right)$$ (0.1940, 0.1292)

$$= +30.2 \text{ ft-Tons.}$$

$$M'_A = -\frac{wL^2}{16}\left(+S_1' + S' - 2C_1 + 2C\right)$$

$$= -90\left(+0.0294 + 0.0420 - 0.1940 + 0.1292\right)$$

$$= +22.7 \text{ ft-Tons.}$$

$$M_{C1} = -\frac{wL^2}{16}\left(-S_2' - S' - 2C_2 - 2C\right)$$

$$= -90\left(-0.2057 - 0.0420 - 0.255 - 0.1292\right)$$

$$= +56.9 \text{ ft-Tons.}$$

$$M_{C2} = -\frac{wL^2}{16}\left(-S_2' + S' - 2C_2 + 2C\right)$$

$$= -90\left(-0.2057 + 0.0420 - 0.255 + 0.1292\right)$$

$$= +26.1 \text{ ft-Tons}$$

$$M_{C\,II} = +\frac{wL^2}{8}\left(S' + 2C\right)$$

$$= +180\left(0.042 + 0.1292\right)$$

$$= +30.8 \text{ ft-Tons}$$

$$M_B = -\left[\frac{wL^2}{16}\right] + \left[\frac{M_A(1+2\phi) + M_{C1}}{2}\right]$$

$$= -\left[90\right] + \left[\frac{30.2(1+0.3156) + 56.9}{2}\right]$$

$$= -41.7 \text{ ft-Tons.}$$ CHECK

$$M_B' = -\left[\frac{M_{C2} + M'_A(1+2\phi)}{2}\right]$$

$$= -\left[\frac{26.1 + 22.7(1+0.3156)}{2}\right]$$

$$= -27.98 \text{ ft-Tons.}$$

$$H_D = +\frac{M_A}{40} = +\frac{30.2}{40}, \quad +0.8 \text{ Tons}$$

$$H_{D'} = +\frac{M'_A}{40} = +\frac{22.7}{40} = +0.6 \text{ Tons}$$

$$H_E = +\frac{M_{C2}}{40} = \frac{30.8}{40} = +0.8 \text{ Tons}$$

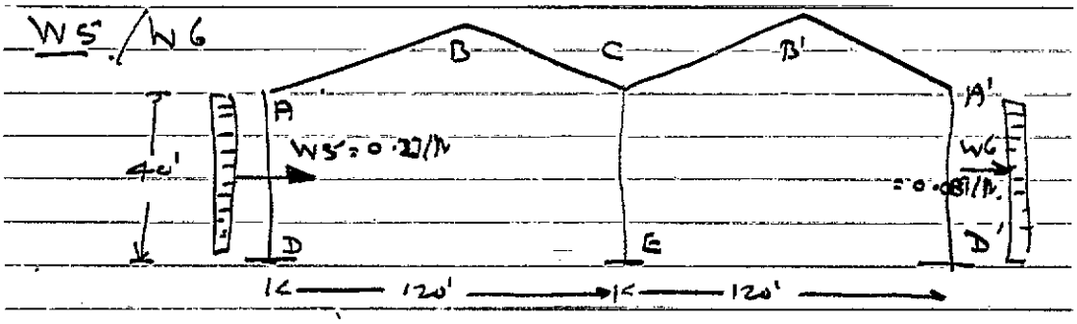
(See P. 401. W = 6 Tons. h/L = 0.33)

$V_D = -0.20W = -1.2$ Tons.

$V_{D'} = -0.022W = -0.1$ Tons. Moment: $\frac{wl^2}{32}$ = 45 ft-T @ 5/2,

$V_E = -0.81W = -4.8$ Tons.

WS / WG



WS = 0.20 Tons / Ft.

$$M_A = \frac{wL^2}{4} \times x_1 \left(-m_{11} - m\right) + \frac{wL^2}{2}\left(+y_{11} + y_{13}\right)$$

$$= \frac{0.20 \times 40^2}{4} \times 0.5304 \left(-0.1092 - 0.0194\right) + \frac{0.20 \times 40^2}{2}\left(0.0306 + 0.3532\right)$$

$$= 42.43 \left(-0.1286\right) + 160 \left(0.3838\right)$$

$$= -5.46 + 61.41 = +55.95 \text{ Ft-Tons} - \text{SAY} : -56.0 \text{ FT-Tons}$$

$$M_{A'} = \frac{wL^2}{4} \times x_1 \left(-m_{11} + m\right) + \frac{wL^2}{2}\left(+y_{11} - y_{13}\right)$$

$$= 42.43 \left(-0.1092 + 0.0194\right) + 160 \left(0.0306 - 0.3532\right)$$

$$= -3.81 - 51.62$$

$$= -55.43 \text{ Ft-Tons} - \text{SAY} : -56.0 \text{ FT-Tons}$$

$$M_{C1} = \frac{wL^2}{4} \times x_1 \left(+m_{12} - m\right) + \frac{wL^2}{2}\left(+y_{12} - y_{14}\right)$$

$$= 42.43 \left(+0.0675 - 0.0194\right) + 160 \left(0.0402 - 0.1468\right)$$

$$= +2.04 - 17.06$$

$$= -15.02 \text{ Ft-Tons} - \text{SAY} : -16.0 \text{ Ft-Tons}$$

$M_{C2} = \frac{wL^2}{4} \cdot x_1 \left(+M_{12} + m\right) + \frac{wL^2}{2}\left(+y_{12} + y_{14}\right)$

$= 42.43(0.0675 + 0.0194) + 160(0.0402 + 0.1468)$

$= 3.69 + 29.92$

$= 33.61$ ft.-Kips Say: +34.0 ft-Tons.

$M_{CII} = -2\left[\frac{wL^2}{4} \cdot x_1 m + \frac{wL^2}{2} \cdot y_{14}\right]$

$= -2\left[42.43 \times 0.0194 + 160 \times 0.1468\right]$

$= -2\left[0.823 + 23.488\right]$.

$= -48.62$ ft.-Kips; Say $-$ 50.0 ft-Tons

$M_B = -\frac{wL^2}{2}\phi + \frac{M_A(1+2\phi)}{2} + M_{C1}$

$= -160 \times 0.1578 - \frac{55.95(1+2\times0.1578)}{2} - 15.02$

$= -25.25 - 44.31 = -69.56$. Say: -70.0 ft-Tons

$M_B' = \frac{M_{C2} + M'_A(1+2\phi)}{2}$

$= +34 - \frac{55.43(1+2\times0.1578)}{2}$

$= -19.46$. Say: -20.0 ft-Kips

$H_D = +M_A/40 = +56/40 = +1.4$ Tons

$H_D' = -M_A'/40 = -56/40 = -1.4$ Tons.

$H_E = -M_{CIV}/40 = -50/40 = -1.3$ Tons.

(See P. 403. W = 8 Tons. $\nu_L = 0.33$).

$V_D = -0.08W. = -0.8$ Tons

$V_D' = +0.09W = +0.8$ Tons

$V_E = -0.02W = -0.2$ Tons.

$W_6 = 0.10$ Tons / ft.

MA : Moment at Reaction due to $W_5 \times 0.5$ – Reversed.

$M_A = 0.5 \times -56 = -28$ ft-Tons,

$M_{A'} = 0.5 \times -56 = -28$ ft-Tons,

$M_{C1} = 0.5 \times +34 = -17$ ft-Tons

$M_{C2} = 0.5 \times +16 = +8$ ft-Tons,

$M_{C\text{II}} = 0.5 \times -50 = -25$ ft-Tons.

$M_B = 0.5 \times -20 = -10$ ft-Tons

$M_{B'} = 0.5 \times -70 = -35$ ft-Tons,

$H_D = 0.5 \times +1.4 = +0.7$ Tons

$H_{D'} = 0.5 \times -1.4 = -0.7$ Tons,

$H_E = 0.5 \times -1.4 = -0.7$ Tons,

$V_D = 0.5 \times -0.8 = -0.4$ Tons.

$V_{D'} = 0.5 \times +0.8 = +0.4$ Tons,

$V_E = 0.5 \times -0.2 = -0.1$ Tons.

WIND – B.M. SUMMARY
kNm

(a) DURING CONSTRUCTION. (b) AS CONSTRUCTED

	Wc TOTAL	W1	W2	W5	W6	TOTAL
MA :	-73	+47	+30	-56	-28	-7
M'A :	-73	+15	+23	-56	-28	-46
Mc1 :	-100	+37	+57	-16	-17	+61
Mc2 :	-100	+4	+26	+34	+8	+72
McĪ :	0	+31	+31	-50	-25	-13
MB :	+47	-41	-42	-70	-10	-163
M'B :	+47	-12	-28	-20	-35	-95
HD :	-1·9	+1·2	+0·8	+1·4	+0·7	+4·1
H'D :	-1·9	+0·4	+0·6	-1·4	-0·7	-1·1
HE :	0	+0·8	+0·8	-1·4	-0·7	-0·5
VD :	+4·8	-4·8	-1·2	-0·8	-0·4	-7·2
V'D :	+4·8	-0·1	-0·1	+0·8	+0·4	+1·0
VE :	+9·6	-1·2	-4·8	-0·2	-0·1	-6·3

DESIGN :	LL+DL	WIND
MA :	-248	-73
M'A :	-248	-73
Mc1 :	-337	-100
Mc2 :	-337	-100
McĪ :	0	-13
MB :	+159	+47
M'B :	+159	+47
HD :	-6·2	-1·9
H'D :	-6·2	-1·9
HE :	0	-0·5
VD :	+163+ 5* ≏ 227	+4·9 [5·0]
V'D :	+163+ 5* ≏ 227	+4·9 [5·0]
VE :	+326 + 4* ≏ 377	+9·7 [10·0]

* = SIDE SHEETING + STANCHIONS, SEE P. 2.

$M = 350$ ft-lbs.

$M = fZ.$

$\frac{350 \times 12}{13} = Z$

$\frac{337}{1\omega}$

$\frac{437 \times 11}{13}$

$Z = 8259.23 = 504.$

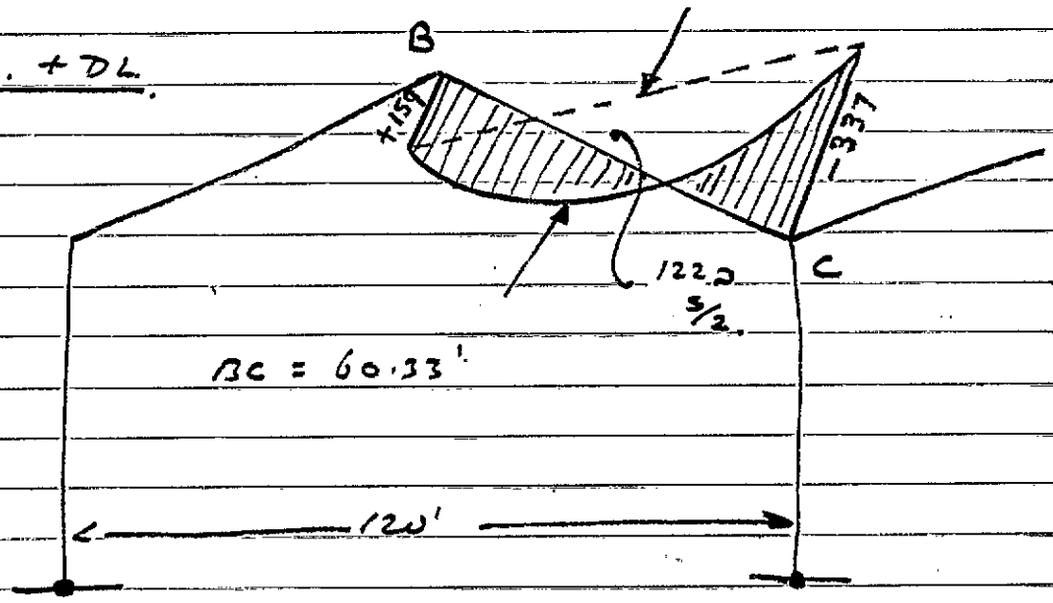
$M = fZ.$

$M = 504 \times 13 = 6550$ in-lbs

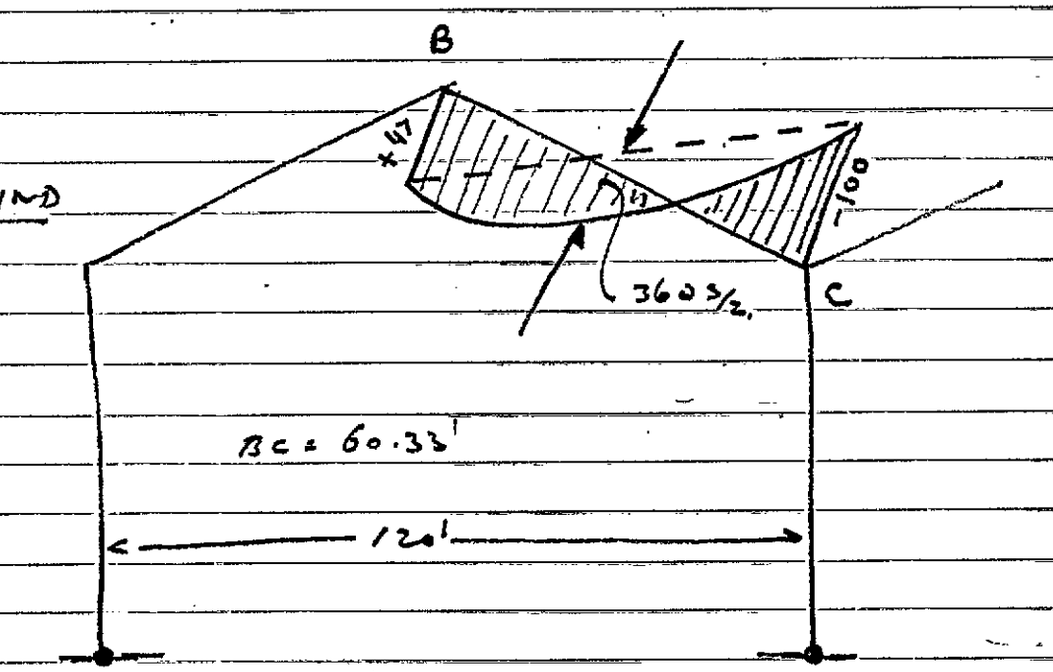
$= 545$ ft-lbs.

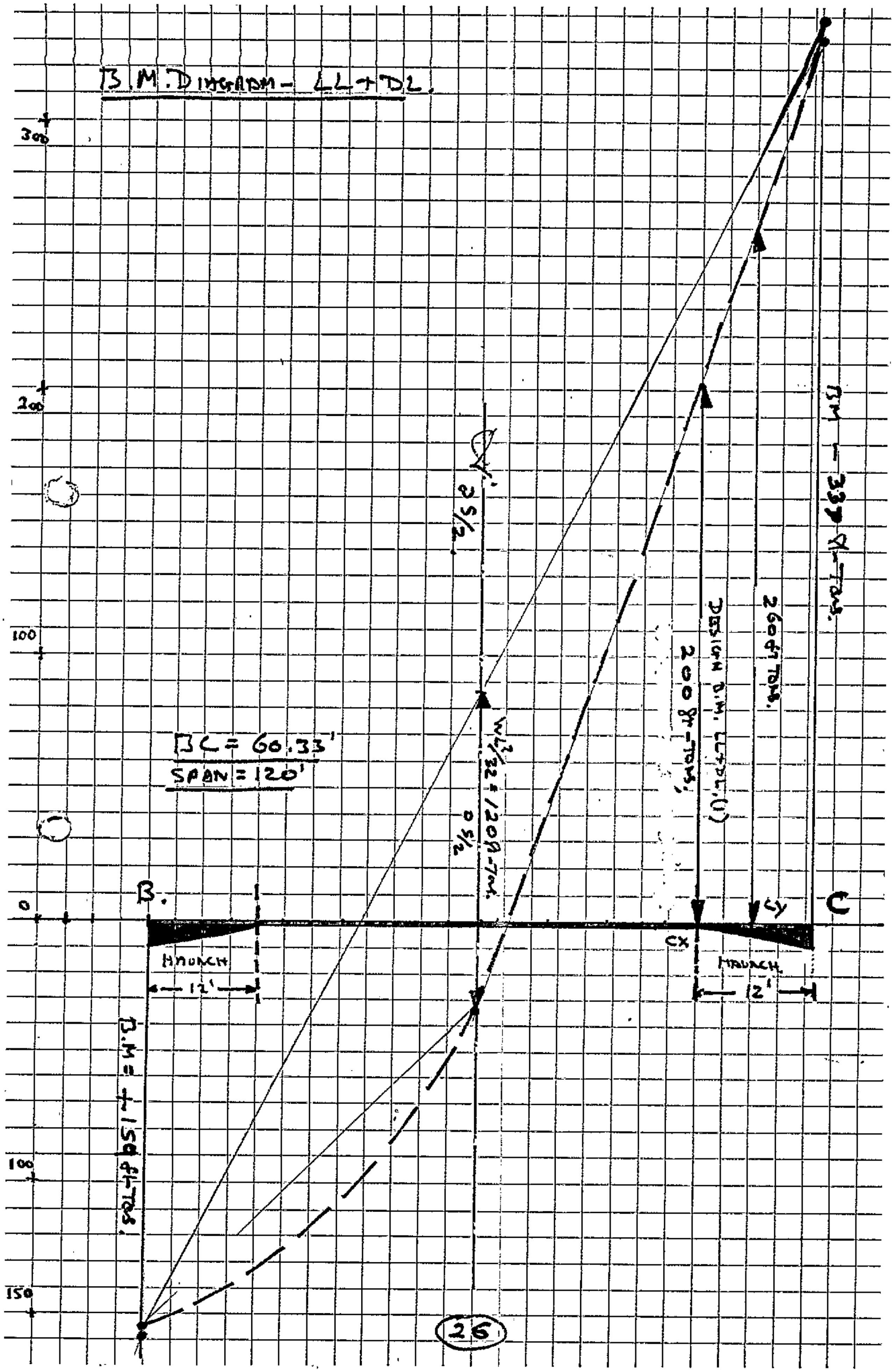
B.M. Diagrams – Ramps

1. L.L. + D.L.



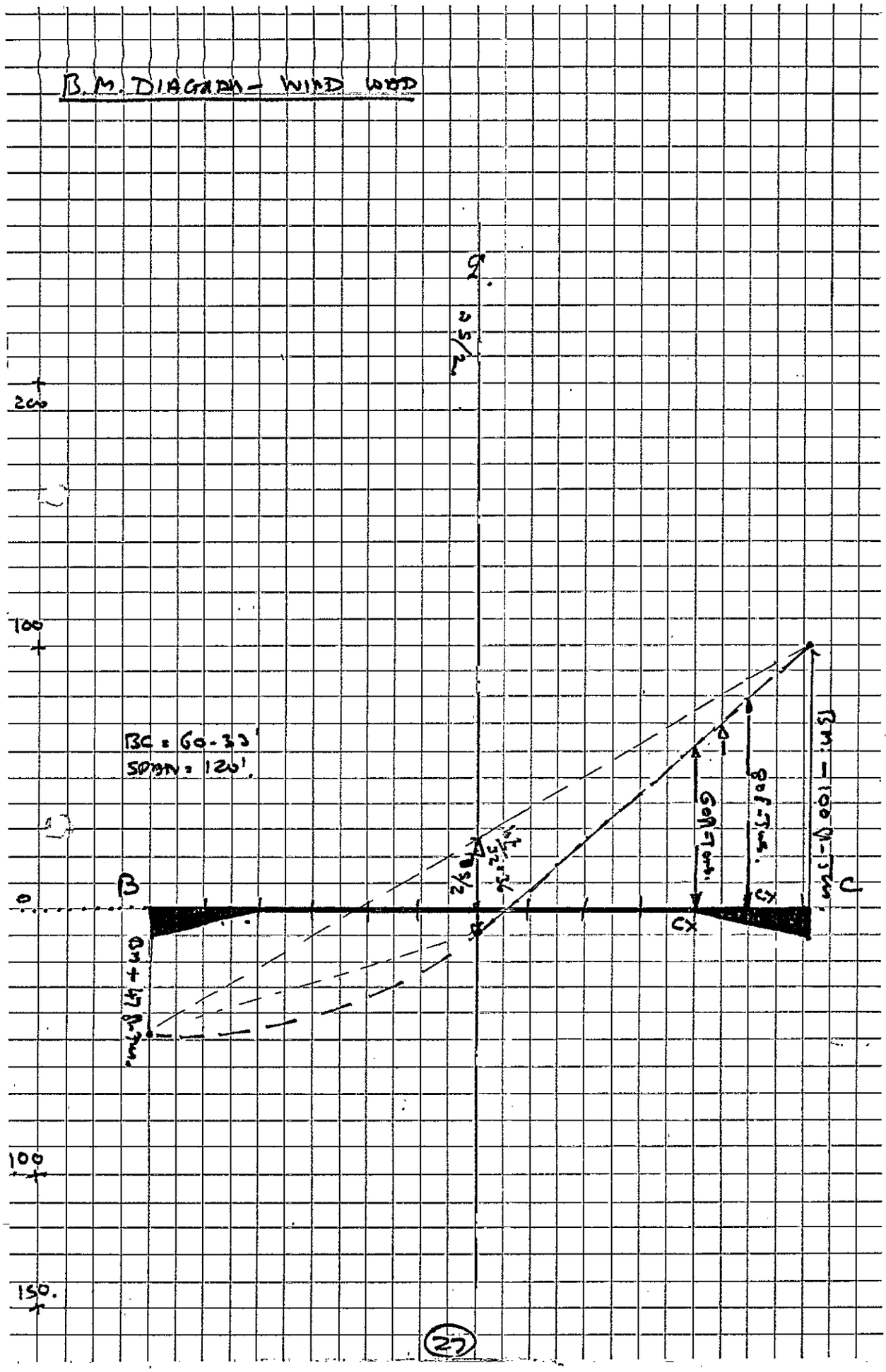
2. WIND





B.M. DIAGRAM - LL + DL.
300
200
100
0
100
150
BC = 60.33'
SPAN = 120'
B.
C
CX
CY
HAUNCH
12'
HAUNCH
12'
B.M = + 159 ft-TONS.
BM - 337 ft-TONS.
DESIGN B.M. LL+DL (1)
200 ft-TONS.
260 ft TONS.

B.M. DIAGRAM – WIND WOD



RAFTERS

1. $L = 120'$ $\therefore$ MIN DEPTH $= \frac{120 \times 12}{60} = 24'' = 610$ mm.

2. TRY: (A) $610 \times 305 \times 149$: $Z_{xx} = 4090\ cm^3$: 249.54

(B) $686 \times 254 \times 140$. : $Z_{xx} = 3988\ cm^3$: 243.3.

$F_{bc} =$ 10.7 Tn/Sq in. B.M. = 200. ft-Tn.

F_{bc} (Wind) = 13.3 Tn/Sq in. BM: 60. ft-Tn.

(A)

$M = f_1 Z$. $\therefore \frac{200 \times 12}{249.54} = f_1 = 9.618$

$M_w = f_w Z$ $\therefore \frac{60 \times 12}{249.54} = f_w = 2.885$

$\therefore \frac{f_1}{F_{bc}} + \frac{f_w}{F_{bcw}} = \frac{9.618}{10.7} + \frac{2.585}{13.375}$

$= 0.899 + 0.216$

$= 1.114$ – TOO SMALL.

TRY: – $610 \times 305 \times 179$; $Z_{xx} = 4911.\ cm^3 = 299.6$.

$M_1 = f_1 Z = \frac{200 \times 12}{299.6} = f_1 = 8.01$.

$M_w = f_w Z = \frac{60 \times 12}{299.6} = f_w = 2.40$.

$\therefore \frac{f_1}{F_{bc}} + \frac{f_w}{F_{bcw}} = \frac{8.01}{10.7} + \frac{2.40}{13.3} = 0.748 + 0.180$

$= 0.92$ OK

TRY: 686 × 254 × 170 : Z = 4911 ∴ OK.

TRY or: 762 × 267 × 147 : Z = 4483 cm³ = 273.

$M_1 = f_1 Z = \frac{200 \times 12}{273} = f_1 = 8.79.$

$M_w = f_2 Z = \frac{60 \times 12}{273} = 2.64.$

$\frac{f_1}{F_{bc}} + \frac{f_w}{F_{bc(w)}} = \frac{8.79}{10.7} + \frac{2.64}{13.375}$

$= 0.821 + 0.197$

$= \underline{1.02}.$

By using 762 × 267 × 147, as against the design wt of 110 lb/ft, reduction in wt.

$= 110 - 98 = 12 lb/ft.$

$12 lb \times 275' = 3300 lb. = 1.473$ tons.

$= 0.006$ Tons/ft.

$\frac{0.006}{0.272} = 2.2\%.$

∴ B.M. reduced by 2.2%, =

∴ New BM = 200 − 4.4 = 195.5 ft-tons.

$\therefore f_1 = \frac{195.5 \times 12}{273} = 8.59.$

$\therefore \frac{f_1}{f_{bc}} = \frac{8.59}{10.7} = 0.803$

$0.803 + 0.197 = 0.99.$

<u>USE: 762 × 267 × 147 UB</u> ∴ <u>OK</u>

STANCHIONS

(A) AXIAL LOAD

(1.) DA: (SIDE).

1. LL+DL. (ROOF) : Tons.
2. DL - Sheeting + Sheeting : 5 Tons

21.3 Tons : SAY: 22 TONS.

(2) EC: (CENTRE).

1. LL+DL. (Roof) : 32.6 Tons.
2 DL - Sheeting : 4.0 "

36.7 Tons : SAY: 38 TONS.

(B) AXIAL WIND LOAD

(1.) DA : 5.0 Tons.

EC : 10.0 Tons.

(C) BENDING MOMENTS (LL+DL.)

DA : 248 ft-Tons.

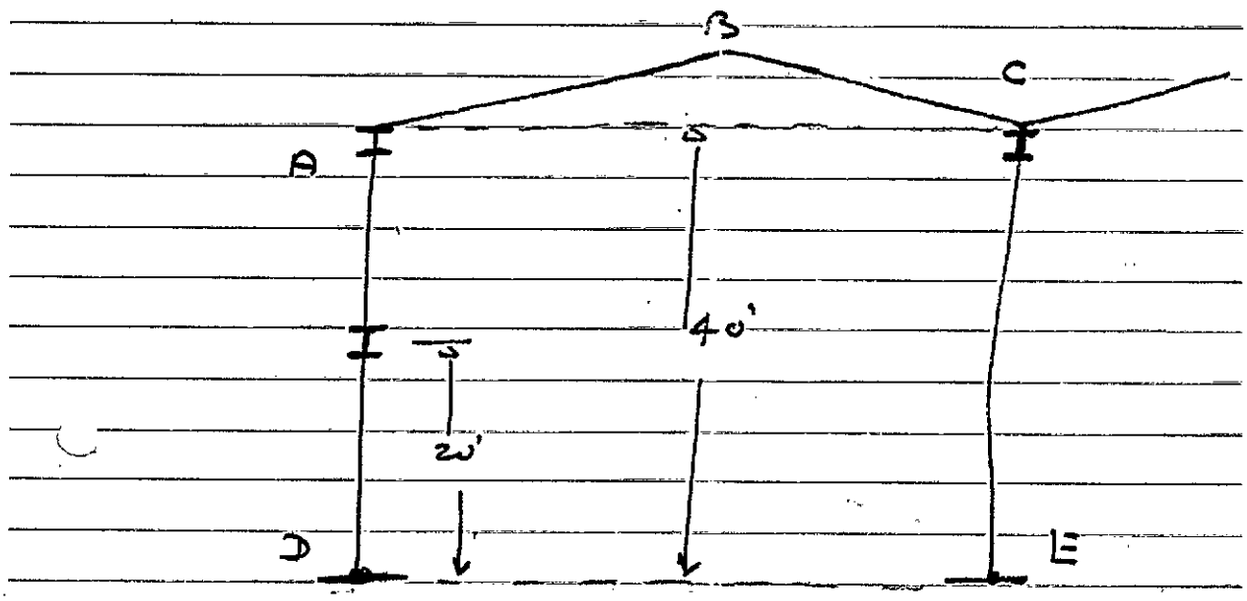
EC : ZERO.

(d) BENDING MOMENTS (WIND)

DA : 73 ft-Tons.

EC : 100 ft-Tons.

EFFECTIVE LENGTH OF STANCHIONS



DA: Effective length = 0.75 × 20 = 15' = 180"

EC: Effective length = 0.75 × 40 = 30' = 360"

SEE STANDARD DESIGN SHEETS (319 + 318)

DA: 838 × 292 × 194 U.B.

EC: 305 × 305 × 97 U.C.

STANCHION DESIGN SHEET.

CLIENT: JOHNSON BROS. FILE NO: DATE: 1981.

SIDE STANCHIONS. [DAJ.

LOADING: AXIAL (D.L + L.L)	22 TONS	W	RATIO l : L = 0.75
AXIAL (WIND)	5 TONS		LENGTH: (L) 40 FT.
OTHER ( )	— TONS		EFFECTIVE: (l') 15 FT.
BENDING: D.L + L.L	248 FT-TONS	M	" : (l) 180 INS.
WIND	73 FT-TONS		SPAN: EAVES:
OTHER ( )	— FT-TONS		SLOPE: c/c:

	PROPERTY.	CONVERSION METRIC TO IMPERIAL	UNITS (IMP)	762×267×173	838×292×176	838×292×194 M I
1	AREA OF SECTION – A	÷6.45	INS^2	34.18	34.74	38.32
2	SECTION MODULUS – Z_{xx}	÷16.39	INS^3	328.5	359.61	405.6
3	RAD. OF GYRATION – r_{yy}	÷2.54	INS.	2.19	2.322	2.385
4	EFFECTIVE LENGTH – l		INS.	180	180	180
5	SLENDERNESS RATIO – $\frac{l}{r_{yy}}$		—	82	78	76
6	ALLOWABLE AXIAL STRESS – P_c (P. 58 – B.S.S. 449). P_c(W)		T/INS^2	6.94 8.675	7.33 9.162	7.02 8.774
7	RATIO: D/T		—	35	45	38
8	ALLOWABLE BENDING STRESS – F_{bc} (P. 28. B.S.S. 449)		T/INS^2	10.68	10.68	10.68
9	ALLOWABLE B. STRESS – WIND – F_{bc} (WIND) (F_{bc} + 25%)		T/INS^2	13.35	13.35	13.35
10	ACTUAL AXIAL STRESS – $W/A = f_a$ f_a (W)		T/INS^2	0.64 0.15	0.63 0.14	0.58 0.13
11	ACTUAL BENDING STRESS – f_{bc} = $\frac{MY12}{Z_{xx}}$		T/INS^2	9.06	8.275	7.337
12	ACTUAL BENDING STRESS-WIND – f_{bc} (WIND) = $\frac{MY12}{Z_{xx}}$		T/INS^2	2.67	2.436	2.159
13	$\frac{f_a}{P_c} + \frac{f_{bc}}{F_{bc}} + \frac{f_{bc(WIND)}}{f_{bc(WIND)}}$		—	$\frac{0.64}{8.94} + \frac{0.15}{8.675}$ + $\frac{9.06}{10.68} + \frac{2.67}{13.35}$ = 1.157 NO.	$\frac{0.63}{7.33} + \frac{0.14}{9.162}$ + $\frac{8.275}{10.68} + \frac{2.436}{13.35}$ = 1.058 NO.	$\frac{0.58}{7.02} + \frac{0.13}{8.774}$ + $\frac{2.337}{10.68} + \frac{2.159}{13.35}$ = 0.95 : OK
14	SUITABILITY OF SECTION (3/19)		—			

STANCHION DESIGN SHEET

CLIENT: Johnson Bros. FILE NO: DATE: 1981.

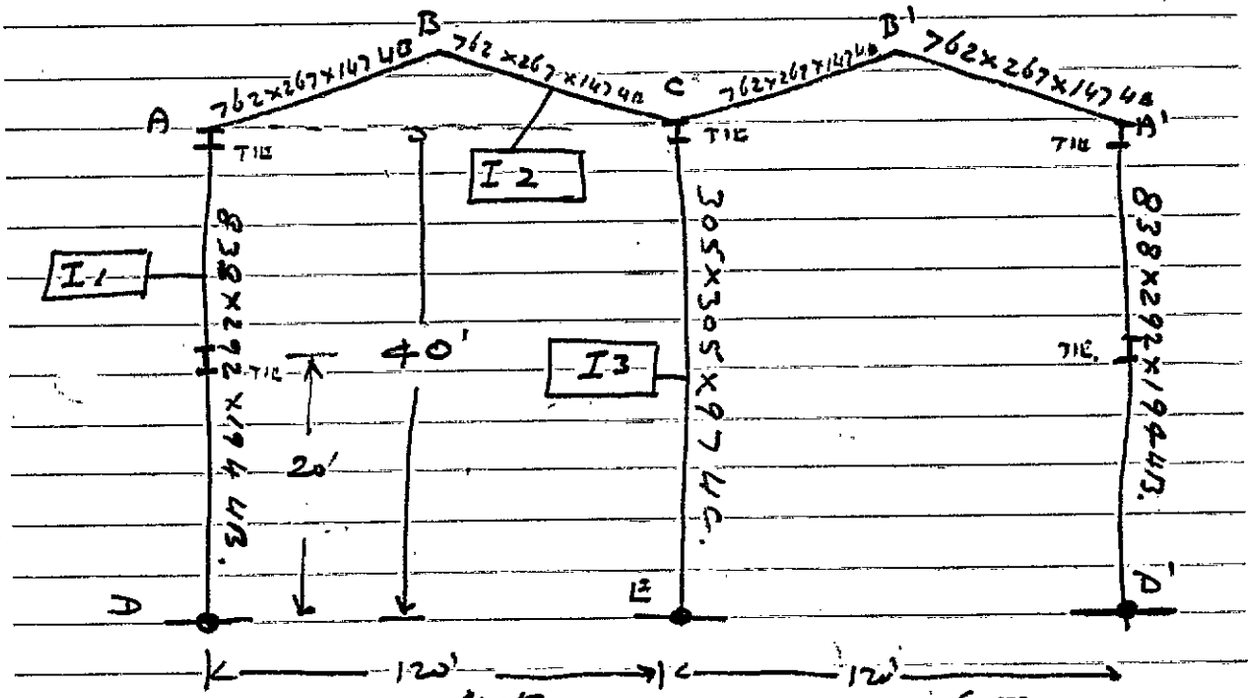
CELTIC STANCHIONS. [CE7.

LOADING: AXIAL (D.L+L.L) : 38 TONS } W
AXIAL (WIND) : 10 TONS }
OTHER ( ) : — TONS }
BENDING: D.L + L.L : — FT-TONS } M
WIND : 13 FT-TONS }
OTHER ( ) : — FT-TONS }

RATIO $l : L$ = 0.75
LENGTH: (L) 40 FT.
EFFECTIVE: (l) 30 FT.
" : (l) 360 INS.
SPAN: 27.20 EAVES: 40'
SLOPE: 6° c/c: 24.6'

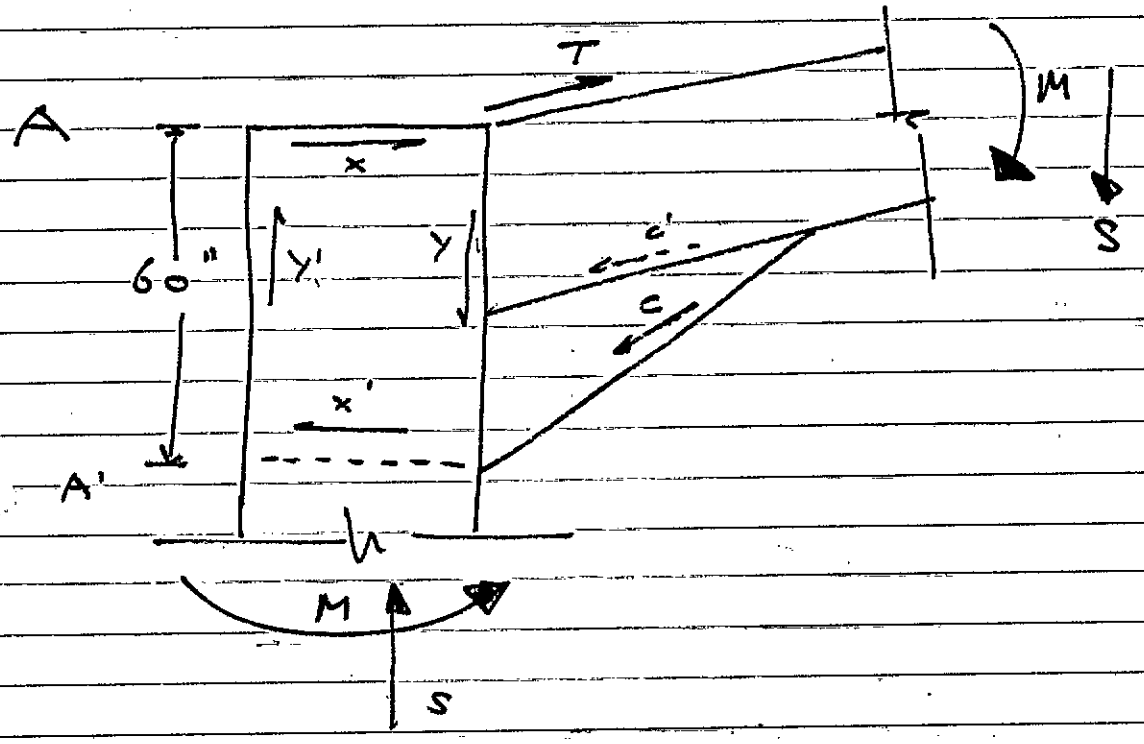
#	PROPERTY.	CONVERSION METRIC TO IMPERIAL	UNITS (IMP)	254×254×89 (BAX16)	254×254×107	305×305×97	M I
1	AREA OF SECTION – A	÷6.45	INS^2	32.93	21.17	19.11	
2	SECTION MODULUS – Z_{xx}	÷16.39	INS^3	126.2	80.10	87.98	
3	RAD. OF GYRATION – r_{yy}	÷2.54	INS	2.67	2.58	3.023	
4	EFFECTIVE LENGTH – l		INS	360	360.	360.	
5	SLENDERNESS RATIO – l/r_{yy}		—	134.8 MAIN	139.5 MAIN	11.9	
6	ALLOWABLE AXIAL STRESS – P_c (P. 58. B.S.S. 449)		T/INS^2	3.16 / 3.95 $P_{c(W)}$	2.96 / 3.70	3.92 / 4.90	
7	RATIO: D/T		—	9.1	13	20	
8	ALLOWABLE BENDING STRESS – F_{bc} (P. 28. B.S.S. 449)		T/INS^2	10.68	9.70	9.55	
9	ALLOWABLE B. STRESS – WIND – $F_{bc(WIND)}$ (F_{bc} + 25%)		T/INS^2	13.35	12.12	11.94	
10	ACTUAL AXIAL STRESS – $W/A = f_a$ $f_{a(W)}$		T/INS^2	1.154 / 0.304	1.795 / 0.472	1.988 / 0.523	
11	ACTUAL BENDING STRESS – f_{bc} = $MY12/Z_{xx}$		T/INS^2	—	—	—	
12	ACTUAL BENDING STRESS-WIND – $f_{bc(WIND)}$ = $MY12/Z_{xx}$		T/INS^2	1.24	1.95	1.77	
13	$\frac{f_a}{P_c} + \frac{f_{bc}}{F_{bc}} + \frac{f_{bc(WIND)}}{F_{bc(WIND)}}$		—	1.154/3.16 + 0.304/3.95 + 1.240/13.35 = 0.535 OK	1.795/2.96 + 0.472/3.70 + 1.95/12.12 = 0.895 OK	1.988/3.92 + 0.523/4.90 + 1.22/11.94 = 0.962	
14	SUITABILITY OF SECTION		—	(3)B			

FRAME



	By moment		Sway		
I_1 =	260228	: 13.8	13	279450	: 12.5
I_2 =	156626	: 8.3	8	168966	: 7.6
I_3 =	18776	: 1.0	1	22202	: 1.0

CONNECTIONS



$M = 248$ ft-tons + 73 ft-tons wind.

SAY: 310 ft-tons TOTAL.

Assume N.A is 3" above A'

$\therefore T = \frac{310 \times 12}{(60-3)} =$ 65 TONS. [6.55 sq in Nett]

HSFG BF	Proof	Shear (× 0.32)	
M_{22}	17.8T	5.69T	∴ 11.4 No. SAY: 12 No.
M_{24}.	20.9T	6.69T	∴ 9.71 No. Say: 10 No.

PLATE: 10" × 3/4" {Nett area}: 8.5" × 3/4" = 6 3/8 sq ins.

BEARING ON COLUMN: AXIAL LOAD: 22 + 5T

Say 30T.

M_{16}: 2.97T. in Shear. ∴ Use 12 No. M_{16}. [35T]

Beam or Col:

Axial Load: 22T + 5T Load

Say 30 Tons

30 Tons ≡ 12 No. M.16 [35T].

Corner stanchions.

Axial: 38T + 10T Load

Say 50 Tons.

50T = 16 No. M.16. or 12 No. M.20.

B.M: 330 +

BM/(Load) 100 +

Design: 430 ft-Tons.

$\therefore T = \frac{430 \times 12}{[60.9-3]} = 90\ T.$

M24: [6.69]: 13.4 No. 16 No.

M22: [5.62]: 15.8 Say 16 No ≥ 2.5%

[~~[illegible]~~].

Depth of Plate: 8" x ~~[illegible]~~ 1".

Bracing: 50 Tons:

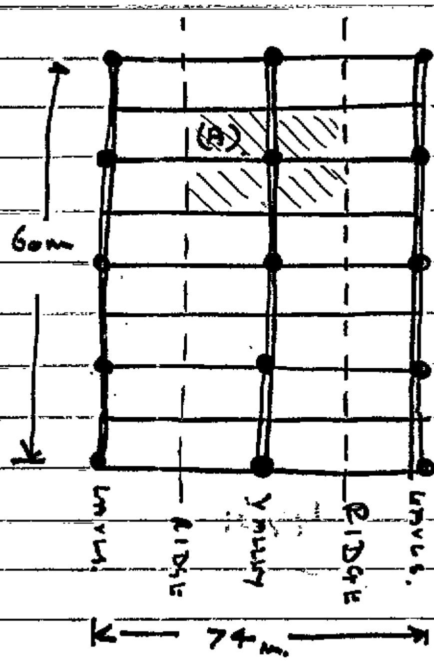
6 No. M27 (9.24) ∴

M27:

M30:

74.

Roof Damage.

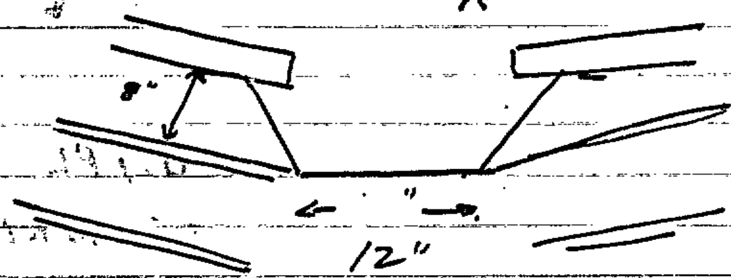


Valley

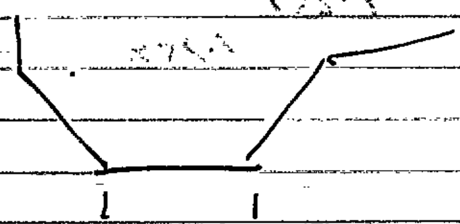
(A): Am = 7.5×2×37 = 555 M^2 = 6000 ft^2.

1 sq in to 75 ft^2

∴ An 1 gulley = 6000/75 = 80 sq ins



Stored : 40 sq. ins



Min: 12"×4"

GABLE TIE

ACTION: Frame to Column Knee of Shelter
= 65 Ton.

2½% of 65 = 1.7 Ton. Say **2.0 Ton.**

$L = 24.6$. $EL = 24.6 \times 0.85 = 20.8' = 250''$

$l/r_{yy} \not> 300$.

$\therefore r_{yy} = \frac{250}{300} = 0.833'' = 2.16$ cm.

Min Depth $= l/20 = 12.5''$.

Try: 305 × ~~[illegible]~~ 127 × ~~[illegible]~~ 37 kg UB.

$A = 7.36$. $r_{yy} = 2.67$ cm $= 1.05''$.

$l/r_{yy} = \frac{250}{1.05} = 238$.

$P_c = 1.09$ Ton/sq in.

$F_{bc} = \frac{2}{7.36} = \underline{0.27 \text{ Ton/sq in}}$

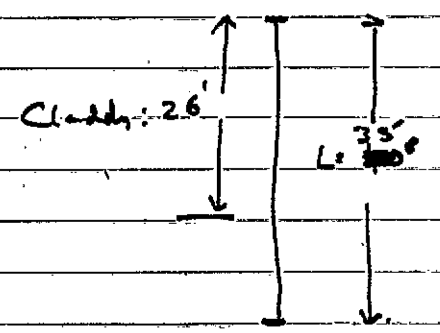
OK

Use: 305×127×37 UB.

Use OK. for Central Beam.

Use: 305×165×40

SIDE COLUMNS. (Sheeting rail supports)



@ 5.3m c/c
= 17.5'

Area Sheeting: 26' × 17.5 = 455 ft².

Wind Pressure: 29 lb/sq. in : 455 × 29 = 5.9 Tn.

5.9 Tn over 35' = 0.16 Tn/ft.

$M = \frac{wl^2}{8} = \frac{0.16 \times 35^2}{8} = 24$ ft. Tn.

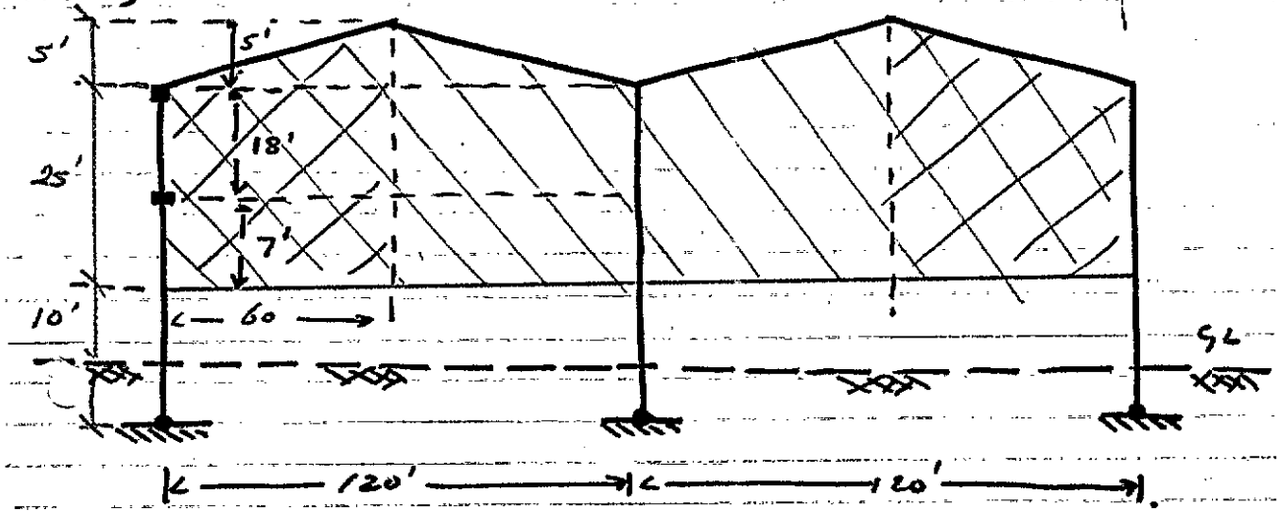
$f = 10.$ $M = fZ.$

$\therefore Z = \frac{24 \times 12}{10} = 29$ in³ = 475 cm³.

Use: 203 × 203 × 46 UC

JOHNSON BROS – GABLES (WIND)

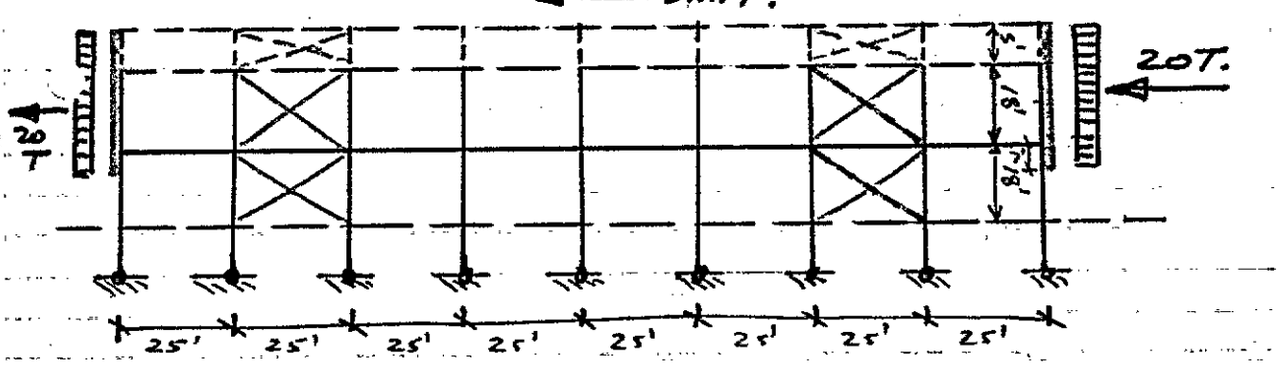
AREA:	1650 ft²	3300 ft²	1150 ft²
C_p	± 1.0	± 0.7	± 1.0
W (TONS):	± 20.0 TONS	± 28.0 TONS.	± 20.0 TONS.

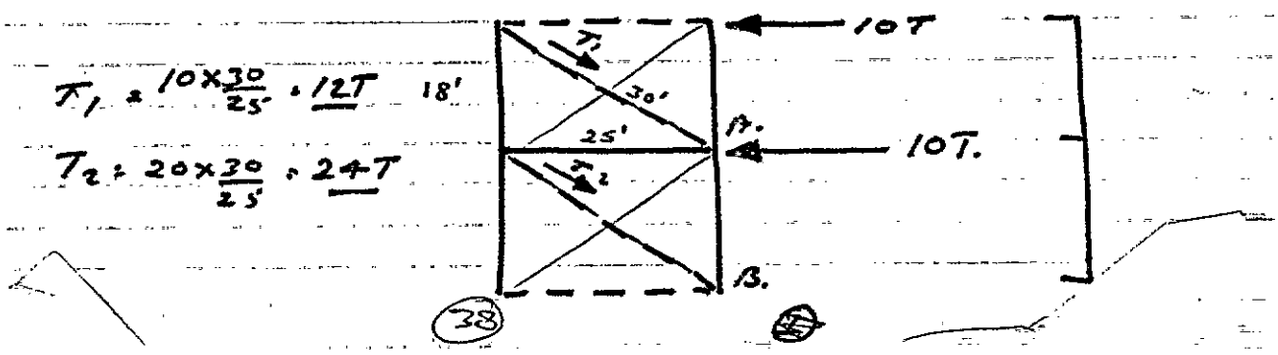


$V_s = V \times S1 \times S2 \times S3$

$= 103 \times 1 \times 1 \times 1 = 103$ MPH. $\therefore q = 27.216/ft^2$.

SIDE STANCHIONS ← WIND?





$T_1 = 10 \times \frac{30}{25} = 12T$ 18'

$T_2 = 20 \times \frac{30}{25} = 24T$

JOINT @ B.

FIG 1

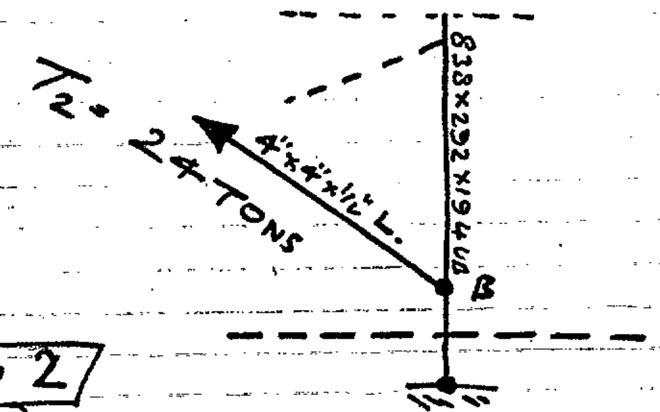
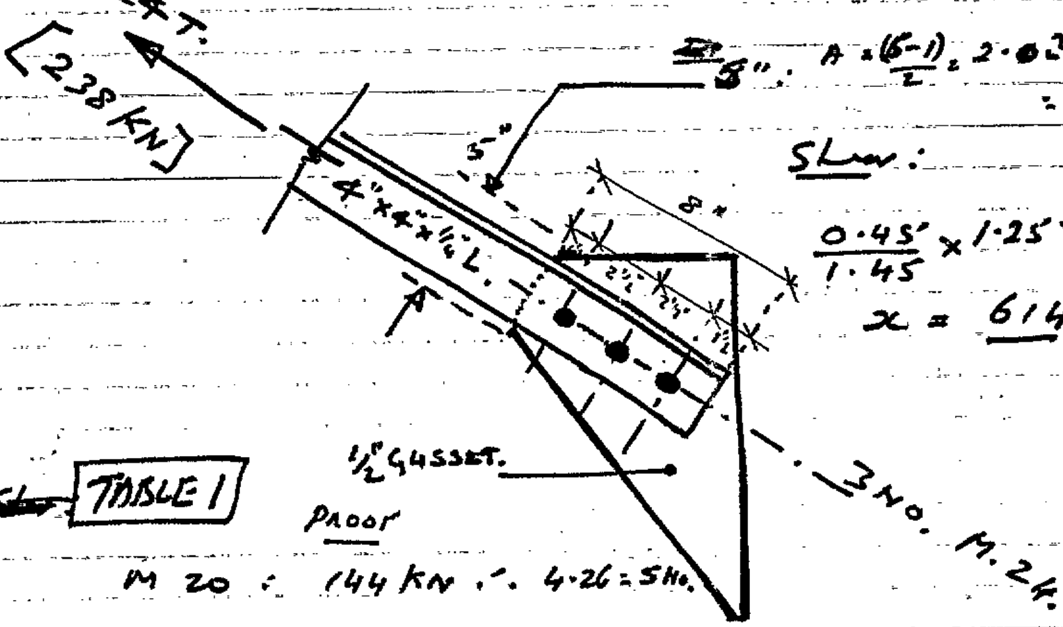


FIG 2



24T.

8": $A = \frac{(6-1)}{2} \cdot 2.0^2 \times 12.5$
$= 25T.$

Shear:

$\frac{0.45}{1.45} \times 1.25 \times x = 238$

$x = \underline{614}$ KN.

~~Shear~~ TABLE 1

PROOF

M 20 : 144 KN ∴ 4.26 = 5 No.

M 22 : 177 KN ∴ 3.47 = 4 No.

M 24 : 207 KN ∴ 2.96 = 3 No. ← ADOPT.

M 27 : 234 KN ∴ 2.62 = 3 No.

Check 4x4x½" L. [Less 1 No. 1" Φ hole + ½ outstanding Leg]

~~Area: (4-½) ...~~ 4" 4"

Area: $\left[\frac{8'' - (2'' + 1'')}{2}\right] = \frac{5}{2}'' = 2.5\ in^2$ @ $12.5\ T/in^2 = 31.25$ Ton.

FIG 3

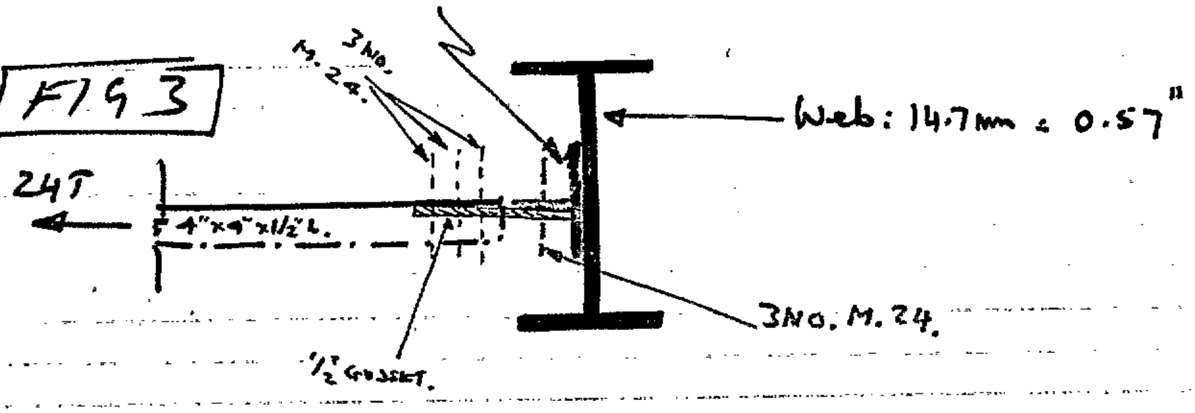
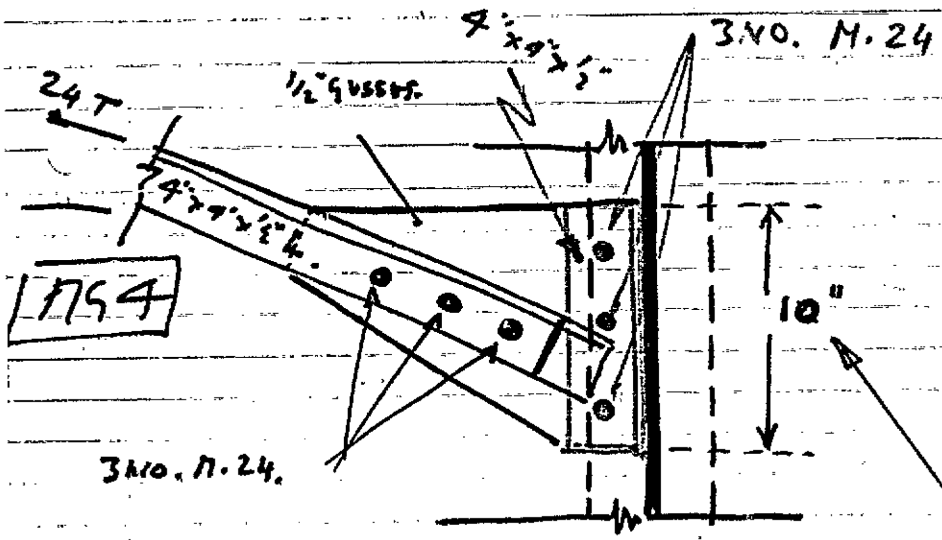


FIG 4



ANGLE: ( ) → 4"x4"x1/2".

(a) Welded to Web : 24 Ton. 2.1 Ton/in = 2.6 (+25%) | Say 10" (L = 1/4")

Shear: 24T : 16 sq. in of Web.

(b) Bolted to Web : [illegible] = [illegible] =

$\frac{24T}{3}$ = 8T/Bolt

= 80 kN x 2

= 160 kN Prnl./Bolt.

∴ 3 NO. M20

[144+25% = 180kN]

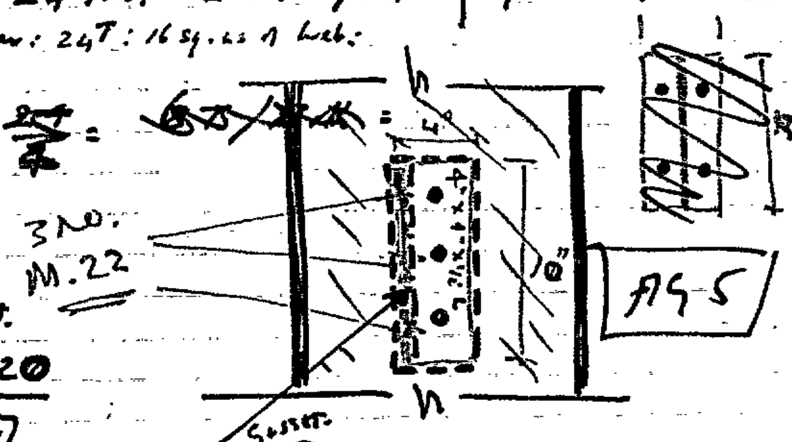
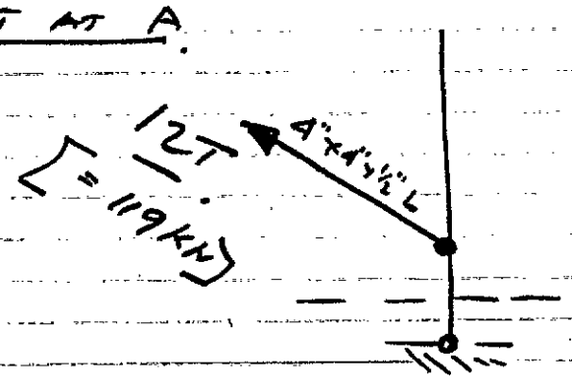


FIG 5

? BACK PLATE ?

(40) (3)

JOINT AT A.



IN FIG 2, P. 2.

$\frac{0.45}{1.45} \times 1.25 \times X = 119 \quad \therefore X = 306 \text{ KN}$

M16	: 92 KN	∴	3.3 =	4 NO.
M20	: 144 KN	∴	2.12 =	3 NO. ADOPT.
M22	: 177 KN	∴	1.72 =	2 NO. ←
M24	: 207 KN	∴	1.47 =	2 NO
M12	: 49.4	∴	6.19 =	7 NO.

∴ 2 NO. M22 ⌐ ½" Gusset, as before.

IN FIG 3. P. 3

2 NO. M22 to 4"×4"×½" M.S. Angle to Web.

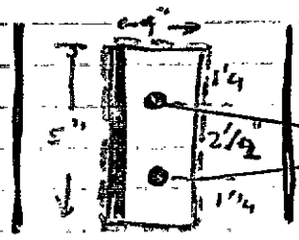
(a) Angle heads to web: 12T ÷ 2.6 Tons/in = 5"

(b) Bolts

12/2 = 6T/Bolt.

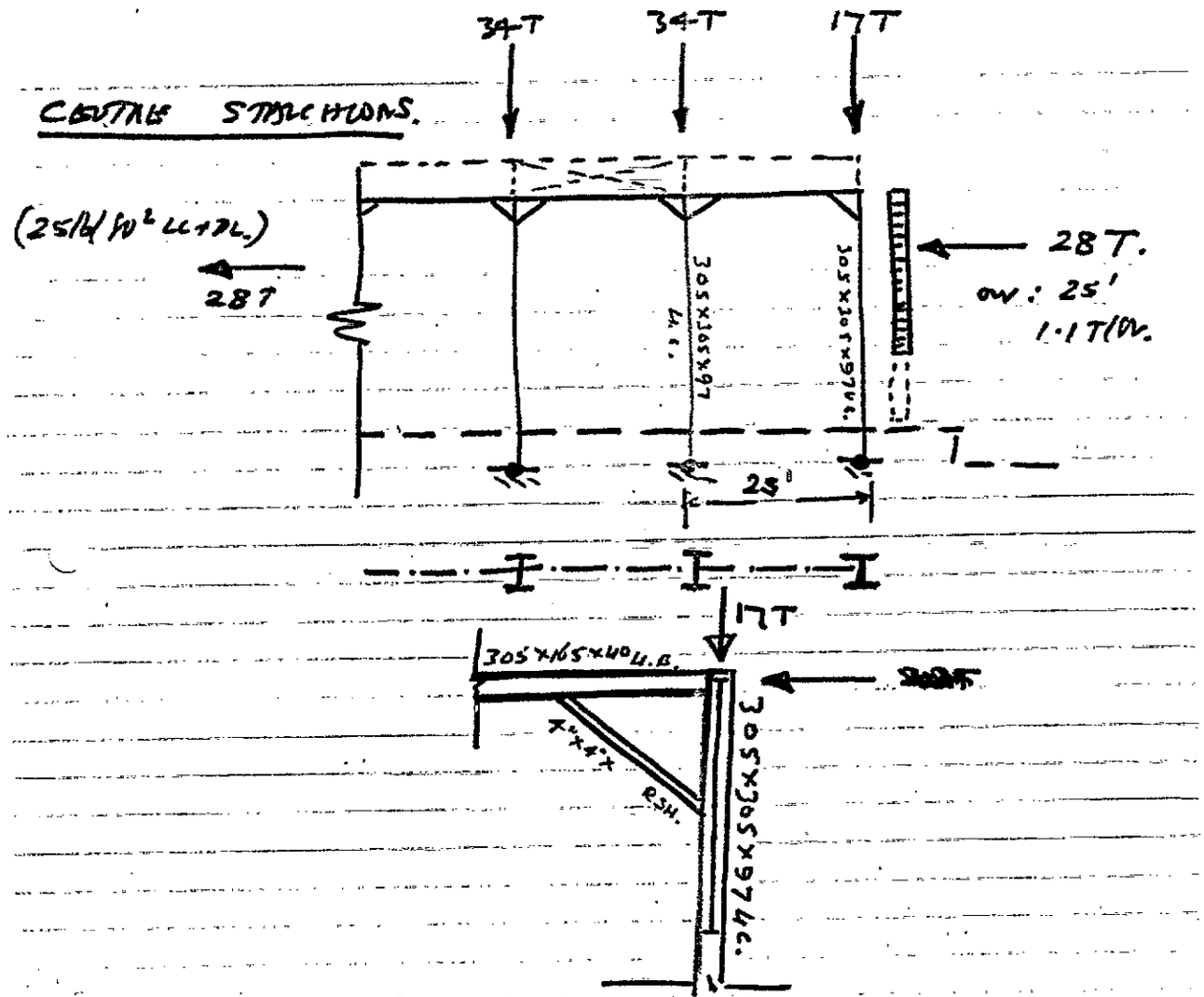
= 60 KN. × 2 = 120 KN

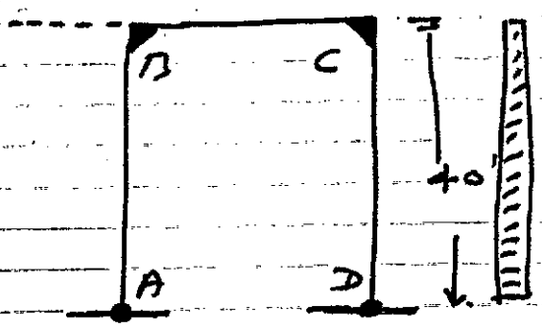
∴ 2 NO M20



(47)

CENTRE STANCHIONS.





1·0T ~ 1W.

$\frac{h}{L} = 1.6$

$H_B = -0.72W$

$H_D = +0.28W.$

$M_B = 40[0.72W - W/2]$

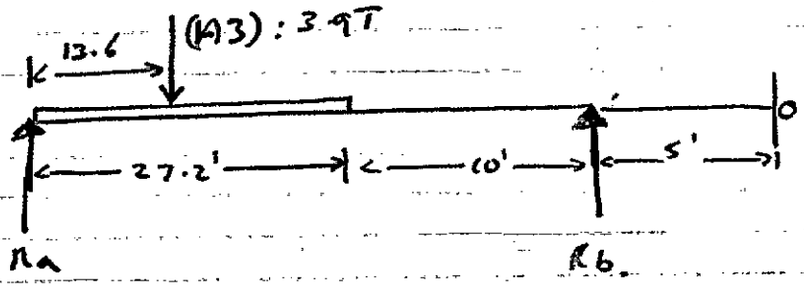
$= 40[28.8 - 20]$

$= 352$ ft-Tons.

$M_C = -0.28 \times 40 \times 40 =$

$= 448$ ft-Tons

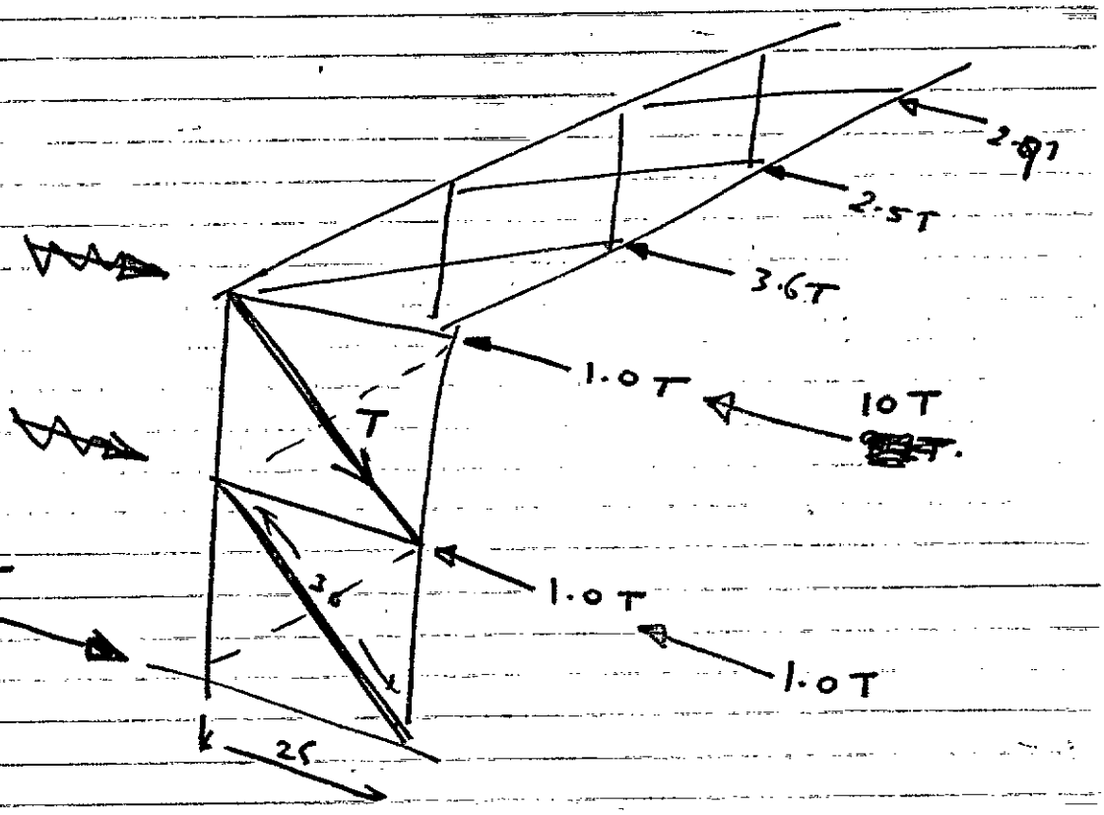
(42)



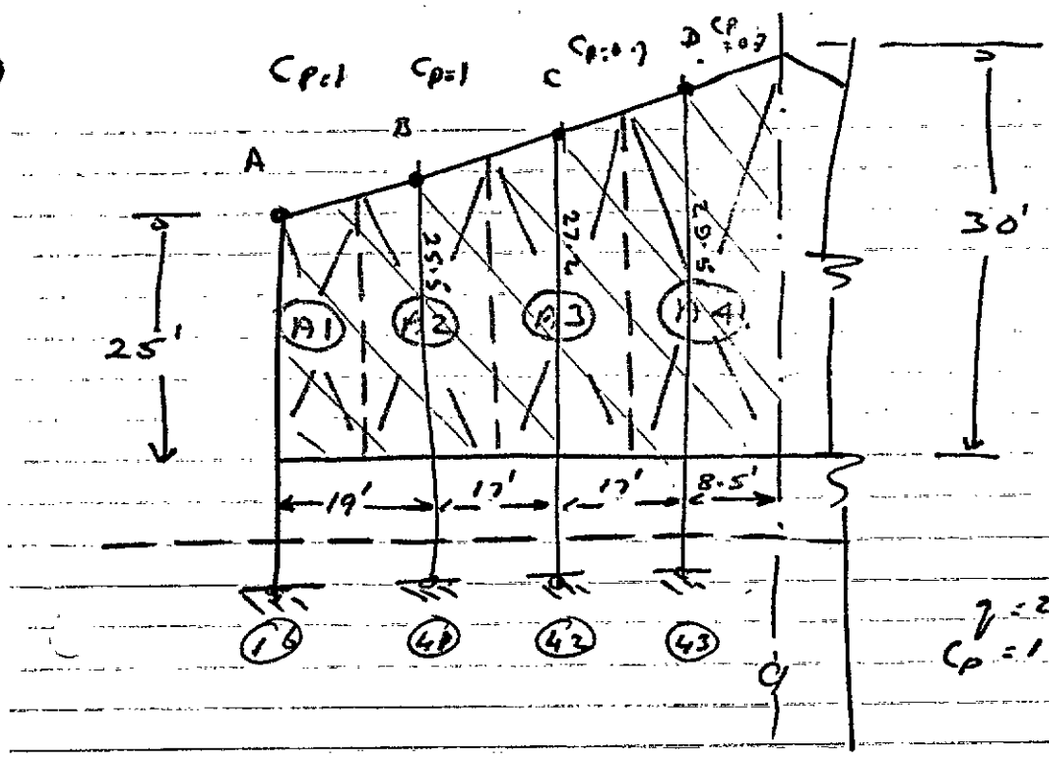
$R_a + R_b = 3.9$.

$3.9 \times 13.6 = R_b \times 37.2$.

$\therefore R_b = 1.4 \quad \therefore R_a = 2.5$ [65% A3].

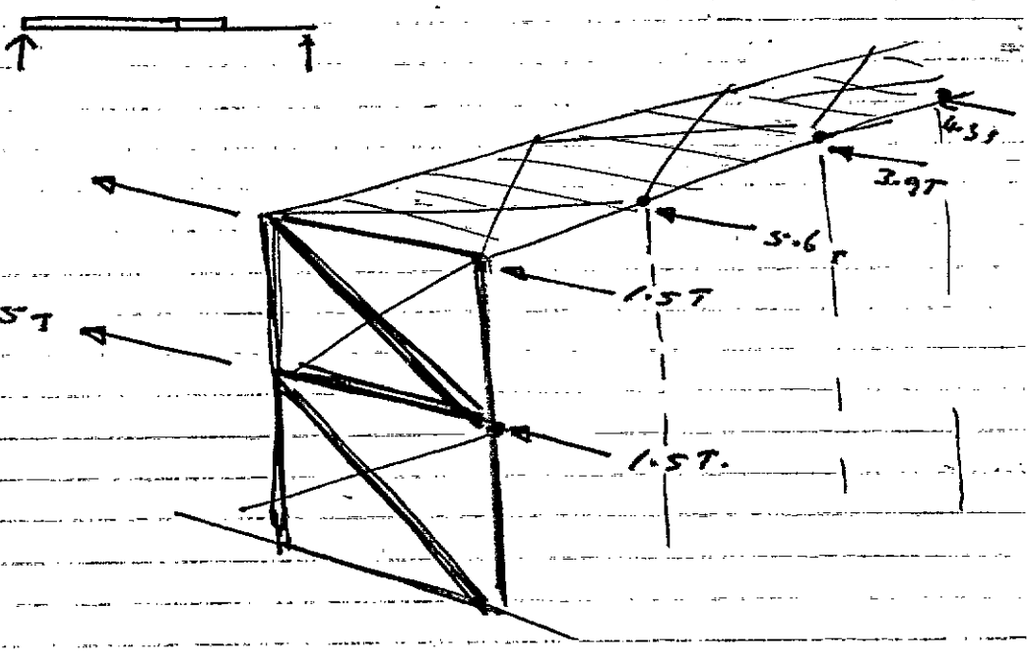


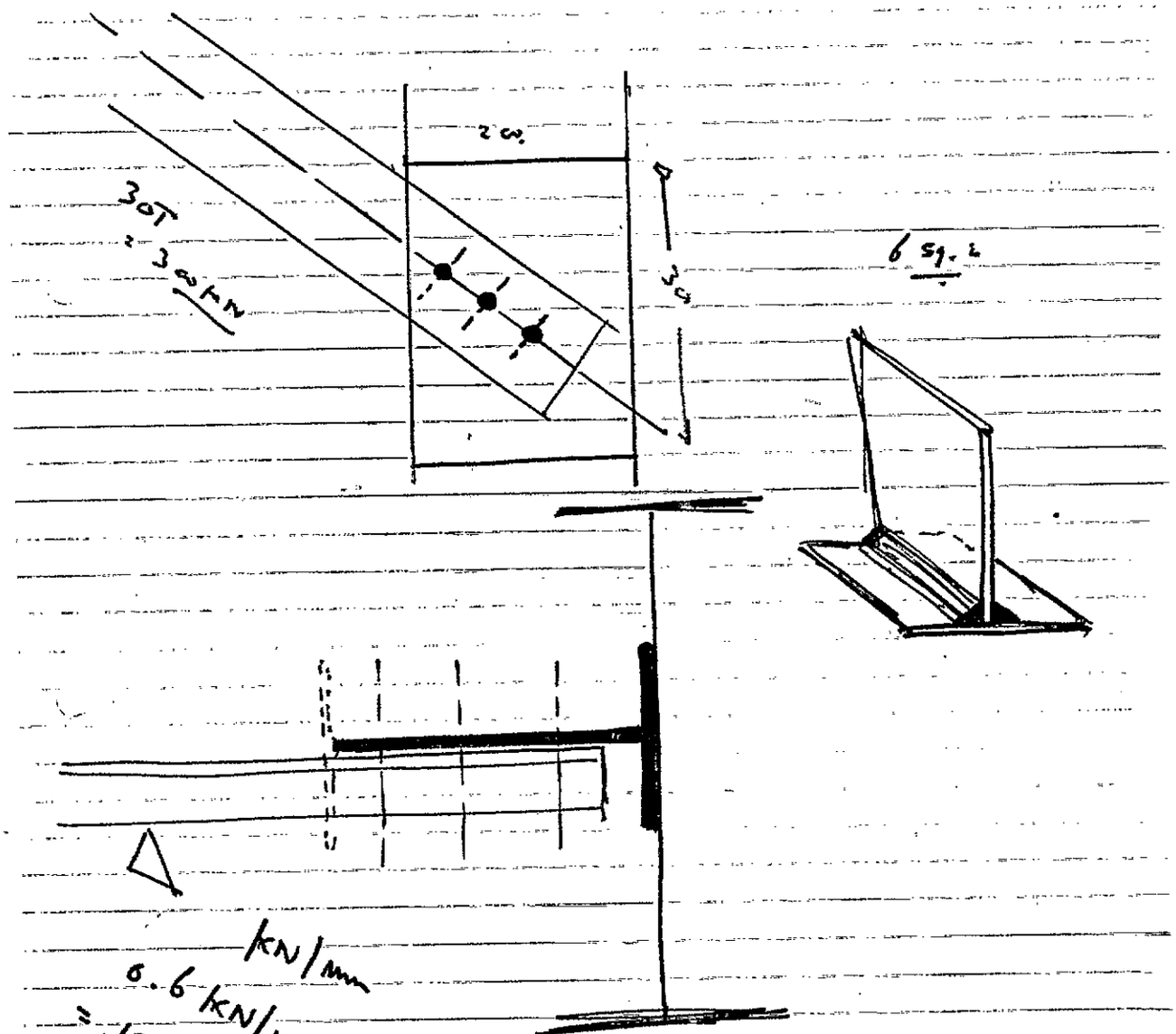
$T = \frac{30}{25} \times 10 = 12$ TONS



A1	: $19/2 \times 25.3$	: $1 \times 240\,ft^2 \times 27.2\,lb/ft^2$: 3.9	T
A2	: $\frac{(19+17)}{2} \times 25.3'$	: $1 \times 460\,ft^2 \times$ " : 5.6	T
A3	: 17×27.2	: $0.7 \times 460\,ft^2 \times$ " : 3.9	T
A4	: 17×29.5	: $0.7 \times 500\,ft^2 \times$ " : 4.3	T

TOTAL : 16.7 T.





kN/mm

0.6 kN/mm

= 15 kN/m

= 1.5 Ton/m.

1.5 Ton/m Weld.

FOUNDATIONS.

Allowable Bearing Pressure: 1.5 TONS/ft².

Load (D.L. + LL + WIND).

SIDE: 2T.

2.0m × 2.0m.

= 43 ft².

≈ 0.62 T/ft²

∴ 2m × 2m OK

CORNER: 4T.

2.2m × 2.2m.

= 52 ft².

0.92 T/ft².

OK.

2.0 × 2.0 = 43 ft².

= 1.12 T/ft².

∴ 2m × 2m OK

1991 EXTENSION

STANCHION DESIGN SHEET.

CLIENT: JOHNSON BROS. 1991. FILE NO: DATE: 20/2/91

SIDE STANCHION.

LOADING: AXIAL (D.L + L.L.)	22	TONS	W
AXIAL (WIND)	5	TONS	W
OTHER ( )	—	TONS	W
BENDING: D.L. + L.L.	248	FT-TONS	M
WIND	73	FT-TONS	M
OTHER ( )	—	FT-TONS	M

RATIO $l : L = 0.75$
LENGTH: (L) 40 FT.
EFFECTIVE: (l) 15 FT.
" : (l) 180 INS.
SPAN: 120' EAVES: 40'
SLOPE: 6° c/c : 24'6"

PROPERTY.	CONVERSION METRIC TO IMPERIAL	UNITS (IMP)	356x406x393	356x406x340	
AREA OF SECTION – A	÷ 6.45	INS^2	77.65	67.08	
SECTION MODULUS – Z_{xx}	÷ 16.39	INS^3	427	367	
RAD. OF GYRATION – r_{yy}	÷ 2.54	INS.	4.13	4.09	
EFFECTIVE LENGTH – l.		INS.	180	180	
SLENDERNESS RATIO = l/r_{yy}		—	44	44	
ALLOWABLE AXIAL STRESS – P_c (P. 58. B.S.S. 449) P_c (w)		T/INS^2	8.86 11.08	8.86 11.08	
RATIO: D/T		—	8.5'	9.5'	
ALLOWABLE BENDING STRESS – F_{bc} (P. 28. B.S.S. 449)		T/INS^2	10.68	10.68	
ALLOWABLE B. STRESS – WIND: F_{bc} (WIND) (F_{bc} + 25%)		T/INS^2	13.35	13.35	
ACTUAL AXIAL STRESS – $W/A = f_a$ $+ f_a$ (w)		T/INS^2	0.28 0.07	0.32 0.07	
ACTUAL BENDING STRESS – f_{bc} = MX12 / Z_{xx}		T/INS^2	6.96	8.11	
ACTUAL BENDING STRESS-WIND – f_{bc} (WIND) = MX12 / Z_{xx}		T/INS^2	2.05	2.39	
$\frac{f_a}{P_c} + \frac{f_{bc}}{F_{bc}} + \frac{f_{bc(WIND)}}{F_{bc(WIND)}}$		—	$\frac{0.28}{8.86} + \frac{0.07}{11.08}$ + $\frac{6.96}{10.68} + \frac{2.05}{13.35}$	$\frac{0.32}{8.86} + \frac{0.07}{11.08}$ + $\frac{8.11}{10.68} + \frac{2.39}{13.35}$	
SUITABILITY OF SECTION		—	= 0.844.	= 0.98 OK	

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/0515 Date : 8th April 1991

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

Dear Sir/Madam,

DEVELOPMENT : Extension to warehouse and build lorry wash

LOCATION : Uppercross Estate, Ballymount Road, Walkinstown

APPLICANT : Johnson Brothers Ltd

APP. TYPE : PERMISSION/BUILDING BYE-LAW APPROVAL

With reference to above, I acknowledge receipt of your application received on 5th April 1991.

Yours faithfully,

.....

PRINCIPAL OFFICER

Christopher S. Pringle,
Glenview,
Monaghan.

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 (If none, give description sufficient to identify) Johnson Bros Ltd, Uppercross Estate, Ballymount Road, Walkinstown, Dublin 12.

3. Name of applicant (Principal not Agent) Johnson Bros. Ltd.

Address Uppercross Estate, Ballymount Rd, Walkinstown, D12 Tel. No. 523000

4. Name and address of person or firm responsible for preparation of drawings Christopher S.Pringle, Consulting Engineer Glenview, Monaghan. Tel. No 047-82268

5. Name and address to which notifications should be sent Christopher S.Pringle, Glenview, Monaghan.

J. [illegible] 4/4/91

BYE-LAW APPLICATION

6. Brief description of proposed development Extension to existing Warehouse and provision of Lorry Wash.

REC. [illegible] 7659.04 N 34771

7. Method of drainage Ex. mains 8. Source of Water Supply Ex. 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. Offices and Warehouse

3794.53 5/4

(b) Proposed use of each floor Same

N 35092

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

11.(a) Area of Site 4.20 Acres 16,997 Sq. m.

(b) Floor area of proposed development 2168.3 Sq. m.

(c) Floor area of buildings proposed to be retained within site 6,395 Sq. m.

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:
The Draft Building Regulations have been taken into account in the proposal

15.List of documents enclosed with application. 4 Sets of Drawings, each set containing 5 drawings Numbers: 3616/91/1 to 5; Page from I.Press (4.4.91).
4 drawings of Lorry Wash.

DUBLIN 12 Johnson Brothers Ltd are applying to Dublin County Council for permission to erect extension to warehouse and build lorry wash at Uppercross Estate, Ballymount Road, Walkinstown

16.Gross [...]velopment (See back) 2168.3 Sq. m.

No of dwellings proposed (if any) Class(es) of Development C and F (Lorry wash)

£70.00

Fee Payable £11,383.57 Basis of Calculation 2168.3 sq.m @ £ 5.25 + £ 70.00 (F).

If a reduced fee is tendered details of previous relevant payment should be given

Signature of Applicant (or his Agent) C.S. Pringle Date 4th April, 1991

FOR OFFICE USE ONLY

Application Type P/BBL

Register Reference 91A/0515

Amount Received £

1·24·0

Receipt No

Date

22-1

RECEIVED
5 APR 1991
REG. SEC.

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

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

1. Name and Address of applicant.

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

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

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

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

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

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

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

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

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

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

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

INDUSTRIAL DEVELOPMENT:

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

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

PLANNING APPLICATIONS

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

COMHAIRLE CHONTAE ÁTHA CLIATH

PAID BY — **DUBLIN COUNTY COUNCIL**
46/49 UPPER O'CONNELL STREET,
DUBLIN 1.

CASH
CHE
M.O.
B.L.
I.T.

RECEIPT CODE

Issue of this receipt is [illegible] acknowledgement that [illegible] tendered is the prescribed application fee.

N 35092

£3794.53

Received this 5th day of April 19 91

from Thomas Bros. Ltd.,
Upperacross Estate,
Ballymount Rd.

the sum of three thousand seven hundred + ninety four Pounds
fifty three Pence, being for
planning application at Upperacross Estate

Helen Deane Cashier

S. CAREY
Principal Officer

Pass 4

RECEIPT CODE

COMHAIRLE CHONTAE ÁTHA CLIATH

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

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

BYE LAW APPLICATION.
REC. No. N 34772

£70.00

Received this 5th day of April 1991

from C. S. Pringle,
Glenview
Monaghan

the sum of seventy Pounds

Pence being Fee for
bye-law application at Uppercross Estate,
Ballymount Rd.
Walkinstown Dublin

Cashier

S. CAREY
Principal Officer

RECEIPT CODE

COMHAIRLE CHONTAE ÁTHA CLIATH

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

BYE LAW APPLICATION

REC. No. N 34771

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

£ 7589.04

Received this 5th day of April 1991

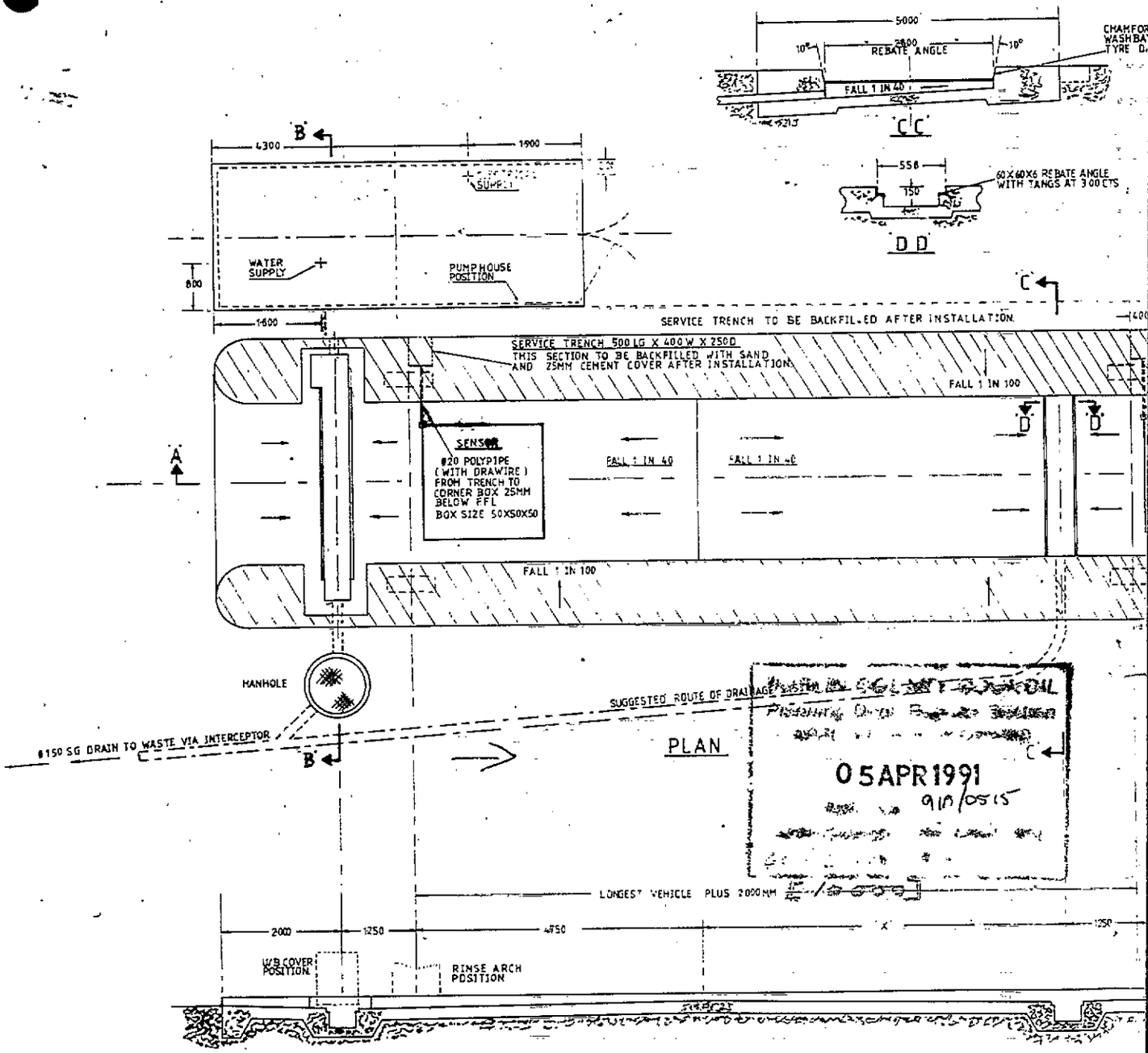
from Johnson Bros. Ltd.,
Upperacross Estate,
Ballymount Rd.

the sum of seven Thousand, five hundred & eighty nine Pounds
four Pence being fee for
bye-law application at Upperacross Estate

Maeleen Deane Cashier

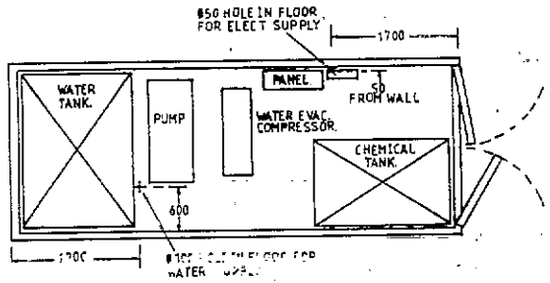
S. CAREY
Principal Officer

Cash C

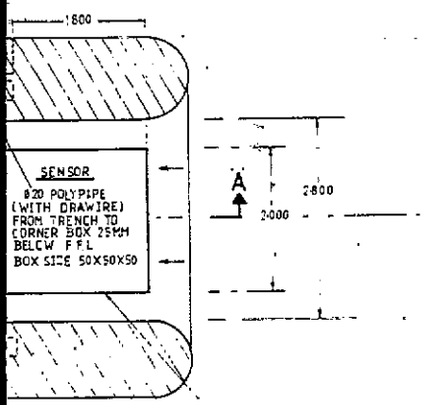


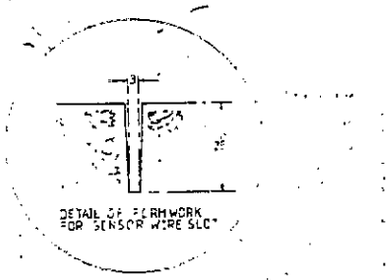
MOD No.	REVISION :	SIG & DATE

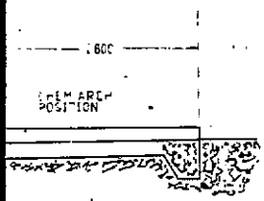
THROUGHOUT TO AVOID IMAGE

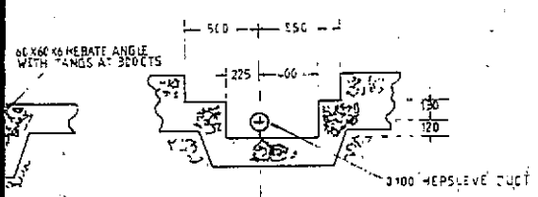


TYPICAL LAYOUT OF PUMP HOUSE
INT. DIM. 5690 L.X 2230 W.X 2135 H.









G

CUSTOMER'S RESPONSIBILITIES

TO PROVIDE:-

WASH BAY AS SHOWN LAID TO FALLS, AND TO INCLUDE DRAINAGE CHANNELS WITH REBATE ANGLES, SENSOR SLOTS, DUCTS, ETC.

SERVICES:- ELECTRICAL - 60A./ 3Ø&N/380-440V
WATER - Ø51(2 N.B.)
DRAINAGE - Ø150 TO WASTE VIA TRIPLE CHAMBER INTERCEPTOR.

N.B. ELECTRICAL AND WATER SERVICES TO BE PLUS 2·000MM ABOVE F.F.L. IN PUMPHOUSE.

PROVIDE CRANE TO UNLOAD DELIVERY TRUCK ON SITE.

WICKHAM - SCOPE OF WORK

TO PROVIDE:- SUBJECT TO ORDER

ARCHES, U/B. WASH C/W GRATING
PUMP, PANEL, COMPRESSOR AND TANKS INSTALLED IN I.S.O. CONTAINER WHEN REQD

INSTALLATION

TO INCLUDE:-

DRILL CONCRETE AND BOLT ITEMS TO FLOOR USING M12 X 150 PARRABOLTS
INSTALL ALL PIPEWORK/CABLING AND TERMINATIONS.
INSTALL SENSORS (2 No.) IN SLOTS PROVIDED AND SEAL WITH MOLTEN BITUMEN
COMMISSION AND TEST

GENERAL CONSTRUCTION NOTES

WASH BAY TO BE BUILT ON COMPACTED HARD CORE BASE.
IF RE-ENFORCEMENT STEEL IS USED IT MUST NOT BE LAID UNDER OR IN CLOSE PROXIMITY TO (500MM) THE SENSORS
CONCRETE TO BE GRADE 25 AND TO ACHIEVE A MIN. 28 DAY CUBE STRENTH OF 25 N/M²
MIN. CEMENT CONTENT — 300 KG/M³

DRAWINGS (PREPARED BY CUSTOMER)

2 No. COPIES TO BE SENT TO WICKHAM FOR RECORD PURPOSES

SCREENING

IN SOME LOCATIONS THIS MAY BE REQD
A STEEL FRAMEWORK CLAD WITH ALCAN TRAPEZOIDAL SELF COLOUR SHEETING IS RECOMMENDED. THIS SHOULD START AT APPROX. 500MM FROM F.F.L. (TO REDUCE WIND PRESSURE LOADING) AND RISE TO OVERALL HEIGHT OF ARCH

MODEL SELECTION SIZE

WASH PLANT	MAX. TRUCK HT.	UNDER ARCH HT.	INT. WIDTH
JC 36	3600	4010	3330
JC 41	4100	4460	3330
JC 45	4500	4910	3330

O/A ARCH HT. = UNDER ARCH HT PLUS 150MM
O/A WIDTH — 3·860MM

Wickham Autowash Limited
Norton Road Stevenage Herts SG1 2BB England
Telephone: 0438-314041 Telex: 825849 WIKGEN G

PROJECT/TITLE:-	DRAWN:-	DATE:-	STAMP:-
CIVIL WORK FOR JETCLENSE & HURRICANE WASH PLANT.	B.J.P	16 3 84	
	CHECKED:-	SCALE:- 1·50/1 25/1 1	
	SUPERSEDES DRG. No. W.I.L.O. 66		DRG. No:- W.I.L.O 70.