Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/622 Rev A

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CAD Drawing

- CIV/SD/622

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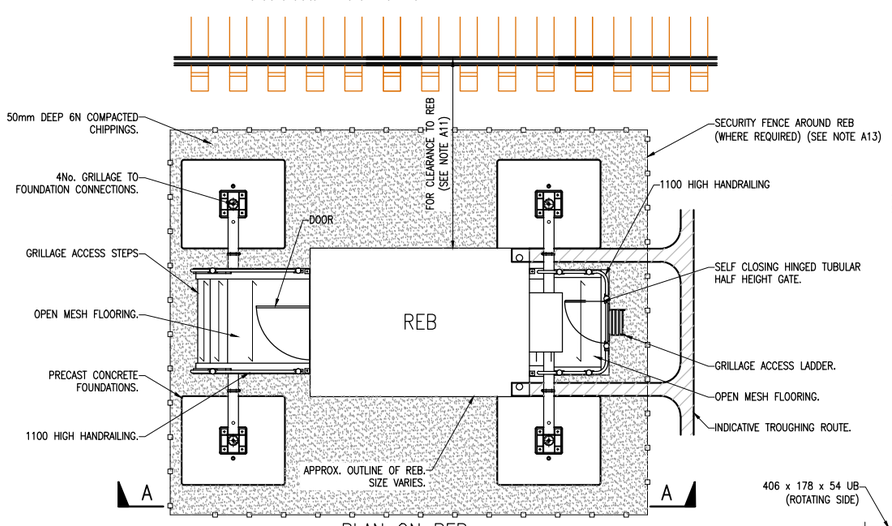
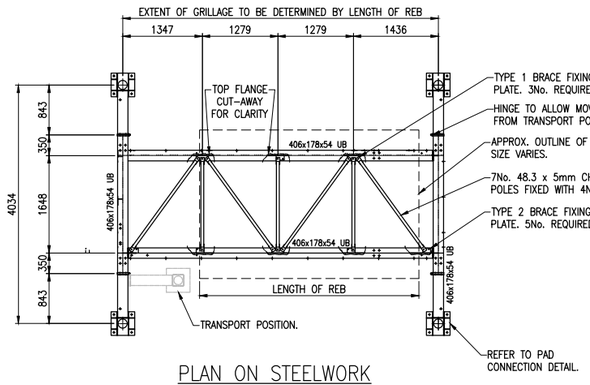


PLAN ON REB

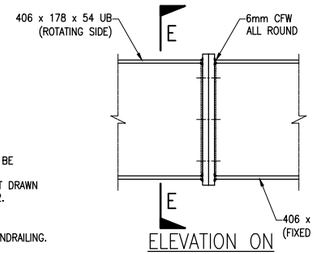
SCALE 1:50



PLAN ON STEELWORK

SCALE 1:50

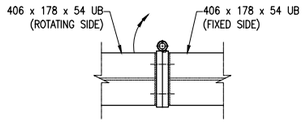
MAIN STEELWORK COMPONENTS			
UNIT	SIZE (mm)	LENGTH (mm)	NUMBER
1	406x178x54kg/m UB	5150	2
2	406x178x54kg/m UB	2438	2
3	406x178x54kg/m UB	725	4
4	400x400x 35	PLATE	4
5	190x 10 x 370	PLATE	4
6	48.3 x 5 CHS	1810	4
7	48.3 x 5 CHS	1450	3
8	433x 190x 20	PLATE	8
9	33.7 x 4 CHS	150	12



ELEVATION ON HINGE DETAIL

(2No. THUS. 2No. HANDED)

SCALE 1:10



PLAN ON HINGE DETAIL

(2No. THUS. 2No. HANDED)

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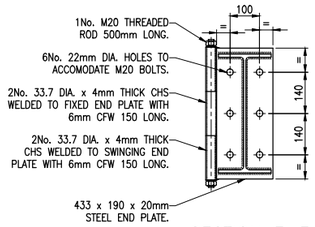
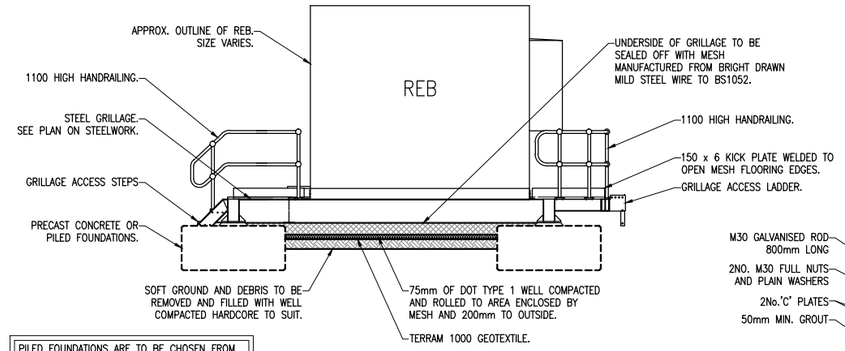


SECTION E–E

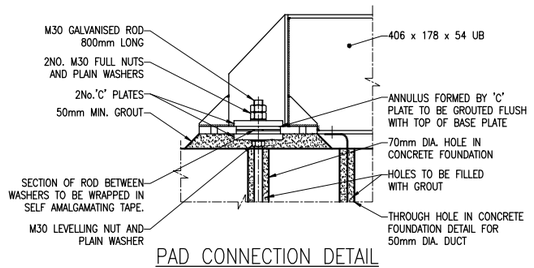
SCALE 1:10



PILED FOUNDATIONS ARE TO BE CHOSEN FROM THE NETWORK RAIL FOUNDATION SELECTION TOOL

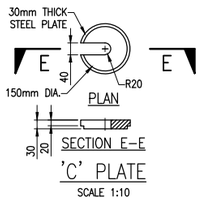
ELEVATION A–A

SCALE 1:50



PAD CONNECTION DETAIL

SCALE 1:10



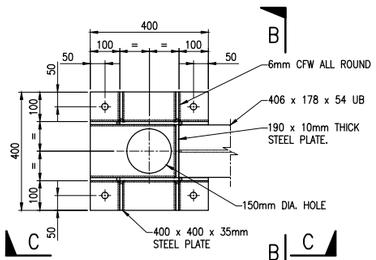
'C' PLATE

SCALE 1:10

M30 GALVANISED ROD TO BE FULLY SCREWED INTO FOUNDATION SOCKET AND TORQUED TO A MINIMUM 350Nm.
ROD TO BE LOAD TESTED TO 35kN BEFORE GRILLAGE INSTALLATION AND GROUTING.
LOAD TEST RESULTS FOR ALL FOUR FIXING POSITIONS TO BE PROVIDED TO SITE DESIGN ENGINEER AND INCLUDED IN THE H&S FILE.

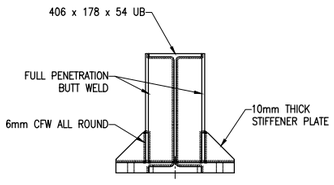
GROUT TO BE MIXED AND POURED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. MIX ONLY WHAT IS REQUIRED AND USE IMMEDIATELY. INSTALLATION CONTRACTOR SUPPLY

HOLES TO BE GROUTED TO TOP OF PRECAST UNIT BEFORE POSITIONING GRILLAGE.



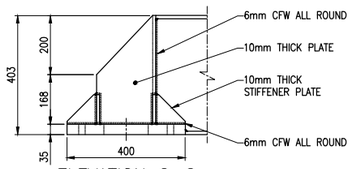
PLAN ON GRILLAGE CONNECTION

SCALE 1:10



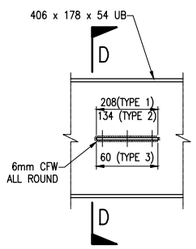
SECTION B–B

SCALE 1:10



ELEVATION C–C

SCALE 1:10



ELEVATION ON BRACE CONNECTION

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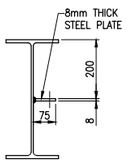
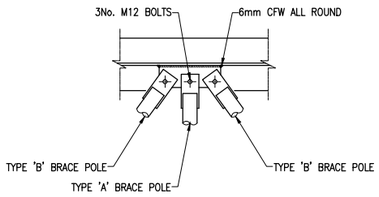


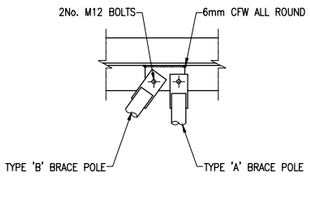
SECTION D–D

SCALE 1:10



PLAN ON TYPE 1 BRACE FIXING

SCALE 1:10



PLAN ON TYPE 2 BRACE FIXING

SCALE 1:10

TABLE 1

SAFETY. HEALTH AND ENVIRONMENT RISK ASSESSMENT

DESIGNERS NOTES – CDM REG. 13(2)(B)
THE FOLLOWING ARE SIGNIFICANT HAZARDS WHICH MIGHT AFFECT THE HEALTH AND SAFETY OF THOSE UNDERTAKING THE WORKS OUTLINED IN THIS SET OF DRAWINGS ON RAILWAY STRUCTURES OR THOSE AFFECTED BY THESE ACTIVITIES. A SITE SPECIFIC RISK ASSESSMENT SHOULD ALWAYS BE UNDERTAKEN PRIOR TO COMMENCING ANY OF THE WORKS DESCRIBED ON SITE.
IT IS ASSUMED THAT A COMPETENT CONTRACTOR IS AWARE OF THE RISKS ASSOCIATED WITH GENERAL CONSTRUCTION ACTIVITIES UNDERTAKEN WITHIN THE RAILWAY ENVIRONMENT

RISK	STAGE	MITIGATION MEASURES
DANGERS ASSOCIATED WITH LOCALISED EXCAVATION.	C	ENSURE COMPETENT PERSONNEL EXCAVATE THE WORKS. WHERE THE DEPTH IS SIGNIFICANT, SUITABLE MEASURES MUST BE UNDERTAKEN TO PREVENT AGAINST EXCAVATION COLLAPSE
BURIED SERVICES, S & T/M & E CABLE STRIKE.	D/C	ENSURE EXCAVATION AREAS ARE CLEAR OF SERVICE LOCATIONS (SEE NOTE A5). ENSURE ALL CABLES/SERVICES ARE IDENTIFIED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
CONTACT WITH OHLE.	C	ENSURE CORRECT PROCEDURE IS FOLLOWED FOR ISOLATION.
MANUAL LIFTING OF HEAVY MATERIALS.	C	ENSURE ADEQUATE LIFTING EQUIPMENT IS PROVIDED.
CONTAMINATED LAND.	C	AVOID CONSTRUCTION ON, EXCAVATION OF OR DISTURBANCE OF AREAS OF POTENTIALLY CONTAMINATED LAND. (SEE NOTE A8)
WORKING NEAR THE RUNNING LINE.	D/C	ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH NETWORK RAIL STANDARDS/RULE BOOK USING RIMINI PLANNING.
LIFTING OF GRILLAGE ELEMENTS INTO POSITION.	C	ALL LIFTING PARTS ARE TO BE DESIGNED BY FABRICATOR FOR APPROVAL TO THE CLIENT. EACH COMPONENT WEIGHT WILL BE SPECIFIED ON DRAWINGS AND THE CENTRE OF GRAVITY
SLIDING/SWINGING PARTS AND ASSOCIATED DANGER DURING LIFTING OPERATION.	C	METHODOLOGY OF GRILLAGE INSTALLATION TO ACCOUNT FOR THE POSSIBILITY OF SLIDING/SWINGING PARTS TO ENSURE NO INJURY TO PERSONNEL DURING LIFTING OPERATION.

NOTE: C = CONSTRUCTION, D = DESIGN, O = OPERATION.

A11) STRUCTURE TO BE POSITIONED SUCH THAT NO PART OF THE FOUNDATION IS WITHIN THE TRACK SUPPORT ZONE AS DEFINED IN (NR/SP/CIV/044). STRUCTURAL ADEQUACY OF TRACK TO BE MAINTAINED AT ALL TIMES. TEMPORARY WORKS MAY BE REQUIRED ESPECIALLY FOR DEEP EXCAVATIONS.

A12) FENCING MAY BE REQUIRED IN HIGH RISK VANDALISM AREAS. WHENEVER FENCING IS REQUIRED CLEARANCES ARE TO BE INCREASED TO ACHIEVE AT LEAST 2000mm CLEARANCE FROM FENCE TO NEAREST POINT OF REB CABINET.
IF NOT ACHIEVABLE, THEN THIS SHALL BE AGREED IN THE PROJECT SPECIFIC FORM B.

A13) IN AREAS OF HIGH VANDALISM, THE PERIMETER OF THE REB SHOULD HAVE A STEEL SECURITY FENCE WITH ENTRY THROUGH A LOCABLE GATE. WHENEVER FENCING IS REQUIRED CLEARANCES ARE TO BE INCREASED TO ACHIEVE AT LEAST 2000mm CLEARANCE FROM FENCE TO NEAREST POINT OF REB CABINET. IF NOT ACHIEVABLE, THEN THIS SHALL BE AGREED IN THE PROJECT SPECIFIC FORM B.

A14) STEELWORK COMPONENT SIZES TO BE CONFIRMED AT FORM B STAGE. SIZES TO BE BASED ON REB SIZE AND REQUIRED SPAN.

A15) ASSESSMENT OF SLOPE OR RETAINING MEASURES TO BE UNDERTAKEN WHERE MODULAR BUILDING IS TO BE POSITIONED NEAR CREST OF SLOPE OR ADJACENT TO RETAINING WALL. BASE NOT TO BE USED WHERE EARTH WORKS OR RETAINING WALL EXHIBIT SIGNS OF DISTRESS OR FAILURE.

B) SPECIFICATION

B1) CABLE TRAY TO BE FIXED BELOW REB CABIN TO BE CUT TO SUIT SITE CONDITIONS. ALL CUT EDGES TO BE PROTECTED BY ZINC RICH PAINT.

B2) ALL METAL HANDRAILS, LADDERS, PLATFORMS ETC., WHERE ON A LINE ELECTRIFIED WITH AC CURRENT, SHALL BE ELECTRICALLY BONDED IN ACCORDANCE WITH THE NETWORK RAIL LINE STANDARD NR/SP/ELP/21058.

B3) DOT TYPE 1 UNBOUND MIXTURE FOR SUB–BASE TO BE IN ACCORDANCE WITH HIGHWAYS AGENCY SPECIFICATIONS FOR HIGHWAYS WORKS.

B4) GROUND UNDER CONCRETE FOUNDATION TO BE WELL COMPACTED PRIOR TO LAYING CONCRETE. ANY SOFT SPOTS TO BE EXCAVATED OUT AND BACKFILLED WITH CLASS 1A FILL WELL COMPACTED IN 150mm LAYERS.

B5) SUB BASE TO BE LAID OVER THE SUBGRADE TO COMPRISE 150mm CLASS 1A GRANULAR MATERIAL. BLINDING CONCRETE CAN BE USED AS AN ALTERNATIVE MATERIAL. IF FOUNDATION SITUATED ON GOOD GROUND THEN THICKNESS CAN BE REDUCED. IF FOUNDATION SEATED ON ROCK THEN NO SUB BASE REQUIRED.

B6) CONCRETE TO BE DESIGNED IN ACCORDANCE WITH MODEL CLAUSES (80)

B7) ALL STEEL FIXINGS TO BE SUPPLIED TO CORRECT LENGTHS. WHERE SITE CUTTING/ALTERATION IS REQUIRED, CORROSION PROTECTION TO BE APPLIED (ZINC RICH PRIMER, TO PROVIDE 140µm DRY FILM THICKNESS).

B8) PERMISSIBLE BEND RADIUS OF CABLES TO BE ADVISED BY CABLING CONTRACTOR PRIOR TO CONSTRUCTION OF CHAMBER, TO CHECK SUITABILITY OF CHAMBER SIZE. MINIMUM CABLE BENDING RADIUS IN CHAMBER = 12 x LARGEST CABLE DIAMETER. DUCTS TO BE PROVIDED WITH DRAW ROPE AND DUCT ENDS TO BE FORMED SMOOTH TO PREVENT CABLE/SHEATH DAMAGE DURING PULL. DRAW ROPES TO BE TIED OFF.

B9) CONTRACTOR IS TO POSITION ANY TURNING CHAMBERS TO ACCOMMODATE THE DUCT/TROUGH INTERFACE IN A SUITABLE LOCATION, TAKING BOTH THE ROUTE WORKS AND ENABLING POSITION INTO CONSIDERATION.

B10) SURFACE PROTECTION TO BE N1 WITH MINIMUM 25 YEAR SERVICE LIFE IN ACCORDANCE WITH NETWORK RAIL STANDARD NR/GN/CIV/002. 'APPLICATION & RE–APPLICATION OF PROTECTIVE TREATMENT TO METALLIC STRUCTURES' HANDRAIL PAINT FINISH TO BE A CONTRASTING COLOUR TO THE STRUCTURE.

B11) GALVANISED STEEL MESH TO BE PROVIDED BETWEEN REB BUILDING AND TROUGHING ALL AROUND BUILDING TO PREVENT COLLECTION OF LITTER AND INHIBIT RODENT INFESTATION. MESH TO BE FIXED TO REB WITH SELF TAPPING SCREWS AND PROPRIETARY CLIPS.

C) DESIGN ASSUMPTIONS

C1) REB CABINET DIMENSION INCLUDING CABLE ENTRY LOCATION ARE TO BE SPECIFIED IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENT BY THE DESIGNER IN A PROJECT SPECIFIC FORM B.

C2) DESIGN ASSUMES FOUNDATION IS LOCATED ON LEVEL GROUND. ANY SPECIAL ACCESS REQUIREMENTS FOR SLOPES, i.e. WALKWAYS, STAIRS AND RETAINING WALLS ARE TO BE COVERED BY THE PROJECT SPECIFIC FORM B SUBMISSION.

C3) WHERE STRUCTURE IS TO BE POSITIONED NEAR AN EMBANKMENT OR CUTTING STABILITY CALCULATIONS SHALL BE PERFORMED ON A SITE SPECIFIC BASIS.

C4) THE TOP SURFACE OF THE FOUNDATION SHALL BE SET TO LEVEL WITH A TOLERANCE OF +/– 5mm. NO POINT SHALL HAVE A SAG GREATER THAN 2mm FROM A 2m STRAIGHT EDGE.

C5) LIVE LOADING IS ASSUMED TO BE 5KN/m² FOR REB IN ACCORDANCE WITH BS 6399 PART 1.

C6) WIND LOADING HAS BEEN DERIVED IN ACCORDANCE WITH BS6399 PART 1 ASSUMING A WORST CASE EFFECTIVE WIND SPEED OF 54m/s AND A MAX. HEIGHT TO TOP OF CABINET OF 3500mm.

C7) SCHEME DESIGNER'S ADOPTING THE FOUNDATION DESIGN FOR TALLER CABINETS SHALL BE RESPONSIBLE FOR REASSESSING THE WIND LOAD ACCORDINGLY AS PART OF A PROJECT SPECIFIC FORM B DESIGN.

DRAWING No. NR/CIV/SD/622

NOTES

A) GENERAL

A1) ALL DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE STATED.

A2) ALL WORK TO BE IN ACCORDANCE WITH NETWORK RAIL COMPANY STANDARD (NR/L3/CIV/140) MODEL CAUSES FOR SPECIFYING CIVIL ENGINEERING WORKS (THE SPECIFICATION).

A3) REFER TO SITE SPECIFIC LAYOUT PLAN FOR LOCATION, SETTING OUT AND ORIENTATION.

A4) SITING OF ALL LINESIDE APPARATUS SHALL TAKE INTO ACCOUNT ANY EFFECT ON SIGNAL SIGHTING. ALL LOCATIONS TO BE APPROVED BY NETWORK RAIL (THE SIGNAL SIGHTING COMMITTEE SHALL BE CONSULTED IF THERE IS A POSSIBLE IMPACT ON SIGNAL SIGHTING ESPECIALLY WITHIN 800m OF LEVEL CROSSING),

A5) THIS DRAWING IS TO BE READ IN CONJUNCTION WITH, AND THE NEW CONSTRUCTION IN ACCORDANCE WITH, NETWORK RAIL COMPANY AND GROUP STANDARDS.

A6) THIS IS A GENERIC DRAWING AND IS IN ACCORDANCE WITH THE STANDARDS APPLICABLE AT THE DATE OF APPROVAL OF THE DRAWINGS. THE CONTRACTOR IS REQUIRED TO ENSURE THAT ANY SUBSEQUENT CHANGES TO STANDARDS ARE INCORPORATED INTO THE DESIGN AND PERMANENT WORKS.

A7) ALL DETAILS ON THIS STANDARD DRAWING ARE SUBJECT TO CONFIRMATION BY DETAILED SITE SPECIFIC DESIGN FOLLOWING A TRIAL PIT GROUND INVESTIGATION AND TOPOGRAPHICAL SURVEY. THE CONTRACTOR IS EXPECTED TO CONFIRM GROUND CONDITIONS AND TO VERIFY THE DESIGN AT EACH AND EVERY SITE.

A8) ARISING FROM EXCAVATIONS NOT REQUIRED FOR BACKFILL MAY BE SPREAD EVENLY AND NEATLY OVER THE SITE SUBJECT TO APPROVAL OF THE PROJECT ENGINEER. IF SITE INVESTIGATION HAS DETERMINED THAT THE EXCAVATED MATERIAL IS CONTAMINATED CONTRACTOR SHALL SEEK CONFIRMATION FROM THE PROJECT ENGINEER ON HOW TO HANDLE ARISING FROM EXCAVATIONS. EACH SITE SHALL BE CONSIDERED AND SPREADING OF ARISING SHALL ONLY BE PERMITTED WHEN THERE ARE NO ADVERSE EFFECTS ON THE RAILWAY INFRASTRUCTURE i.e. BLOCKING OF DRAINS, LOADING OF EMBANKMENTS ETC.

A9) PRIOR TO CONSTRUCTION ALL VEGETATION IS TO BE REMOVED IN THE VICINITY OF THE WORKS AND GROUND TREATED WITH A NON–TOXIC HERBICIDE. WHEREVER POSSIBLE THE FOUNDATION SHOULD BE SET WITH AT LEAST 3m CLEARANCE FROM THE RUNNING EDGE. THIS ENSURES THAT THE WHOLE OF THE INSTALLATION IS IN A PERMANENT GREEN ZONE IN ACCORDANCE WITH RAILWAY GROUP STANDARD (GE/RT8000). FOR LESS THAN 3m REFER TO (NR/GN/SIG/11303).

A10) STRUCTURES ARE TO BE POSITIONED SUCH THAT ALL PARTS ARE AT LEAST 3m DESIRABLE MINIMUM CLEARANCE FROM RUNNING EDGE. ABSOLUTE MINIMUM CLEARANCE FROM RUNNING EDGE TO BE 2m FOR LINESPEED < 125mph, AND 2.75m FOR LINESPEED > 125mph. STRUCTURES ARE TO BE POSITIONED SUCH THAT ALL PARTS ARE AT LEAST 2.75m CLEARANCE FROM ALL LIVE OHLE. STRUCTURES ARE TO BE POSITIONED SUCH THAT ALL OTHER METALLIC PARTS (i.e. REB AND CABINET) ARE AT LEAST 2.75m TOUCH POTENTIAL CLEARANCE FROM ALL LIVE OHLE. OHLE INCLUDES ALL LIVE EQUIPMENT, MASTS AND RETURN CONDUCTOR.

Rev	Date	Description of revision	Design'd	C'kd
A	04/04/11	FIRST ISSUE	C.K.	R.E.S.

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Approved				
	Name	Position	Signature	Date

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CIVIL ENGINEERING STANDARD DESIGN

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MISCELLANEOUS & ANCILLARY STRUCTURES

TYPICAL MODULAR BUILDING (REB) GRILLAGE DETAIL

Scale	AS SHOWN	
Drawing Number	NR/CIV/SD/622	A

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