

# Berry Systems

**Berry**

SYSTEMS

Specialists in the design, manufacture and supply of car park barriers, cladding and façades and industrial products

# Who We Are

**Berry**

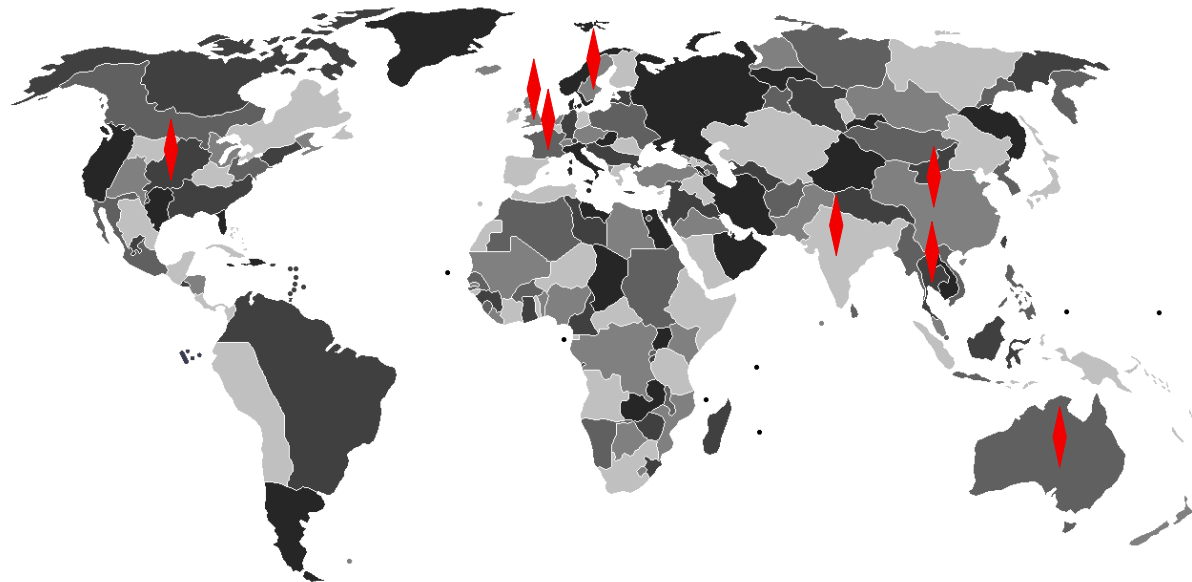
SYSTEMS

## Berry Systems – A Trading Division of Hill & Smith Limited

- Part of an international group of companies that are leaders in their field
- Wide spectrum of companies in manufacture and supply of infrastructure products and services
- Founded in 1824 and Headquartered in the West Midlands, UK
- Listed on the London Stock Exchange since 1960
- Workforce collectively of 4, 100 staff globally

- Key locations include:

- UK
- France
- Sweden
- USA
- Thailand
- India
- China
- Australia



# Group Structure

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Hill & Smith Holdings PLC

Hill & Smith Holdings

Hill & Smith Limited



Asset International VRS



Berry Systems



Hill & Smith Limited



Hill & Smith Solar

Barrier

Armco

Bristorm

Barkers Engineering

Varley & Gulliver

Joseph Ash Galvanising



BARKERS ENGINEERING



Techspan

Hardstaff Barriers Ltd

Mallatite



Examples of other companies part of Hill & Smith Holdings PLC



# Bankability & Credibility

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**Being part of HS Holdings PLC increases our bankability and the ability to invest more into our people and our products**

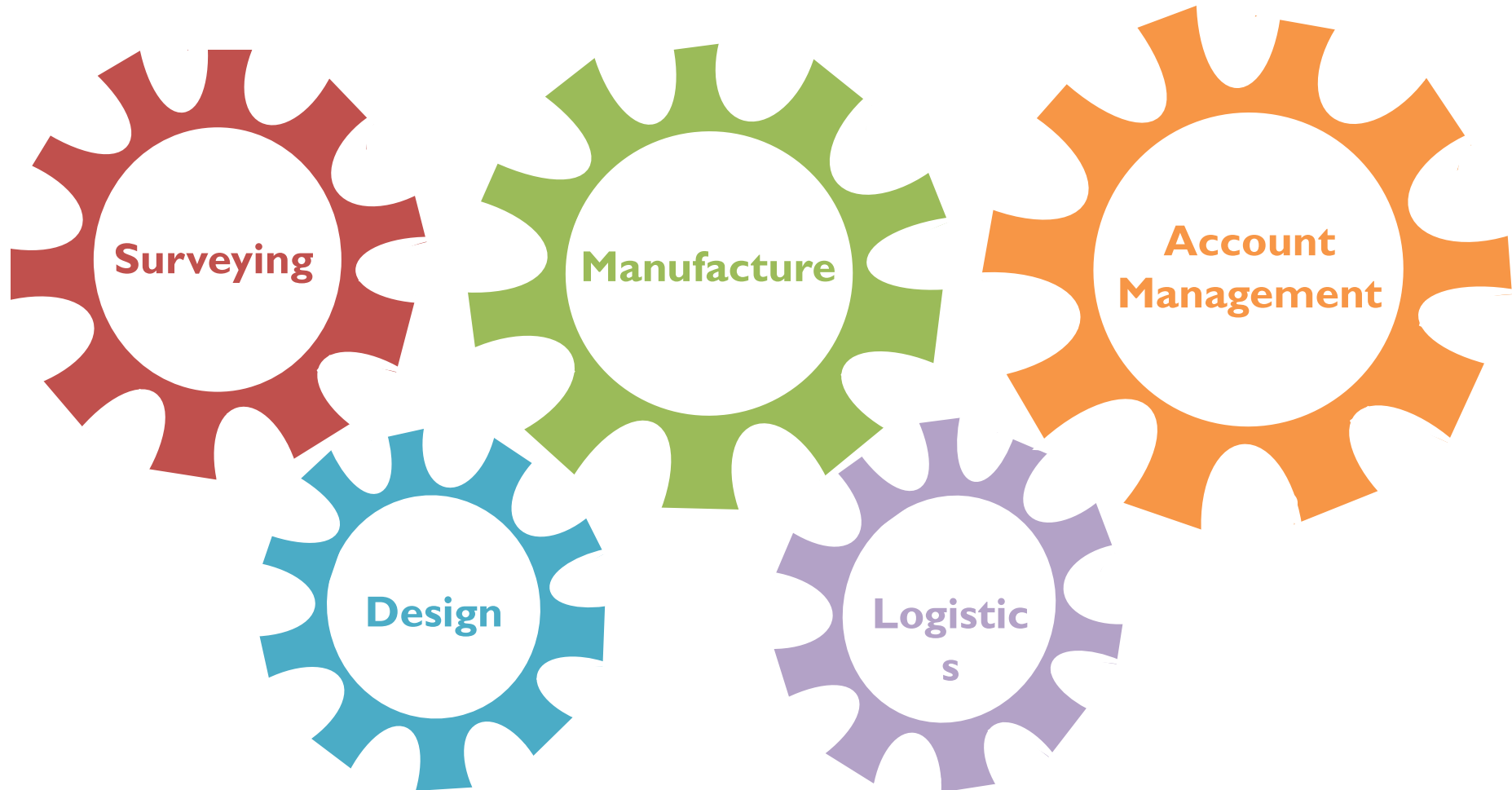
- **2016 Annual Turnover for Hill & Smith**  
£540 million
- **We are a FTSE 250 Company**
- **Credit Rating**  
100%

# A Turnkey Solution

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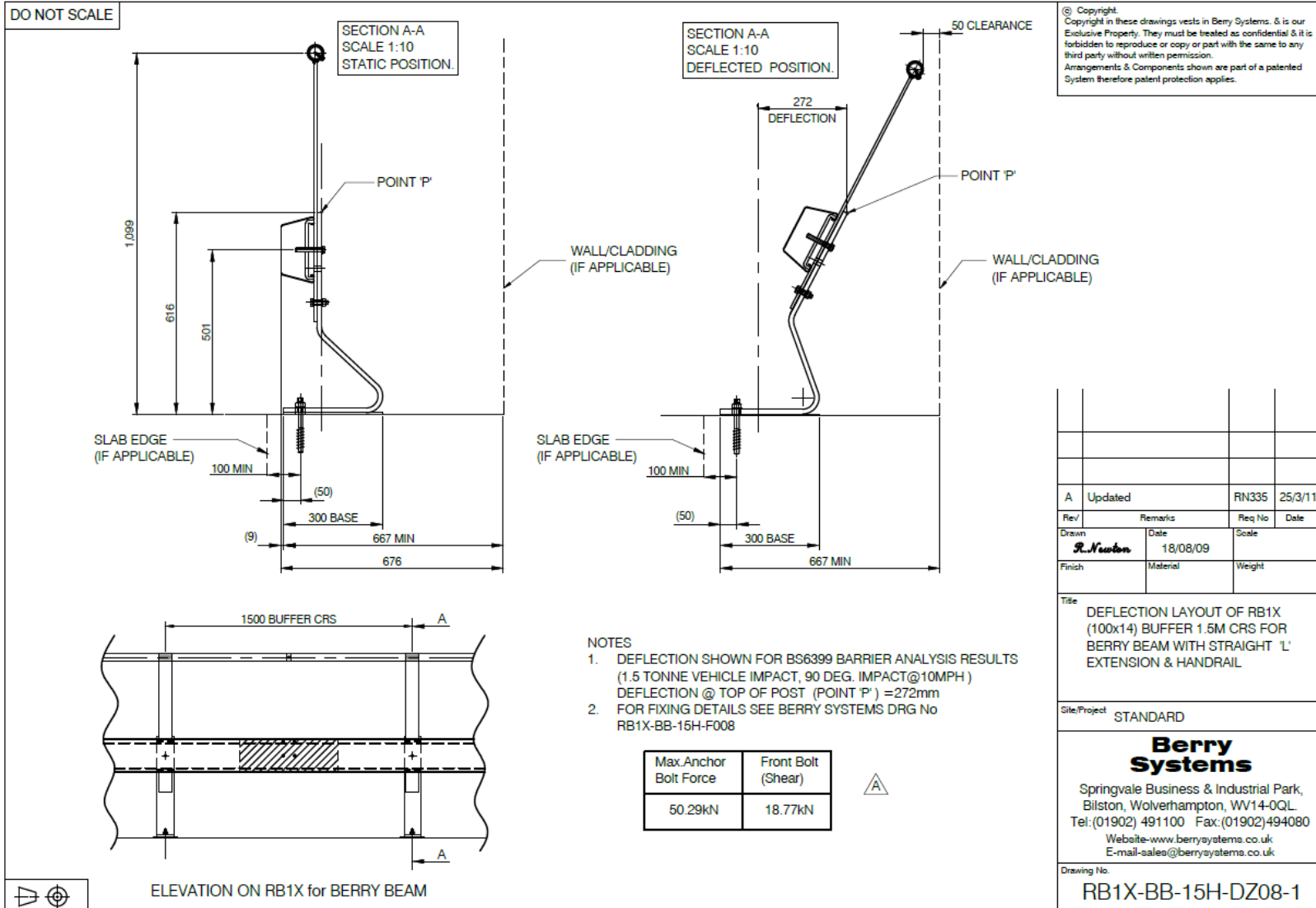
We offer a full turnkey solution for our products to ensure your project is faultless throughout from start to completion



# System Proposal

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# Anchorage

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:: Anchors for Concrete

## E3001 TSM B 14 M 16x165



### Applications:

Fixing passive retaining systems of Classes N1 to H2

### Installation:

Set drill hole 14 X 125  
Clean out drill hole  
Inject composite adhesive compound  
Turn in screw to a depth of 125 mm, using an impact driver  
Attach fixture, no curing or setting period needs to be observed

### Loads in concrete class C 20/25:\*

Average failure load under static tension 80 kN  
Average failure load under shock load (impact) 100 kN

### Design variants available:

Steel coated, stainless steel grade 1.4401, HCR material 1.4529

### Approvals:

[Technical approval Z.21.1 - 1709](#)

\* Failure loads differ substantially from permissible loads and are to be proved in any case by incl of the axial spacings and edge distances and the geometry of the building components fixed to b concrete strength.

Single Force Anchor  
Fixing thickness: 40mm

# Test Reports

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**JOB NUMBER: A4633/310805**

**INPUT DATA**

	kN	mm
First critical point	47.03	60.29
Second critical point	71.08	137.26
Vehicle mass	1500.00 Kg	
Vehicle speed	4.50 m/sec	
Front bolt to hinge (bolt spacing)	0.14 m	
Assumed deformation of vehicle	0.1 m	
Barrier Impact Height	0.375 m	

Forces and deflections for critical points are extracted from sheet 2

**ANALYSIS**

**Energy**

Energy up to first point of yield	1418 Nm
Energy between 1st and 2nd point	4545 Nm
Total Energy to 2nd point	5963 Nm
Vehicle Kinetic Energy	15188 Nm
Energy absorbed by vehicle	7108 Nm
Energy required to restrain vehicle	8079 Nm

**Barrier Force and Deflection**

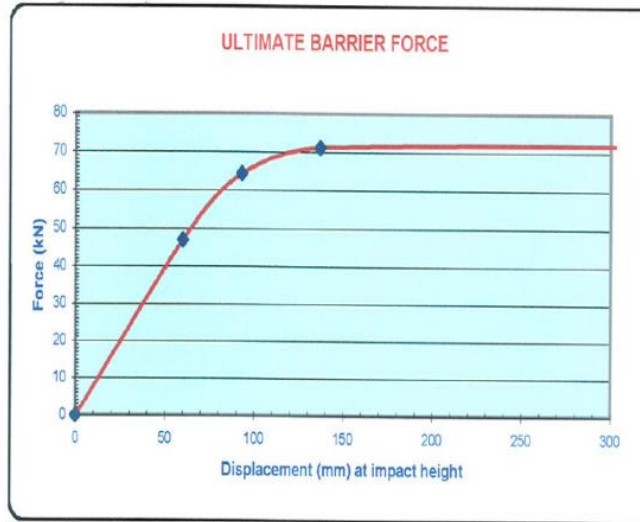
Maximum Barrier Force	71.08 kN
Barrier Deflection @ Impact Height	167 mm
Deflection of Post Top	272 mm

**Bolts forces at critical overturning moment of post**

Buffer ultimate moment **	7.04 kNm
Maximum Bolt Force	50.29 kN
Front Bolt (Shear)	18.77 kN

\*\* This is the maximum moment that can be sustained by any individual buffer, therefore maximum bolt forces are determined from this moment

PAGE 1



DISTANCE BETWEEN POSTS (mm): 1500      DATE: 2/9/05  
 POST: RB1x-14.3  
 BARRIER: BB3  
 PROJECT NAME: TC LAB Simulations  
 DESCRIPTION: 8 posts, 3 rails

**IMPACT EFFECT ON BARRIER SYSTEM**  
 Rail and Support Yield

**Berry** **BS6399 BARRIER**  
**SYSTEMS** **ANALYSIS RESULTS**

Checked: Simon French



**TESTCONSULT LIMITED**  
 11 Trinity Court, Risley, Warrington  
 Cheshire WA3 6QT  
 Tel: (01925) 830036 Fax: (01925) 830037



## BERRY SYSTEMS - BS6399 BARRIER ANALYSIS RESULTS

**DATE:** 2/9/05 **DISTANCE BETWEEN POSTS (mm):** 1500 **ULTIMATE BENDING MOMENTS (Nm)**  
**JOB NUMBER:** A4633/310805 **POST:** RB1x-14.3 **POST:** 7.04E+03  
**PROJECT NAME:** TC LAB Simulations **BARRIER:** BB3 **BARRIER:** 1.10E+04  
 8 posts, 3 rails **HEIGHT OF IMPACT (mm):** 375 **HEIGHT OF POST (mm):** 610

*This sheet is included to illustrate the procedure for conversion of the numerical data obtained from the finite element analysis into ultimate forces and deflections at the 1st and 2nd critical points of failure. This data is then used to determine energy as in sheet 2*

### Primary Failure

d1 (mm)
1.282

K (x E5) 7.80	MEMBERS					Force (kN)	Defn. (mm)	Failure Position
	Barrier 1	Barrier 2	Barrier 3	Post 1	Post 2			
<b>Critical Moments</b>	234.13	88.60	98.90	104.31	49.13			
<b>Yield Coefficients</b>	47.03	127.13	111.33	67.49	143.29	47.03	60.29	Centre Rail
<b>Yield Residuals</b>	0.00	6937.52	8359.29	2134.98	4729.58			

### First Hinge Failure

d1 (mm)
1.92

K (x E5) 5.22	Barrier 1	Barrier 2	Barrier 3	Post 1	Post 2	Force	Defn.	Failure Position
<b>Critical Moments</b>	1.00	90.66	149.20	123.54	37.96			
<b>Yield Coefficients</b>		76.52	42.62	17.28	124.61	17.28	33.09	Centre Posts
<b>Yield Residuals</b>		5370.69	3780.77	0.00	4073.62	64.31	93.38	

### Second Hinge Failure

d1 (mm)
6.478

K (x E5) 1.54	Barrier 1	Barrier 2	Barrier 3	Post 1	Post 2	Force	Defn.	Failure Position
<b>Critical Moments</b>	1.00	187.59	558.19	1.00	134.94			
<b>Yield Coefficients</b>		28.63	6.77		30.19	6.77	43.88	Third Point on Rail
<b>Yield Residuals</b>		4100.06	0.00		3159.65	71.08	137.26	
<b>General Yield</b>						72.00	500.00	

# Method Statement

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**Contracts Manager:** Michael Newland

**Work Package:** Installation of Crash Barrier System

## **Access, Deliveries and Storage:**

1. Client is responsible for clearing and keeping clear access to installation area. Minimum working area required per day is 75m.
2. No restrictions on delivery vehicle size.
3. Forklift to be provided by Client and is required for offloading and distribution of materials to storage and work areas. Forklift to be operated by competent personal only.
4. Berry to distribute material to appropriate areas to be worked. Materials to be stored on pallets or wooden skids to protect floor surfaces.
5. Foreman's Mate to act as Banksman during all lifting operations using the Forklift.
6. Storage areas to be agreed and discussed between Berry Foreman and Client Site Management. Storage on each level preferred.

# Method Statement

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## Other:

1. Hot Works will be carried at installation area unless otherwise agreed. If required and in line with Client Management policy, a segregated cutting area to be agreed between Installation Team & Client Site Management.
2. Hot Works permit obtained in accordance with Client on site Management Policy. CO2 fire extinguishers and Fire Blanket to be present during all cutting operations.
3. All fitter competencies detailed in Site Operations Manual.
4. Berry Site Foreman to be SSSTS qualified
5. COSHH: COSHH Register, Assessments, and data sheets to be issued to Site Foreman. Site Foreman to carry out Toolbox Talks on COSHH materials on site. Talk to be recorded on Toolbox Talk Record of Delivery. All COSHH materials to be stored in a suitable lockable container.
6. COSHH Waste: COSHH waste material deemed to be negligible. Where required waste materials will be bagged, labelled and stored within the COSHH storage container. All waste will be removed from site when works complete and disposed of as per requirement in COSHH Assessment.
7. Dust: The amount of dust generated during on site operations is deemed to be negligible. What little This will be controlled by wetting down the drilling area prior to drilling taking place, further wetting down to be done whilst drilling taking place if required.

# Method Statement

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## Other (Continued):

8. Forklift Truck: Before first use of forklift Inspection Certification to be handed over from Supplier. Forklift to be immediately checked using Daily Inspection Sheet. Daily checks to be carried out there after.
9. All plant and tools to be inspected on a daily basis using Daily Plant Inspection Sheet
10. All trigger time on hand tools to recorded and measured in strict accordance with HAV register inline with HAV policy.
11. Noise: Noise levels from tools on site as detailed in Fitter Plant List has been assessed and Ear Defenders rated accordingly to
12. Refuelling: Although probably not required, re-fuelling of tools will be carried out in a designated area over a drip tray with spill kits to hand and in line with Client Site Management Policy.
13. Agree setout datum in conjunction with Client Site Management & Drawing Nos. XXXXXXXX, XXXXXXXX, XXXXXXXX, & XXXXXXXX.
14. Any deviation from drawing layout to be signed off by Client Site Management on both Weekly Site Report & Handover Certificate.
15. NO extra works to be undertaken without written instruction.



# Method Statement

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## Equipment Required:

- 2 KVA Generator
- 240v to 110v transformer
- Torque Wrench
- Hammer Drill
- Percussion Drill
- 9"/12" Angle Grinder
- Chop Saw
- Extension Leads
- Trolley
- All electrical plant suitably PAT tested

## Plant and Operator Training:

All our site operatives are experienced and skilled in the erection / use of the aforementioned system and plant. Training is constantly reviewed and updated and currently includes:

- CSCS Health & Safety Training
- Plant & Operator forklift truck
- Abrasive Wheels Training (prov. & use of Work Equipment Regulations 1998)
- First Aid Training
- All of the above is additional to the site induction

## Personnel Protective Equipment:

The following equipment is supplied as standard and is to worn in conjunction with the Risk Assessment attached and any Site Induction conditions.

- Hard Hats
- Protective Footwear
- High Visibility Clothing

## Supervision:

1. All operatives to have Client site induction
2. Berry foreman on site in charge of day to day operations
3. Permit to work to be obtained from Client for hot works i.e. use of abrasive wheels
4. Berry Contracts Manager to keep overall view of project
5. All Health & Safety issues will be co-ordinated and supervised by this team
6. Berry foreman & Client Site Manager to agreed on safe cutting area for Hot Works

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## Emergency Arrangements:

1. Berry operatives will co-ordinate with Client site emergency procedures as per induction.
2. Site foreman has mobile phone for emergency calls.

## Welfare:

1. Client to provide shared welfare facilities
2. Berry operatives to use Client First Aid Personnel and facilities

## Circulation of Information:

1. The aforementioned will be checked and reviewed as the works progress
2. The method of work will be fully explained to the workforce
3. All amendments to the aforementioned will be given in writing to Client
4. All operatives will be issued a copy of the Method Statement

## Monitoring and Compliance:

1. Berry foreman to ensure all the aforementioned is enforced at all times.
2. Berry Contracts Manager to perform site audits with no prior notice to check enforcement.
3. Client, Berry foreman and contracts manager to monitor effectiveness of procedures throughout project as part of Berry ongoing assessment.

## Occupational Health Assessment:

These points are appendixes to this Method Statement via Berry Systems Health & Safety Policy.

## Operatives:

On completion of project signed copies of Method Statement, Risk Assessment and Tool Box Talks must be returned back to Berry Systems.

If at any time during installation it is necessary to change the Method of Work, this Method Statement must be amended and acknowledged by client before work continues.

**I have read and understood this Method Statement and the associated Risk Assessments and will undertake to work in accordance with them.**

**This Method Statement is prepared using all the available information received to date. Any further information referred to in the pre-tender Health & Safety Plan will be incorporated as appropriate.**

# Risk Assessments

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## Site Specific Risk Assessment

On completion of project signed copies of Method Statement, Risk Assessment and Tool Box Talks must be returned back to Berry Systems.



Document No:	-RAMS-001
Start Date:	
Revision:	A
Site Manager:	
Employer:	
Site Address:	

Activity with Potential Risk: Barrier Installation		Location:
Name Printed:	Signed:	Position:
Prepared By:		Project Coordinator
Authorised By:	Michael Newland	Contracts Manager

The last page of this risk assessment must be signed by all personnel undertaking the work to confirm that they have read and understand its contents.

**Hazards which create potential for harm**

Mobile plant/Vehicles <input checked="" type="checkbox"/>	Falling Objects <input type="checkbox"/>	Hot Works <input checked="" type="checkbox"/>	Operating a Forklift Truck <input checked="" type="checkbox"/>
Excavation Post Holes <input type="checkbox"/>	Noise/Vibration <input type="checkbox"/>	Asbestos <input type="checkbox"/>	Unauthorised Entry <input type="checkbox"/>
Welding Operations <input type="checkbox"/>	Fumes/Gas <input type="checkbox"/>	Unspecified lift points <input type="checkbox"/>	Manual handling <input checked="" type="checkbox"/>
Working in a Live Car Park <input type="checkbox"/>	Dust <input checked="" type="checkbox"/>	Mobile Scaffold <input type="checkbox"/>	Using Abrasive wheels <input checked="" type="checkbox"/>
Falls from height <input checked="" type="checkbox"/>	Heat <input type="checkbox"/>	Pressurised Systems <input type="checkbox"/>	Confined spaces <input type="checkbox"/>
Trips and Slips <input checked="" type="checkbox"/>	Lifting operations <input type="checkbox"/>	Lighting levels <input type="checkbox"/>	Scissor Lift <input type="checkbox"/>
Drilling Operations <input checked="" type="checkbox"/>	Other Trades in Area <input type="checkbox"/>	Cartridge Fired Tools <input type="checkbox"/>	

Other risk (Specify):  
The above list is not exhaustive.

Persons exposed:

Berry Systems employees:  Other workers:

Young persons:  Public/Visitors:

Total No at risk:

**INSTRUCTIONS FOR USE**  
Each hazard must be assessed and qualified for the likelihood of possibility of injury and the severity of any injury so caused. The numeric assessments are then multiplied to achieve a risk rating for each of the hazards identified.

**Note 1** Likelihood of Harm (L): Very Unlikely = 1; Unlikely = 2; Likely = 3; Very Likely = 4; Almost Certain = 5.  
**Note 2** Severity of Harm (S): First Aid Injury = 1; Minor injury = 2; Reportable Injury = 3; Major Injury = 4; Fatality or Disabling Injury = 5.  
**Note 3** With an Likelihood of Harm rating of 5 and an Initial Risk Rating of over 6 then controls should be implemented to reduce the degree of risk. A Post Control Risk Rating of 10 or over will result in an immediate cessation of work until the risk is reduced.  
**Note 4** If our operations are likely to affect pedestrians or the safe operation of a public transport system, the control measures must reduce the likelihood of significant harm to the level that existed before our work commenced.

Hazard	Pre Control			Control Measures (To include details of the person or organisation responsible for implementing the measure(s).)	Post Control		
	Factors of Harm		Risk Rating		Factors of Harm		Risk Rating
	L	S	Multiple of columns 1&2		L	S	Multiple of columns 4&5
Site vehicles and plant	4	5	20	Segregate vehicles and pedestrian traffic. Wear Hi-Vis clothing. Erect Barriers. Post warning signs. Make your presence know to the vehicle operator wear practical.	1	5	5
Falls from height	4	5	20	Ensure guard rails are in place. Ensure operatives are wearing fall arrest harnesses attached to appropriate anchor points if guard rails require removal to complete a task.	2	5	10
General site conditions (housekeeping etc)	4	4	16	Tidy up any debris at the end of each shift and on completion of the work. Keep all access routes clear of materials.	1	4	4
Drilling Operations	3	4	12	Wear appropriate PPE i.e. gloves, ear defenders, goggles. Ensure level directly below working area is cordoned off and free of parked vehicles and pedestrians.	1	4	4

## Site Specific Risk Assessment

On completion of project signed copies of Method Statement, Risk Assessment and Tool Box Talks must be returned back to Berry Systems.



Document No:	-RAMS-001						
Start Date:							
Exposure to harmful substances	3	4	12	Wear the correct PPE. Be aware of the COSHH data for the product. Have access to first aid facilities and water wash.	1	4	4
Flying particles	4	4	16	Wear the correct eye protection for the hazard. Segregate the hazard area where reasonable practicable.	1	4	4
Fumes from plant & equipment	3	3	9	Position plant away from work area & use weld extension leads. In buildings use LEV. Switch off when not in use.	1	3	3
Hot works	4	4	16	Area cleared of combustible materials. Fire fighting equipment in place. Fire watcher present. Permits in place where applicable. Work ceases 1 hour before the shift end. Area monitored for fire.	1	4	4
Manual handling	3	4	12	Try to eliminate manual handling as far as reasonably practicable. Tool box talks to be implemented for correct lifting of equipment regarding manual handling. Operatives to be trained in manual handling	1	4	4
Noise	4	4	16	Ear protection required during any drilling, cutting and grinding operations. If voices need to be raised to communicate at a distance of 2 metres or closer, works must cease, an appropriate dynamic risk assessment must be carried out and the correct course of action must be pursued. This may include setting up a	1	4	4
Operating a forklift truck	4	5	20	Only Authorised. Competent and trained personnel operate the forklift. Weights known before lifting. Area clear of non-essential personnel. Ground conditions stable.	1	5	5
Operatives working at height.	5	5	25	The area below the work to be cleared of personnel. When working at height advise other personnel in area. Barrier off danger area and post warning notices.	1	5	5
Hazards from other works being carried out	4	5	20	Co-ordinate activities with other contractors in the area. Segregate the work areas where reasonable practicable	1	5	5
Substances, i.e. chemicals, LPG's, dust, fumes etc	4	5	20	COSHH details to be available to users. Users to be trained as appropriate for the substance being used. Any necessary PPE to be worn.	1	5	5
Working in a Live Car Park	4	5	20	Ensure traffic management procedures are in place. Post warning signs and introduce traffic calming measures. Ensure level directly below working area is cordoned off and free of parked vehicles and pedestrians.	1	5	5

# Mill Certs

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Typical example of a Mill Cert, however these will be submitted once raw material orders are placed

## DAVRO STEEL

Unit 9, Hayes Lane Trading Estate, Hingley Road, Halesowen, West Midlands, B63 2RR, United Kingdom  
Tel: +44 (0) 1633 290 100, E-mail: [www.davrosteeel.co.uk](mailto:www.davrosteeel.co.uk)  
VAT Registration No: 655 1271 45 Registered in England: 471310



Davro-73331



DAV190

Page 1 of 1

Invoice Address:  
HILL & SMITH LTD  
Springvale Business & Industrial Park  
Bilston  
Wolverhampton  
West Midlands  
WV14 0QL

Delivery Address:  
HILL & SMITH LTD  
SPRINGVALE BUSINESS & INDUSTRIAL PARK  
BILSTON  
WOLVERHAMPTON  
WV14 0QL

<b>DELIVERY NOTE / LETTER OF CONFORMITY</b>		<b>Despatch Note</b>	<b>Davro-73331</b>
Printed	2nd Aug 2017 - 10:40	Despatch Note Date	2nd August 2017
Our Sales Person	Tom Smith	Account Code	HIL002
Vehicle Reference	DE 63 VSC	Trailer Reference	

Item	Description	Pieces/LM	Weight
1	S275JR TO BS EN 10025-2:2004 3.000mm x 474.000mm Part No: SC474X2.9  Our Order No: 192566-1 Your Order No: PO061636-3  STK No: 362859 Parent: 347805 W/H: Hingley Road STK No: 362860 Parent: 347805 W/H: Hingley Road STK No: 362936 Parent: 346607 W/H: Hingley Road STK No: 362937 Parent: 346607 W/H: Hingley Road STK No: 362938 Parent: 346607 W/H: Hingley Road STK No: 362939 Parent: 346607 W/H: Hingley Road STK No: 362951 Parent: 346609 W/H: Hingley Road STK No: 362952 Parent: 346609 W/H: Hingley Road STK No: 362953 Parent: 346609 W/H: Hingley Road STK No: 362954 Parent: 346609 W/H: Hingley Road  Item Totals	10 PCS	27.140 Tne

TOTAL PCS: 10 - TOTAL WEIGHT: 27.140 Tne

THIS MATERIAL IS SUPPLIED IN ACCORDANCE WITH OUR TERMS AND CONDITIONS OF SALE, AVAILABLE ON REQUEST OR [WWW.DAVROSTEEL.CO.UK](http://WWW.DAVROSTEEL.CO.UK)

Customer Print Name	Customer Signature	Date Received	Time
Dp Jones	[Signature]	28/8	9

WE HEREBY CERTIFY THAT THE MATERIALS DETAILED HEREON AND UNDER COVER OF THE APPLIED ADVICE NOTE HAVE BEEN TESTED IN QUALITY PROCEDURES IN ACCORDANCE WITH THE CONDITIONS OF OUR QUALITY REGISTRATION.

Corporation Road,  
NEWPORT,  
South Wales NP19 4XE  
Tel: +44 (0) 1633 290 288  
Fax: +44 (0) 1633 290 240

## LIBERTY STEEL NEWPORT LIMITED

TEST CERTIFICATE

346607

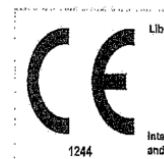
CUSTOMER:	DAVRO STEEL LIMITED UNIT 9 HAYES TRADING ESTATE HINGLEY ROAD HALESOWEN B83 2RR UNITED KINGDOM	SHIPPED TO:	DAVRO STEEL LIMITED UNIT 9 HAYES TRADING ESTATE HINGLEY ROAD HALESOWEN
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Specification: BS EN 10025:2004 Grade S275JR +AR	Size: 980 x 3 mm	Customer Order No: 31564	Despatch Date: 17/05/2017
Steel/making Process: BOS / Concast	Test Certificate to BS EN 10204 3.1	Despatch Note No: 660522	Liberty Steel Order No: 00237571 001

CAST NUMBER	COIL NUMBER	NOMINAL SIZE	YIELD STRENGTH (Rp)	TENSILE STRENGTH (Rm)	% ELONG @ 80 mm	% ELONG @ 5.65a	BEND TESTS	CHEMICAL ANALYSIS %													
								C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Al	Nb	N	CE
161204	AKR124	980 x 3 mm	358	450	37.7			0.15	0.010	0.20	0.017	0.016	0.040	0.007	0.020	0.060	0.003	0.041	0.001	0.004	0.237

Hardness Scale	HARDNESS TEST			
	Result 1	Result 2	Result 3	Average
HRB	0	0	0	0

Certified that the whole of the material herein have been inspected and tested, and unless otherwise stated conforms with the requirements of the order. Nigel Carter, Quality Manager.



Liberty Steel Newport Ltd, Corporation Road, Newport, South Wales NP19 4XE  
17  
LSN Strip S275JR  
EN 10025-1 : 2004  
1.0044  
Intended uses: To be used in welded, bolted and riveted structures

Tolerances on dimensions and shape: EN 10051 Class  
Elongation  
Tensile strength  
Yield strength  
Impact strength  
Weldability  
Durability  
: Steel S275JR - EN 10025-2  
Dangerous substances: No performance determined



# Previous Installation

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Photos of previous installations carried out by Berry Systems



# Contacts

**Berry**

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**Mark Robbins – Sales Manager**

**James Fildes – Senior Estimator**

**Berry Systems**

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Bilston

Wolverhampton

WV14 0QL

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**Mobile:** (0)7764 228352

**Email:** [mark.robins@berrysystems.co.uk](mailto:mark.robins@berrysystems.co.uk)



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