MASONRY

B1.1 Applicable Codes and Standards

Description	Code
Brickwork	SANS 0164 - Appendix B
Calcium silicate masonry units	SANS 285
Clay masonry units	SANS 227
Concrete masonry blocks	SANS 1215
Galvanised butterfly ties	SANS 28

B1.2 Material Specifications

B1.2.1 Compressive strength of brickwork and mortar:

Type / Location	Nominal Compressive Strength MPa
Load-bearing bricks / blocks (foundation walls, retaining walls, all structural masonry, et cetera)	14
Mortar	7

B1.2.2 Mortar class:

Type / Location	Mortar class
For structural use (1:4 Mix Design)	II

B1.2.3 Brickforce:
Minimum Diameter of Brickforce = 2.8mm
Yield Strength = 485 MPa
Minimum Lap Length = 400mm
All brick reinforcement to be galvanised.

B1.2.4 Calcium silicate bricks shall be laid slightly wetted but not saturated.

B1.2.5 Clay bricks shall be well-saturated 2 hours before being built in.

B1.2.6 Water absorption of clay bricks shall not exceed 12%.

B1.2.7 No clay bricks shall be laid within 6 weeks of removal from kiln.

B1.2.8 Concrete bricks and blocks shall be laid dry.

B1.3 Execution of Works

B1.3.1 All 220mm thick brickwork shown is load-bearing unless otherwise noted.

B1.3.2 All brickwork to be reinforced as follow (also refer to typical details drawings):
B1.3.2.1 Brickforce to be placed in every brick course layer above foundations up to 3 layers above surface bed level. Thereafter every 4th course layer in all brick walls.

B1.3.2.2 Provide 2x5.6 rod reinforcement (hard-drawn wire) immediately in first course below all window/ventilation openings and brickforce in each layers for minimum 6 course above all door openings. Brickforce and reinforcement to extend minimum 600mm past the openings into masonry on either side.

B1.3.2.3 Brickforce to be placed in each brick course layer from top of window up to wallplate and or concrete ring-beam/slab soffit level.

B1.3.2.4 All brickforce to be discontinious at articulation (AJ)- and brick joints (BJ).

B1.3.2.5 Cavities that are <75mm in width, shall receive galvanised butterfly ties, or approved polypropylene ties, at a minimum rate of 1 tie/500mm2. Adjacent to columns and openings, ties shall be built into every second layer of brickwork.

B1.3.2.6 Cavities that are 75 - 150mm in width, shall receive twist type ties at 1 tie/500mm2.

B1.3.2.7 All ties to be embedded to a depth of >50mm in the mortar joint of each skin.

B1.3.3 Galvanised hoop iron anchors shall be installed in every fourth course between RC/steel columns and brick walls and across all articulation- & brick joints, 6mm Nail plugs to be used, no shot fixing is allowed. Shot fixing only allowed for connection to steel elements.

B1.3.4 Joints

B1.3.4.1 Slip Joints
The top of all load-bearing brickwork to be plastered smooth with 3:1 cement mortar. Two layers of Malthoid 3 Ply with 0.58mm thick galvanised plate (U.N.O) between to be placed on walls prior to casting of concrete.

B1.3.4.2 Movement joints
For non-load-bearing brickwork, allow 15mm soft joint (jointex or similar approved) between concrete members, such as beam/slab soffits, and top of walls. Allow 10mm soft joint (jointex or similar approved) to vertical joints between concrete columns and walls, and all other concrete-to-brick interfaces. This vertical joint also applies to all articulation-(AJ) and or brick joint (BJ) positions. These joints to continue through plaster finishes.

B1.3.4.3 Joints to be sealed in accordance with Architect's specifications.

B1.3.5 All brick walls to be built on strip foundations, unless shown otherwise.

B1.3.6 Setting-out of brickwork to Architects' layouts.

B1.3.7 Brickwork on suspended concrete slabs to be built only when:
- Concrete slab has reached its required design compressive strength.
- All supportwork and props have been removed.

B1.3.8 For walls built on suspended concrete slabs, no brickwork to be above internal door openings.

B1.3.9 All precast lintols to be provided strictly in accordance with the manufacture's specifications. Precast lintols to be propped during brickwork over, and to remain propped for a minimum period of 7 days.

B1.3.10 Plaster work to walls at all door & window/ventilation openings to be reinforced with chicken mesh as shown below (NOTE: detail not to be provided at/across articulation joint (AJ) positions):

[redacted]

B1.3.11 1st Bed joint for brickwalls on foundation may vary between 5mm (minimum) to 40mm (maximum). Where thicker bed joints would result, bricks shall be cut to suit to remain within the above limits.

STRUCTURAL STEEL

S1.1 Applicable Codes and Standards

Description	Code
Structural steelwork	SANS 2001-CS1
Cladding	SABS 1200 HB
Welding procedures, welders	SABS 044; Part III & IV
Butt welds	AWS Code D 1.1

S1.2 Material Specifications

S1.2.1 Hot rolled steel:

S1.2.1.1 All hot rolled steel sections to be Grade S355JR .

S1.2.1.2 All hot rolled steel sections to be corrosion protected as per Section S1.5 below.

S1.2.2 Cold-formed steel:

S1.2.2.1 All cold-formed steel sections to have minimum yield stress of 250 MPa .

S1.2.2.2 All cold-formed steel sections to be hot-dip galvanised.

S1.2.3 Bolts, nuts and washers:

4.2.3.1 All bolts to be Grade 8.8 unless noted otherwise .

4.2.3.2 All bolts to be hot-dip galvanised.

S1.2.4 Welds:

S1.2.4.1 All welders shall be coded welders.

S1.2.5 Fire protection:

S1.2.5.1 All structural steel to be fire protected as per the Fire Consultants' specification where applicable.

S1.3 Workshop Drawings

S1.3.1 Contractor to generate detail shop drawings. These shall be forwarded to the Engineer for evaluation at least 10 working days before the scheduled fabrication date.

S1.3.2 Engineers' drawings are design drawings and not intended for fabrication purposes.

S1.3.3 Details of shop drawings to include the following;

S1.3.3.1 Anchor bolt and cast-in plate layout and details.

S1.3.3.2 Roof steel layout showing truss, girder, column, bracing positions et cetera .

S1.3.3.3 Truss and girder elevations and details.

S1.3.3.4 All connections and splice details.

S1.3.4 Any connections not shown on the Engineers' drawings shall be brought to the Engineers' attention in writing.

S1.3.5 Engineers' general notes take preference, irrespective of any comments or notes made on the workshop drawings by the Contractor.

S1.4 Fabrication and Erection

S1.4.1 The Contractor is to submit, in writing, his proposed erection method statement for the comment of the Engineer. Compliance with this requirement will in no way absolve him from his responsibility to produce the final product in accordance with the Engineers' design drawings.

S1.4.2 Connection details to be approved by the Engineer before shop drawings are submitted.

S1.4.3 Bolted Connections:

S1.4.3.1 Edge distance to bolts to be minimum 1.75x bolt diameter.

S1.4.3.2 Bolt spacing to be minimum 2.5x bolt diameter.

S1.4.3.3 Bolted connections to have a minimum of two bolts unless shown otherwise.

S1.4.3.4 Bolt holes to be drilled, not punched.

S1.4.3.5 Allow 25mm slotted holes for steel members fixed to concrete -- 12mm each side.

S1.4.3.6 Drilled holes for bolted connections to be 2mm larger than bolt diameter.

S1.4.3.7 Drilled holes for base plates to be 4mm larger than bolt diameter.

S1.4.4 Welded Connections - General:

S1.4.4.1 No site cutting or welding will be allowed unless approved or specified by the Engineer.

S1.4.4.2 All site welds shall be shown thus: [redacted]

S1.4.4.3 All welds to be continuous fillet welds (unless shown otherwise) with a throat thickness not less than 0.7x the thinner material thickness welded to.

S1.4.4.3 Use Class E7018 electrodes for all welding.

S1.4.4.4 All truss and girder members to be welded all round both sides. Allow for gusset plates to ensure adequate welding length to develop full tensile capacity of members.

S1.4.4.5 The Contractor shall produce evidence acceptable to the Engineer that welding procedures and welders have been tested in accordance with the requirements of SABS 044; Part III & IV .

S1.4.4.6 Shop and site welds shall be tested as part of the contractor's quality assurance plan. At least 15% of all site welds shall be submitted to non-destructive testing.

S1.4.5 Welded Connections - Plate girders:

S1,4,5,1 Continuous fillet welds either side of the web to both flanges. Weld size as specified.

S1.4.5.2 All anchor bolts welded onto anchor plates need to be inserted into holes in the plate and then welded on with full penetration weld from both sides of the plate.

S1.4.5.3 15% of all shop butt welds shall be examined radio graphically. Welds to be selected at random.

S1.4.5.4 All site butt welds shall be examined radio graphically.

S1.4.5.5 The standard of acceptance of butt welds shall be the applicable requirements of AWS Code D 1.1 .

S1.4.5.6 Use low-hydrogen E7018 electrode. Baking and handling prior to use to be to the manufacturer's specification.

S1.4.6 All connections to be adequate to develop the full tensile capacity of members.

S1.4.7 Centroids of all members to intersect at node points.

S1.4.8 Post-fixing of mechanical- or chemical-anchors to be approved by the Engineer. All chemical fixing strictly in accordance with the suppliers' specifications. Site personnel to be trained under the supervision of the anchor suppliers to ensure installation requirements will be met on site.

S1.4.9 Steelwork delivered to site shall be stacked on timber supports at least 300mm above ground level. Trusses and girders to be stored vertically.

S1.4.10 Approved non-shrink grout shall be placed under all steel supported on concrete.

S1.4.11 The Contractor must check all dimensions on site prior to construction.

S1.4.12 Plate girders:

S1.4.12.1 Top level of columns shall correspond with the level of the top flange or the uppermost connected floor beam, unless shown otherwise.

S1.4.12.2 The centroids of diagonal members shall intersect the centroids of the columns/beams to which it is connected, unless shown otherwise.

S1.4.12.3 All members are positioned centrally on gridlines, unless shown otherwise.

S1.5 Corrosion Protection

S1.5.1 Internal applications (paint only):

S1.5.1.1 Surface preparation;
Wire brush steel to Swedish standards SIS 055900:1967 to ST3 .

S1.5.1.2 Primer;
Apply by airless spray: one coat of zinc phosphate primer (Code UC 182).
Dry film thickness: 40-50µm; Over coating time: 24 hours

S1.5.1.3 Finishing coats:
Apply by brush, roller or spray: two coats of Plascon Hysheen Enamel (HG) .
(DFT 25 - 35 µm per coat); Over coating time: 24 hours
Overcoating time; 24 hours minimum

S1.5.1.4 Minimum total DFT (dry film thickness): 90µm

S1.5.1.5 Final colour to Architect's specification. The two finish coats to be different colours.

S1.5.1.6 After erection, repair all damaged areas as above.

S1.5.1.7 All bracing at the truss top chord to be painted same colour as roof insulation, u.n.o.

S1.5.2 External applications (hot dip galvanizing, paint optional):

S1.5.2.1 All steelwork to be hot-dip galvanised and, if required, painted.

S1.5.2.2 If painting is required, it shall be done off-site. If off-site painting is not possible or if on-site painting is specified, special procedures specified by suppliers shall be obtained for this work.

S1.5.2.3 The stages of paint shall be subject to holding points for inspection by the suppliers Inspectors as set out in the suppliers final paint specification. No paint guarantee can be given without the stipulated inspections.

S1.5.2.4 The final paint specification will contain a project action sheet that must be completed prior to commencement of painting. Without said action sheet inspections cannot be planned and actioned, resulting in no paint guarantee.

S1.5.2.5 Depending on mode of paint application, multiple coats may be required to achieve specified DFT and/or full obliteration.

S1.5.2.6 Cleaning;
Step 1:
Abrasive sweep blast all steel to achieve a blast profile of 20-30µm.
(Sweep blasting shall only be waived where the Contractor motivates this adequately and where the Engineer agrees to this in writing.)
Alternative Step 1 (when agreed to in writing by the Engineer):
Apply Plascon Galvanized Iron Cleaner (GIC 1) by brush, broom or spray. Allow to react for 1 minute. Rinse off with tap water using "Scotch Brite" pads to remove all surface contaminants. Check if surface is water-break free. If not, repeat process. Allow to completely dry.
Step 2:
By means of Wattman Paper, Weber Reilly or similar test method, ensure that the soluble salts/chloride content complies with SANS 5770 specifications.

S1.5.2.7 Primer;
Apply by brush or roller a stripe coat of Plascotuff 3000 (Code: PEX3004 / PEH 3) to all edges, welds, bolt holes, etc. (DFT 100 (min) - 200 (max) µm)
Apply by spray (airless or conventional), brush or roller one full coat of Plascotuff 3000 (Code: PEX3004 / PEH 3) (DFT 100 (min) - 200 (max) µm)
Overcoating time: 16 hours minimum , 2 weeks maximum for above applications.

S1.5.2.8 Intermediate Coat (Optional in coastal areas for increased life expectancy - TBC in project specification):
Apply by airless spray (preferable) or conventional spray one coat of Plascotuff MIO (micaceous iron oxide) (Code: PEX 125 / PEH 125) (DFT 100 (min) - 200 (max) µm)

S1.5.2.9 Finishing Coat;
Apply by spray (airless or conventional), brush or roller one full coat of Plascothane 9000 series (DFT 40 - 75 µm) airless/conventional spray; one coat of Plascochem High Build Vinyl Copolymer Zinc Phosphate (Code CHC 1) .
Overcoating time;10 hours minimum

S1.5.2.10 After installation, repair all damaged areas as above.

S1.5.2.11 If paint coats / repairs are done in different environments (e.g. in workshop and on site), wash off with fresh water in between coats in accordance with the manufacturer's specifications.

S1.5.2.12 All bracing at the truss top chord to be painted same colour as roof insulation, u.n.o.

S1.5.2.13 Final colour to Architect's specification.

S1.6 Cladding

S1.6.1 Cladding to be done to SABS 1200 HB as well as the suppliers' specifications.

S1.6.2 All roof and side cladding to be as per Architect's specification.

S1.6.3 Cladding contractor to ensure purlins and girts remain straight during installation of cladding and insulation material.

S1.6.4 Cladding will only commence once all bracing is installed, inspected and approved by the Engineer.

S1.7 Fixing of Services to Roof Structure

S1.7.1 No fixing to longitudinal ties and knee braces shall be allowed.

S1.7.2 Fixing to purlins are to be done by screwing or bolting through the vertical leg (web) of the purlin. Purlin clamps shall not be allowed anywhere. No hanging of services from purlins are allowed until roof sheeting is installed.

S1.7.3 Main pipe runs and heavy items are to be suspended from trusses and girders only. Approved flange clamps may be used. These clamps or any other support fixing shall never be further than 100mm away from a truss node point. (See illustration below)

[redacted]

S1.7.3 Feeder pipes and other lightweight elements:

S1.7.3.1 running perpendicular to purlins are to be suspended from every purlin it crosses.

S1.7.3.2 running parallel to purlins have to be suspended from two adjacent purlins at maximum 1800mm c/c.

S1.7.4 Penetrations and holes required in galvanised steel shall be predrilled before steel is galvanised. No drilling is allowed on site in any galvanised structural steel members, unless written instruction is given by the Engineer.

NOTES:

1. DRAWINGS MUST NOT BE SCALED. ALL MEASUREMENTS TO BE CONFIRMED ON SITE.
2. DRAWINGS TO BE READ WITH THE GENERAL NOTES DRAWING AND ALL TYPICAL DETAIL DRAWINGS WHERE APPLICABLE.
3. DRAWINGS TO BE READ WITH THE ARCHITECTS DRAWINGS AND ALL DISCREPANCIES TO BE REPORTED TO THE RESPONSIBLE ENGINEER IMMEDIATELY.
4. DRAWINGS TO BE READ WITH THE PROJECT SPECIFICATIONS AND APPLICABLE SANS 1200 CODES.

AS-BUILT RECORD

CONTRACT No.	DESCRIPTION	CERTIFIED BY	DATE

CERTIFIED AS-BUILT FOR CONTRACT :
ECSA Reg. No:

ENGINEER _____ DATE _____

VERSION/AMENDMENTS

No.	DATE	DESCRIPTION	AUTHORISED BY
1.0	2021/03/17	ISSUED FOR TENDER	F. DE KOCK

PROJECT TITLE:

LERATO PARK
REPAIR OF 491 RDP HOUSES

DRAWING TITLE:

STANDARD NOTES AND DETAILS
SHEET 2

DATE: NOVEMBER 2018

CO-ORDINATE SYSTEM:

ORIGINAL DRAWING SCALE: 1:100

ORIGINAL DRAWING SHEET SIZE: A1

0 50 100
100mm ON ORIGINAL DRAWING

bigen
Doing good while doing business

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APPROVED ON BEHALF OF BIGEN: ECSA Reg. No: 20130462
ENGINEER: _____ DATE: _____

DRAWING No: 2334.50.02.SUA.14.A002
VERSION: 1.0

APPROVED:
CLIENT OR ASSIGNEE: _____ DATE: _____

CLIENT: DRAWING No.: _____
CLIENT: REF No.: _____

2334.50.02.SUA.14.A002