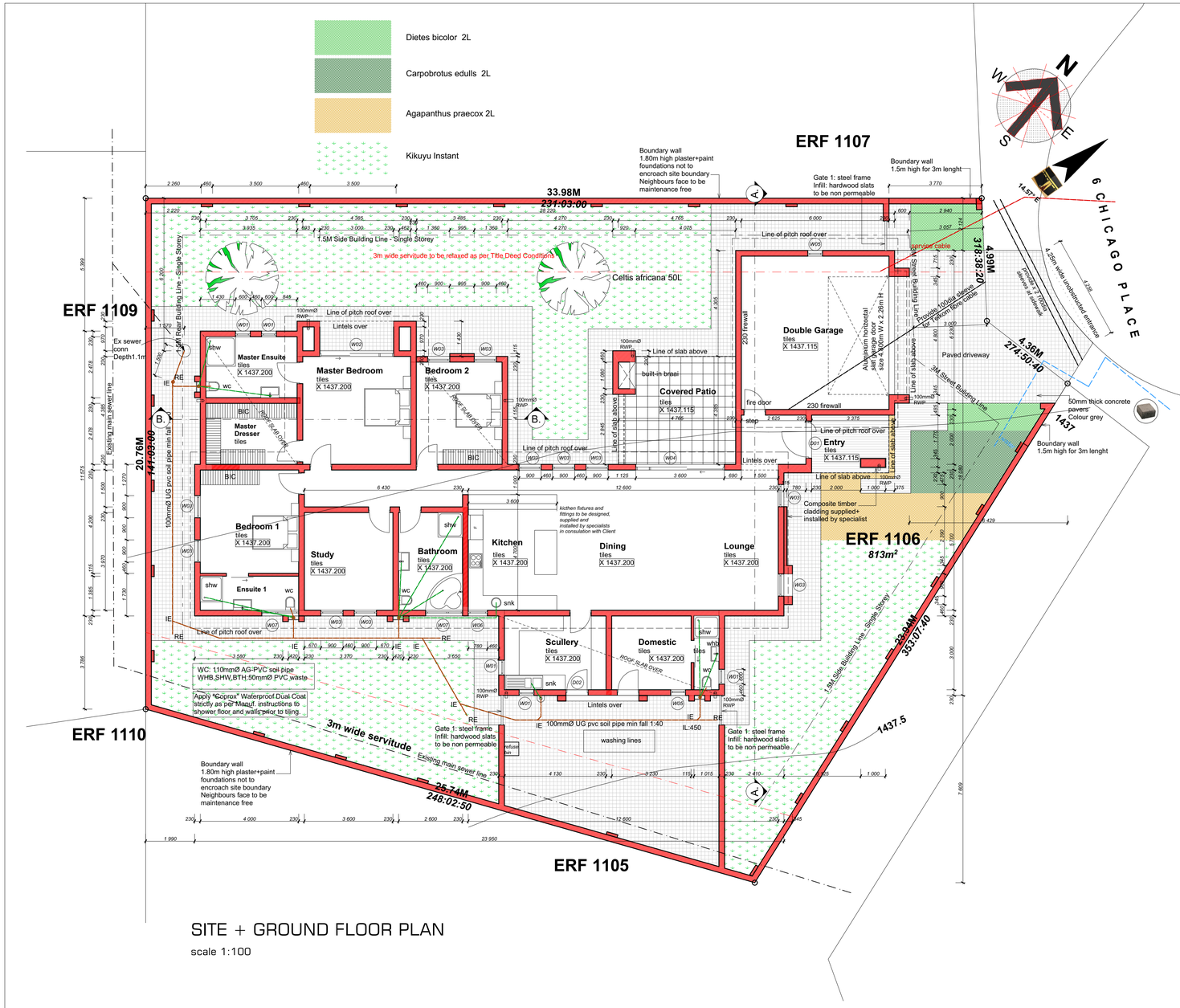
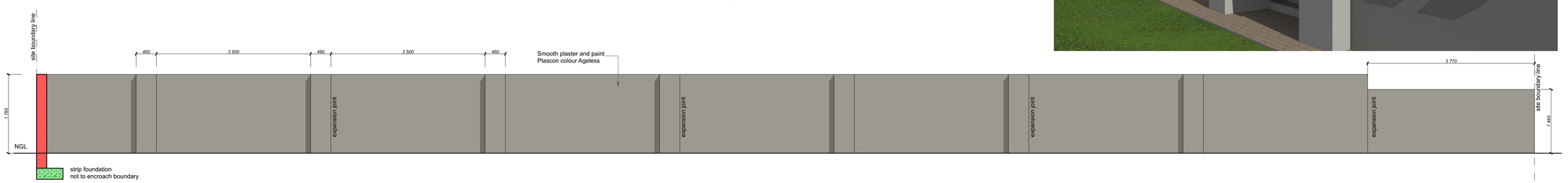


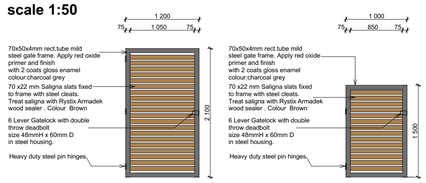

## SITE + GROUND FLOOR PLAN

scale 1:100



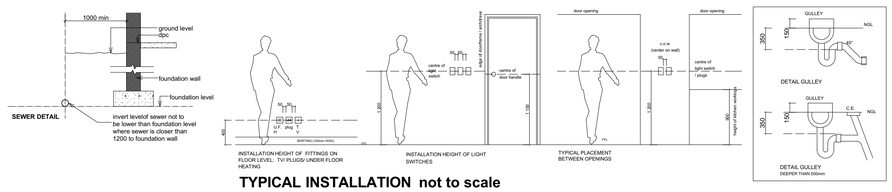

## BOUNDARY WALL: SIDE SPACE BETWEEN RESIDENTIAL ERVEN

scale 1:50




**Gate 1 Detail**
scale 1:50

**Gate 2 Detail**
scale 1:50




**TYPICAL INSTALLATION not to scale**

**NOTES FOR UTILITIES**

**Satellite dishes and aerials**
Compact domestic television satellite dishes and aerials to receive the channels as generally offered for the South African viewer/listener are permitted provided they are mounted in the least conspicuous practical position on the building and below the eave height of either a single or double storey building.

**Air Conditioning**
- Air conditioning units must be installed at ground level and not visible from any street, golf course or public open space.
- No reticulation of air conditioning units may be surface mounted and should be housed in ducts or an inconspicuous manner which doesn't protrude or stand proud of walls.
- Whenever mechanical equipment is not placed at ground floor level it shall only be positioned on roof slabs and screened in an architectural manner of which a detail must be submitted with the building design or before the installation.

**Solar Panels**
- Solar panels to be flush mounted with roof surface and ALL pipes concealed. Any exposed pipes to be painted to match roof colour. A data or specification sheet of the units must be provided for aesthetical approval by the design committee.

**Service Pipes and Ducts**
All plumbing to be concealed and no painted fibre cement panels will be allowed. All service ducts to be covered with natural timbers slabs or aluminium louvre panels to match colour of windows.
- The minimum size for any one duct shall be 220mm deep by 330mm wide.

**Building Numbers and Signage**
- Building numbers and names are permitted provided they are painted black / charcoal, not illuminated and that the lettering and numbers do not exceed a height of 300mm.
- A maximum of one building number and / or name is permitted.
- Building names and / or numbers may be mounted on the external walls of the building.

**Telecommunications**
In order to ensure that the house may be connected to telecommunications the following will be required:
- A 110mm minimum diameter sleeve must be installed at a minimum depth of 800mm without any right angle bends.
- The sleeve should be protected and have a wire inserted.
- Adequate lightening protection should be provided.

**Backup Generators**
Please refer to "Rules and specifications on backup generator installations "available from the home owners association for more detail regarding noise and air pollution.
As an architectural and aesthetical rule the following shall be complied with:
- Any part of the generator set shall not be visible from the street, golf course or open spaces.
- Any screening of a generator shall be to the satisfaction of the design review committee.

**External Lighting**
External wall mounted lighting must be discreet and kept to a minimum and may only be used to illuminate the front door entrance and garage entrance(s).
- Lights in the side boundary spaces will only be allowed if it does not illuminate the neighbour's erf.
- External pole mounted street lamps are not permitted.
- Discreet garden lighting may be used in the form of low level bollard lights with a maximum height of 1000mm and up lighters provided they do not result in any light nuisance that extends beyond the confines of the erf.



**Notes**

**Owner / Contractor**
No work to commence on site prior to approval of drawings by Local Authority. Any building work commencing prior to approval is at the owners risk. The architectural professional will not be held liable for any loss or damage that may result from such action.
Contractor to check all levels and dimensions prior to commencement of any work.
Any discrepancies on drawings must be reported to the architect prior to commencement of any work.
Do not scale the drawings, if in doubt, ask.
All plumbing and electrical work to be carried out by registered persons, and on completion must provide a certificate of completion/compliance.
***The Architectural Professional is not liable for the failure of the Contractor to adhere to these drawings, specifications and all the relevant and applicable SANS standards.***

**Soil Conditions**
The owner is responsible for soil tests.

**Land Surveyor Note**
The site must be identified and be verified, and building set out by a registered land surveyor.

**Levels**
Levels are approximate and must verified by the contractor prior to pricing and construction.
All external finished levels must be min 170mm lower than internal floor levels.

**Materials and Finishing**
All finishing products such as window frames, roof tiles, tiles, cornices, ceilings, etc must be approved by the owner prior to ordering and installation.

All products must comply to SABS standards.

**Local Authority Notes**

All work to comply with SANS 10400 National Building Regulations and applicable SABS/NHBRC standards.

**Drainage Notes:**
Soil pipes to be 100mm dia.PVC
Waste pipes to be 50mm dia PVC
Waste fitting to have re-seal traps 60mm deep
Provide anti-vac bottle traps to all waste fittings.
IE's to all bends and junctions to have marked covers at ground level.
RE's to head of drain and at all changes of direction of soil pipes.
Foundations to be protected where soil pipes go under buildings.

**Boundary Walls**
All boundary wall foundations not to encroach site perimeter. Provide construction joints at 4500-600 centres if not indicated on elevation.

**Geyser Note**
To comply with SABS 10254

**Chimney Note**
To comply with SANS 10400 Part VV1-VV3
Chimney to be min 1000mm above roof.

**Glazing**
To comply with SANS 10400 Part N

| Nominal Glass thk | Max size of pane sq.m |
|---|---|
| 3mm | 0.75 |
| 4mm | 1.5 |
| 5mm | 2.1 |
| 6mm | 3.2 |

Glass installed in door/sliding doors shall be safety glass with a nominal thickness of not less than 6mm. All doors shall have indicators.

**Flashing Note**
Provide 0.6mm galvanised flashing & counter flashing at all parapets.

**Showers**
All showers to be waterproofed by a specialist to a height of 1800mm prior to tiling.
Provide brass traps to all showers.

**Timber**
All structural timber to comply with SABS 10163.
All timber, dry walls to comply with SANS 082.

**Structural Engineer**
All foundations, reinforced floor, roof slabs, beams, columns,roof and associated structural work to be designed and specified by a registered Structural Engineer

****IF IN DOUBT, PLEASE ASK****

## AREA SCHEDULE

| | |
|---|---|
| TOTAL ERF | 813m² |
| NEW GROUNDFLOOR | 320m² |
| TOTAL BUILT AREA | 320m² |
| COVERAGE | 39% |

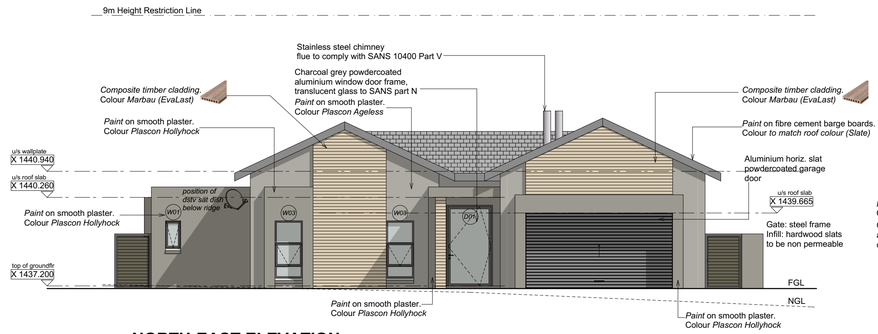
http://mohsinsujee.wixsite.com/architecturestudio
www.instagram.com/mohsinsujee
cell 082 969 7352
fax 086 613 6914
e-mail mohsinsujee@vodamail.co.za
GPS S 25°47'33.6" E 28°06'00.9"
mohsin sujee architecture studio
Pr.Snr Arch Tech SACAP 0317

Job Title
New House for
GLOTECH SOLUTIONS PTY (LTD)
ERF 1106 (6 CHICAGO PLACE)
PEACH TREE X2

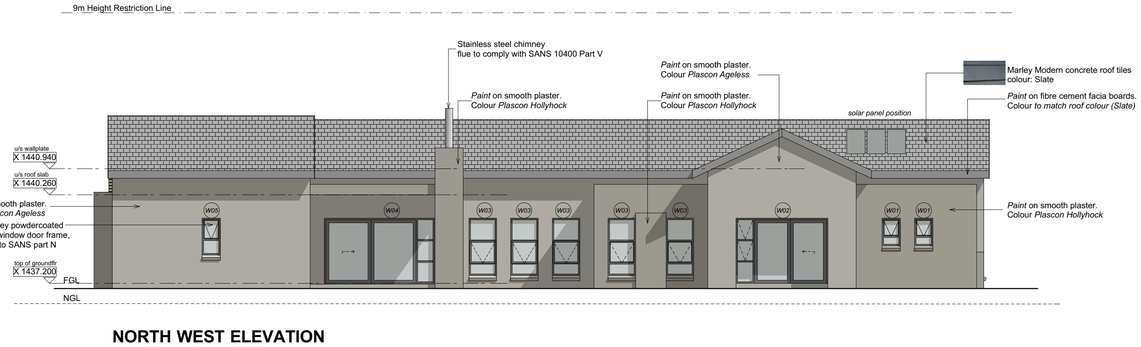
Drawing Name
SITE + GROUND FLOOR PLAN
WALL DETAIL

Drawing Status
COUNCIL SUBMISSION

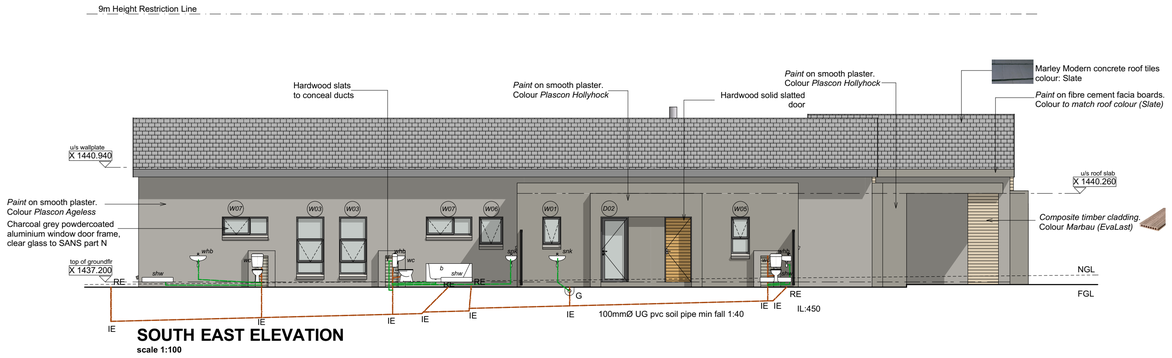
| Drawn by | Date |
|---|---|
| M.Sujee | 28 APR 2017 |
| Drawing scale 1:100 | Sheet size A1 |
| Project No. 217-298 | |
| Drawing No. 298-200 | Revision 2 (9 JUNE 17) |



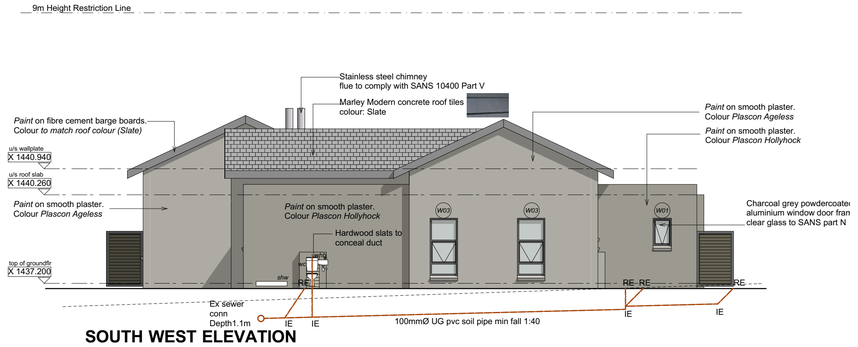

## NORTH EAST ELEVATION
**scale 1:100**



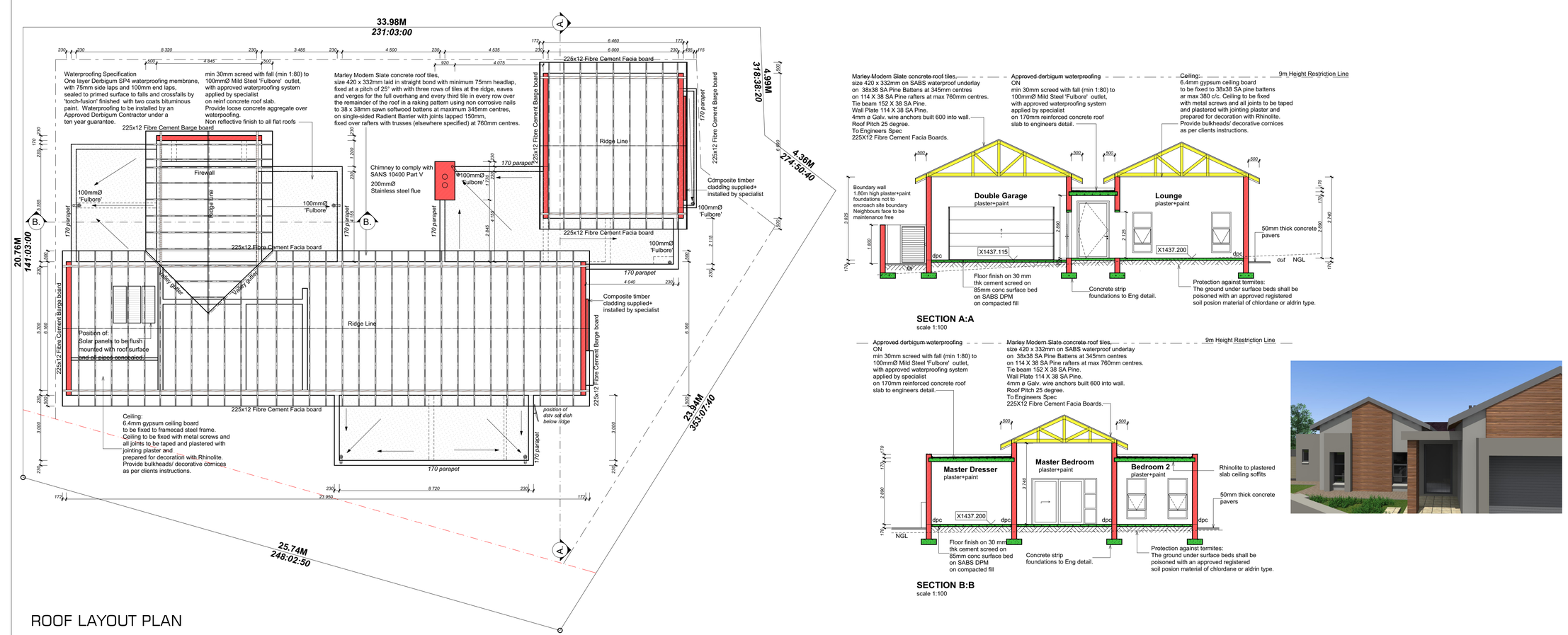

## NORTH WEST ELEVATION
**scale 1:100**




## SOUTH EAST ELEVATION
**scale 1:100**




## SOUTH WEST ELEVATION
**scale 1:100**




## ROOF LAYOUT PLAN
scale 1:100




## SECTION A:A
scale 1:100




## SECTION B:B
scale 1:100





**Notes**

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**Soil Conditions**
The owner is responsible for soil tests.

**Land Surveyor Note**
The site must be identified and be verified, and building set out by a registered land surveyor.

**Levels**
Levels are approximate and must verified by the contractor prior to pricing and construction.
All external finished levels must be min 170mm lower than internal floor levels.

**Materials and Finishing**
All finishing products such as window frames, roof tiles, tiles, cornices, ceilings, etc must be approved by the owner prior to ordering and installation.

All products must comply to SABS standards.

**Local Authority Notes**

All work to comply with SANS 10400 National Building Regulations and applicable SABS/NHBRC standards.

**Drainage Notes:**
Soil pipes to be 100mm dia.PVC
Waste pipes to be 50mm dia PVC
Waste fitting to have re-seal traps 60mm deep
Provide anti-vac bottle traps to all waste fittings.
IE's to all bends and junctions to have marked covers at ground level.
RE's to head of drain and at all changes of direction of soil pipes.
Foundations to be protected where soil pipes go under buildings.

**Boundary Walls**
All boundary wall foundations not to encroach site perimeter. Provide construction joints at 4500-600 centres if not indicated on elevation.

**Geyser Note**
To comply with SABS 10254

**Chimney Note**
To comply with SANS 10400 Part VV1-VV3
Chimney to be min 1000mm above roof.

**Glazing**
To comply with SANS 10400 Part N

| Nominal Glass thk | Max size of pane sq.m |
|---|---|
| 3mm | 0.75 |
| 4mm | 1.5 |
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Glass installed in door/sliding doors shall be safety glass with a nominal thickness of not less than 6mm. All doors shall have indicators.

**Flashing Note**
Provide 0.6mm galvanised flashing & counter flashing at all parapets.

**Showers**
All showers to be waterproofed by a specialist to a height of 1800mm prior to tiling.
Provide brass traps to all showers.

**Timber**
All structural timber to comply with SABS 10163.
All timber, dry walls to comply with SANS 082.

**Structural Engineer**
All foundations, reinforced floor, roof slabs, beams, columns,roof and assosciated structural work to be designed and specified by a registered Structural Engineer

****IF IN DOUBT, PLEASE ASK****

http://mohsinsujee.wixsite.com/architecturestudio
www.instagram.com/mohsinsujee
cell 082 969 7352
fax 086 613 6914
e-mail mohsinsujee@vodamail.co.za
GPS S 25°47'33.6" E 28°06'00.9"
mohsin sujee architecture studio
Pr.Snr Arch Tech SACAP 0317

Job Title
New House for
GLOTECH SOLUTIONS PTY (LTD)
ERF 1106 (6 CHICAGO PLACE)
PEACH TREE X2

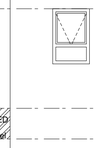
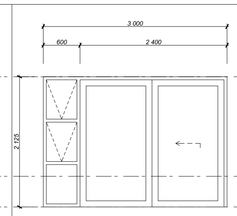
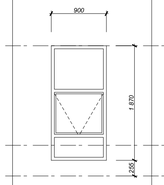
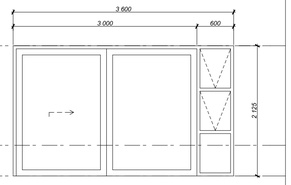
Drawing Name
ROOF LAYOUT PLAN
SECTIONS, ELEVATIONS

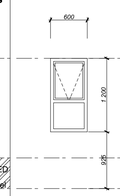
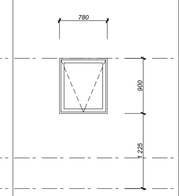
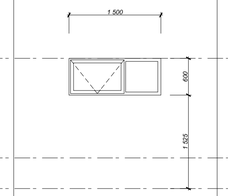
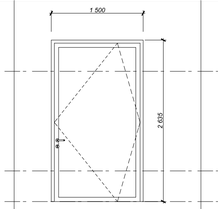
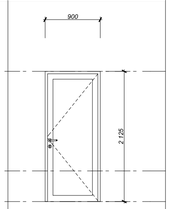
Drawing Status
COUNCIL SUBMISSION

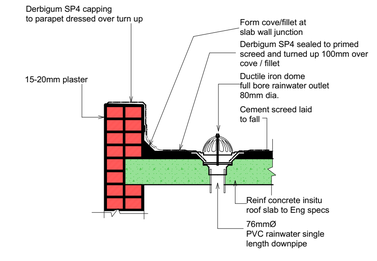
| Drawn by | Date |
|---|---|
| M.Sujee | 28 APR 2017 |
| Drawing scale 1:100 | Sheet size A1 |

Project No.
217-298

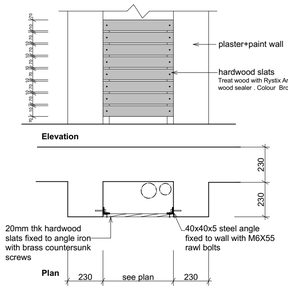
Drawing No. 298-201
Revision 2
9 JUNE 17

| Windows are indicated as viewed from outside |  |  |  |  |
|---|---|---|---|---|
| WINDOW NO | **W1** QTY:5 | **W2** QTY:1 | **W3** QTY:11 | **W4** QTY:1 |
| DESCRIPTION | Charcoal Grey Powdercoated aluminium window with stainless steel friction stays, complying with AAAMSA performance criteria A0 (600Pa), glazed in accordance with NBR N schedule 1 and SANS 10137:2002, with clear glass, fitted with clip-on glazing beads with gasket seals with lugs plugged and screwed to brickwork or concrete, all in accordance with AAAMSA Selection Guide for Glazed Aluminium Architectural Aluminium Products - June 2008. Supplied with all fittings. ie, handles, catches, rollers etc. | | | |
| GLASS | FACTORY FITTED CLEAR GLASS 4mm glass to SANS 10400 N All bathrooms obscure glass | FACTORY FITTED CLEAR GLASS 4mm +6mm safety glass indicators to door,to SANS 10400 N | FACTORY FITTED CLEAR GLASS 4mm +6mm safety glass to SANS 10400 N | FACTORY FITTED CLEAR GLASS 4mm +6mm safety glass indicators to door,to SANS 10400 N |

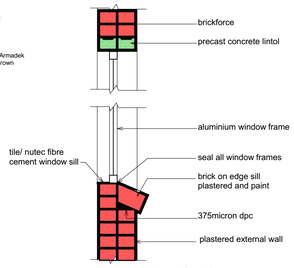
| Windows are indicated as viewed from outside |  |  |  |  |  |
|---|---|---|---|---|---|
| WINDOW NO | **W5** QTY:2 | **W6** QTY:1 | **W7** QTY:2 | **D1** QTY:1 | **D2** QTY:1 |
| DESCRIPTION | Charcoal Grey Powdercoated aluminium window with stainless steel friction stays, complying with AAAMSA performance criteria A0 (600Pa), glazed in accordance with NBR N schedule 1 and SANS 10137:2002, with clear glass, fitted with clip-on glazing beads with gasket seals with lugs plugged and screwed to brickwork or concrete, all in accordance with AAAMSA Selection Guide for Glazed Aluminium Architectural Aluminium Products - June 2008. Supplied with all fittings. ie, handles, catches, rollers etc. | | | | |
| GLASS | FACTORY FITTED CLEAR GLASS 4mm glass to SANS 10400 N All bathrooms obscure glass | FACTORY FITTED CLEAR GLASS 4mm to SANS 10400 N | FACTORY FITTED CLEAR GLASS 4mm glass to SANS 10400 N All bathrooms obscure glass | FACTORY FITTED CLEAR GLASS 6mm safety glass indicators to door,to SANS 10400 N | FACTORY FITTED CLEAR GLASS 6mm safety glass indicators to door,to SANS 10400 N |



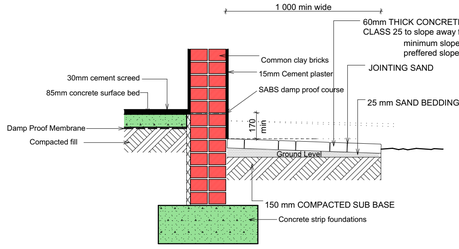

TYPICAL DETAIL : FULL BORE OUTLET ON CONCRETE ROOF
scale 1:25




TYPICAL DETAIL : DRAINAGE DUCT
scale 1:25




DETAIL : WINDOW SILL
scale 1:25




TYPICAL SECTION THROUGH PAVING
AT BUILDING PERIMETER scale 1:25

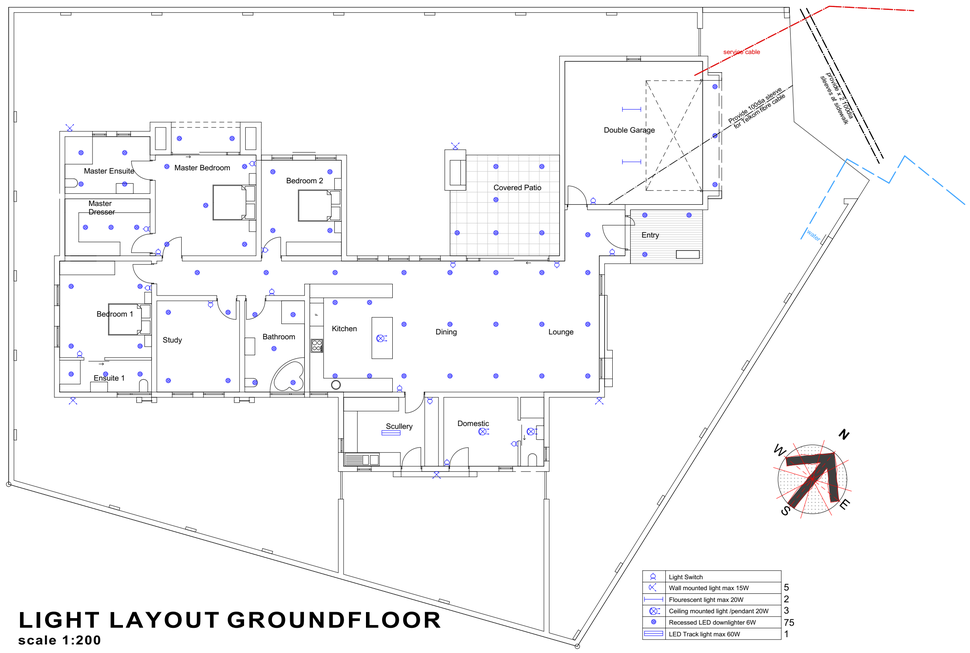
## CONCRETE BLOCK PAVING SPECIFICATIONS.

GENERAL:
-THE NATURAL SLOPE OF THE PAVING IS TO BE DETERMINED TO ENSURE ADEQUATE DRAINAGE AWAY FROM BUILDINGS.
-WATER MUST NOT BE ALLOWED TO DAM UP OR FLOW TO BUILDING.
-FINAL LEVELS AND SLOPES TO TIE INTO EXISTING MUNICIPAL /ESTATE STORMWATER SYSTEM.
-CONCRETE KERBS TO BE USED WHERE NECESSARY.

EARTHWORKS.
-REMOVE TOPSOIL CONTAINING ORGANIC MATERIAL.
-SCARIFY IN-SITU MATERIAL TO 150mm. WET AND COMPACT TO 93% MOD AASHTO DENSITY.
-A 150mm LAYER OF SUITABLE IMPORTED G5 MATERIAL TO BE USED AS A SUB BASE AND COMPACTED TO 95% MOD AASHTO DENSITY.
- A LAYER OF 25mm SAND TO BE USED FOR BEDDING OF PAVING BLOCKS.

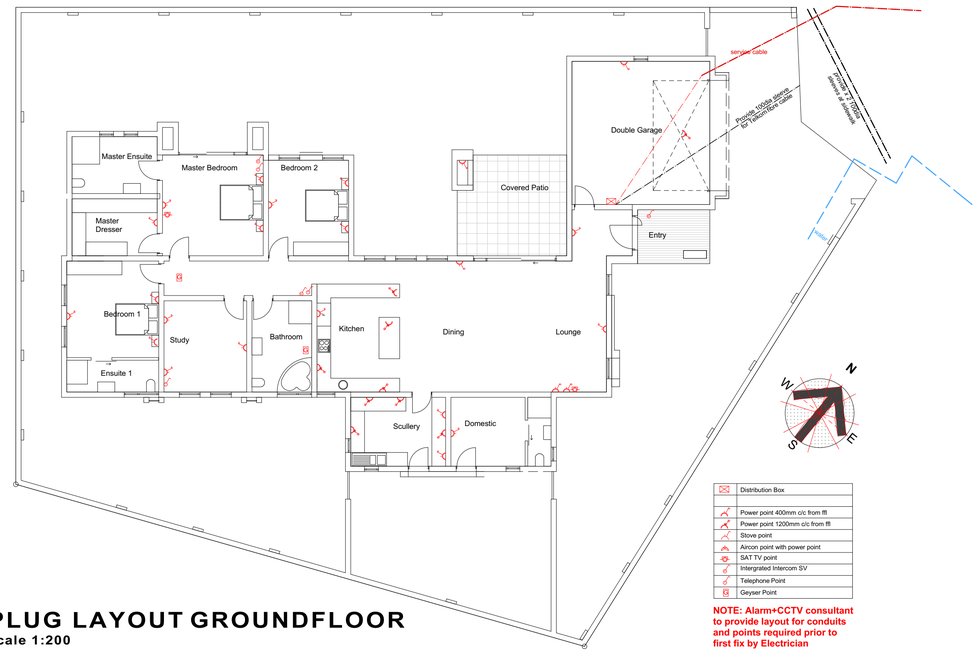
PAVING SURFACE.
-CLASS 25, 60/80mm CONCRETE INTERLOCKING BLOCKS TYPE S-A, INTERLOCKING IN ALL DIRECTIONS.
-A MIXTURE OF SAND AND CEMENT TO BE WASHED IN BETWEEN BLOCKS.

ALL PAVING BLOCKS SUPPLIED, SUB BASE PREPARATION, AND LAYING OF PAVING TO SANS 1058, SANS 1200MJ.
TO COMPLY WITH BOOK 3: CONCRETE BLOCK PAVING. SPECIFICATION AND INSTALLATION PUBLISHED BY CMA.




| | |
|---|---|
| Light Switch | |
| Wall mounted light max 15W | 5 |
| Flourescent light max 20W | 2 |
| Ceiling mounted light /pendant 20W | 3 |
| Recessed LED downlighter 6W | 75 |
| LED Track light max 60W | 1 |

## LIGHT LAYOUT GROUNDFLOOR
**scale 1:200**




| | |
|---|---|
| Distribution Box | |
| Power point 400mm c/c from ffl | |
| Power point 1200mm c/c from ffl | |
| Stove point | |
| Aircon point with power point | |
| SAT TV point | |
| Intergrated Intercom SV | |
| Telephone Point | |
| Geyser Point | |

**NOTE: Alarm+CCTV consultant to provide layout for conduits and points required prior to first fix by Electrician**

## PLUG LAYOUT GROUNDFLOOR
**scale 1:200**



**Notes**

**Owner / Contractor**
No work to commence on site prior to approval of drawings by Local Authority. Any building work commencing prior to approval is at the owners risk. The architectural professional will not be held liable for any loss or damage that may result from such action.
Contractor to check all levels and dimensions prior to commencement of any work.
Any discrepancies on drawings must be reported to the architect prior to commencement of any work.
Do not scale the drawings, if in doubt, ask.
All plumbing and electrical work to be carried out by registered persons, and on completion must provide a certificate of completion/compliance.
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**Soil Conditions**
The owner is responsible for soil tests.

**Land Surveyor Note**
The site must be identified and be verified, and building set out by a registered land surveyor.

**Levels**
Levels are approximate and must verified by the contractor prior to pricing and construction.
All external finished levels must be min 170mm lower than internal floor levels.

**Materials and Finishing**
All finishing products such as window frames, roof tiles, tiles, cornices, ceilings, etc must be approved by the owner prior to ordering and installation.

All products must comply to SABS standards.

**Local Authority Notes**

All work to comply with SANS 10400 National Building Regulations and applicable SABS/NHBRC standards.

**Drainage Notes:**
Soil pipes to be 100mm dia.PVC
Waste pipes to be 50mm dia PVC
Waste fitting to have re-seal traps 60mm deep
Provide anti-vac bottle traps to all waste fittings.
IE's to all bends and junctions to have marked covers at ground level.
RE's to head of drain and at all changes of direction of soil pipes.
Foundations to be protected where soil pipes go under buildings.

**Boundary Walls**
All boundary wall foundations not to encroach site perimeter. Provide construction joints at 4500-600 centres if not indicated on elevation.

**Geyser Note**
To comply with SABS 10254

**Chimney Note**
To comply with SANS 10400 Part VV1-VV3
Chimney to be min 1000mm above roof.

**Glazing**
To comply with SANS 10400 Part N

| Nominal Glass thk | Max size of pane sq.m |
|---|---|
| 3mm | 0.75 |
| 4mm | 1.5 |
| 5mm | 2.1 |
| 6mm | 3.2 |

Glass installed in door/sliding doors shall be safety glass with a nominal thickness of not less than 6mm. All doors shall have indicators.

**Flashing Note**
Provide 0.6mm galvanised flashing & counter flashing at all parapets.

**Showers**
All showers to be waterproofed by a specialist to a height of 1800mm prior to tiling.
Provide brass traps to all showers.

**Timber**
All structural timber to comply with SABS 10163.
All timber, dry walls to comply with SANS 082.

**Structural Engineer**
All foundations, reinforced floor, roof slabs, beams, columns,roof and assosciated structural work to be designed and specified by a registered Structural Engineer

****IF IN DOUBT, PLEASE ASK****

http://mohsinsujee.wixsite.com/architecturestudio
www.instagram.com/mohsinsujee
cell 082 969 7352
fax 086 613 6914
e-mail mohsinsujee@vodamail.co.za
GPS S 25°47'33.6" E 28°06'00.9"
mohsin sujee architecture studio
Pr.Snr Arch Tech SACAP 0317

Job Title
New House for
GLOTECH SOLUTIONS PTY (LTD)
ERF 1106 (6 CHICAGO PLACE)
PEACH TREE X2

Drawing Name
WINDOW SCHEDULE, GENERAL DETAILS
ELECTRICAL LAYOUTS

Drawing Status
COUNCIL SUBMISSION

| Drawn by | Date |
|---|---|
| M.Sujee | 28 APR 2017 |
| Drawing scale 1:50 /1:20 | Sheet size A1 |
| Project No. 217-298 | |
| Drawing No. 298-202 | Revision 2 — 9 JUNE 17 |

## GLAZING ELEMENTS : FACTOR & CO-EFFICIENT SUMMARY

| Glazing Elements | | | | | Glazing Element | | Sector | | | Shading | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Storey Level | Identifier No: | No. of Units | Size w x h | Area (m²) | U-value | SHGC | Orientation | | | Projection (P) | Height (H) | Height (G) | P/H |
| Ground Storey | W1 | 2 | 0.6 x 0.9 | 1.08 | 4.06 | 0.63 | North West | | | 0.12 | 0.90 | 0.00 | 0.13 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.92 | -0.14 | 1.38 | -0.01 | 0.98 | 0.92 | |
| Ground Storey | W2 | 1 | 3.6 x 2.125 | 7.65 | 4.06 | 0.63 | North West | | | 1.32 | 2.13 | 0.00 | 0.62 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.48 | -0.14 | 1.38 | -0.01 | 0.70 | 0.53 | |
| Ground Storey | W3 | 2 | 0.9 x 1.87 | 3.37 | 4.06 | 0.63 | North West | | | 0.12 | 1.87 | 0.00 | 0.06 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 1.02 | -0.14 | 1.38 | -0.01 | 1.00 | 1.00 | |
| Ground Storey | W3 | 3 | 0.9 x 1.87 | 5.05 | 4.06 | 0.63 | North West | | | 0.62 | 3.17 | 1.30 | 0.10 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.96 | -0.14 | 1.38 | -0.01 | 1.00 | 1.00 | |
| Ground Storey | D1 | 1 | 1.5 x 2.635 | 3.95 | 4.06 | 0.63 | North East | | | 0.92 | 2.13 | 0.00 | 0.43 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.56 | -0.09 | 1.55 | -0.01 | 0.83 | 0.68 | |
| Ground Storey | W3 | 1 | 0.9 x 1.87 | 1.68 | 4.06 | 0.63 | North East | | | 0.12 | 1.87 | 0.00 | 0.06 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.94 | -0.09 | 1.55 | -0.01 | 1.00 | 1.00 | |
| Ground Storey | W3 | 1 | 0.9 x 1.87 | 1.68 | 4.06 | 0.63 | North East | | | 0.46 | 1.87 | 0.00 | 0.25 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.73 | -0.09 | 1.55 | -0.01 | 0.95 | 0.85 | |
| Ground Storey | W1 | 1 | 0.6 x 0.9 | 0.54 | 4.06 | 0.63 | South East | | | 0.12 | 0.90 | 0.00 | 0.13 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.77 | -0.41 | 0.75 | 0.05 | 0.95 | 0.93 | |
| Ground Storey | W6 | 1 | 0.78 x 0.9 | 0.70 | 4.06 | 0.63 | South East | | | 0.62 | 2.20 | 1.30 | 0.14 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.77 | -0.41 | 0.75 | 0.05 | 1.00 | 1.00 | |
| Ground Storey | W7 | 2 | 1.5 x 0.6 | 1.80 | 4.06 | 0.63 | South East | | | 0.62 | 1.90 | 1.30 | 0.16 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.74 | -0.41 | 0.75 | 0.05 | 1.00 | 1.00 | |
| Ground Storey | W3 | 2 | 0.9 x 1.87 | 3.37 | 4.06 | 0.63 | South East | | | 0.62 | 3.17 | 1.30 | 0.10 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.80 | -0.41 | 0.75 | 0.05 | 1.00 | 1.00 | |
| Ground Storey | W1 | 1 | 0.6 x 0.9 | 0.54 | 4.06 | 0.63 | South West | | | 0.12 | 0.90 | 0.00 | 0.13 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.84 | -0.43 | 0.68 | 0.05 | 0.96 | 0.94 | |
| Ground Storey | W3 | 2 | 0.9 x 1.87 | 3.37 | 4.06 | 0.63 | South West | | | 0.12 | 1.87 | 0.00 | 0.06 |
| | | | | | | | Factor (E) | $C_A$ | $C_B$ | $C_C$ | Heating $S_H$ | Cooling $S_C$ | |
| | | | | | | | 0.91 | -0.43 | 0.68 | 0.05 | 1.00 | 1.00 | |

### 4.5.2 Hot water services

**4.5.2.1** A minimum of 50 % by volume of the annual average hot water heating requirement shall be provided by means other than electrical resistance heating, including, but not limited to, solar heating, heat pumps, heat recovery from other systems or processes.

**4.5.2.2** The solar water heating systems shall comply with SANS 1307 and SANS 10106, based on the thermal performance determined in accordance with the provisions of SANS 6211-1 and SANS 6211-2. The installation thereof shall comply with SANS 10254.

**4.5.2.3** Hot water usage should be minimized and the system maintained in accordance with the requirements given in SANS 10252-1.

**4.5.2.4** All exposed pipes to and from the hot water cylinders and central heating systems shall be insulated with pipe insulation material with an *R*-value in accordance with table 13.

**4.5.2.5** Insulation shall

a) be protected against the effects of weather and sunlight,

b) be able to withstand the temperatures within the piping, and

c) achieve the minimum total *R*-value given in table 13.

**Table 13 — Minimum *R*-value of pipe insulation**

| 1 | 2 |
|---|---|
| **Internal diameter of pipe** | **Minimum *R*-value[a]** |
| ≤ 80 mm<br>> 80 mm | 1,00<br>1,50 |

[a] Determined with a hot surface temperature of 60 °C and an ambient temperature of 15 °C.

**4.5.2.6** Hot water vessels and tanks shall be insulated with a material achieving a minimum *R*-value of 2,0.

NOTE To achieve this value, insulation in addition to the manufacturers' installed insulation may be required.

**4.5.2.7** Insulation on vessels, tanks and piping containing cooling water shall be protected by a vapour barrier on the outside of the insulation.

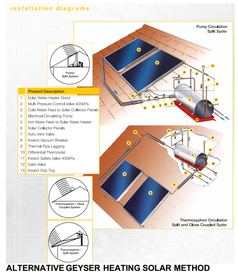
**4.5.2.8** The piping insulation requirements do not apply to space heating water piping

a) located within the space being heated where the piping is to provide the heating to that space, or

b) encased within a concrete floor slab or in masonry.

These pipes shall comply with SANS 10252-1.

**4.5.2.9** Piping to be insulated includes all flow and return piping, cold water supply piping within 1 m of the connection to the heating or cooling system and pressure relief piping within 1 m of the connection to the heating or cooling system. Where possible, lengths of pipe runs should be minimized.

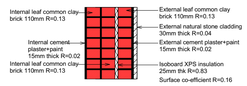



**ALTERNATIVE GEYSER HEATING SOLAR METHOD**

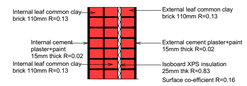

**EXTERNAL WALL**
COMMON BRICKS
AND PLASTER 230mm
**Total R-Value 1.30m²K/W**
**Total CR-Value 143 hours**




**EXTERNAL WALL**
FACEBRICK +COMMON BRICKS
AND PLASTER 230mm
**Total R-Value 1.23m²K/W**
**Total CR-Value 133 hours**




**EXTERNAL WALL**
COMMON BRICKS
AND PLASTER 345mm + CLADDING
**Total R-Value 1.46m²K/W**
**Total CR-Value 228 hours**



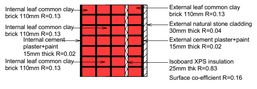

**EXTERNAL WALL**
COMMON BRICKS
AND PLASTER 345mm
**Total R-Value 1.38m²K/W**
**Total CR-Value 226 hours**


**EXTERNAL WALL**
COMMON BRICKS
AND PLASTER 230mm + CLADDING
**Total R-Value 1.34m²K/W**
**Total CR-Value 161 hours**

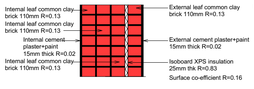
| REQUIRED | |
|---|---|
| **Total R-Value 0.35m²K/W** | |
| **Total CR-Value 80 hours** | |



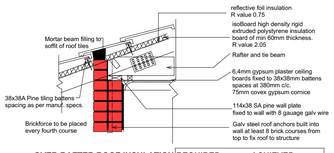

**EXTERNAL WALL**
FACEBRICK 230mm
**Total R-Value 1.16m²K/W**
**Total CR-Value 123 hours**




**EXTERNAL WALL**
COMMON BRICKS
AND PLASTER 460mm + CLADDING
**Total R-Value 1.59m²K/W**
**Total CR-Value 320 hours**

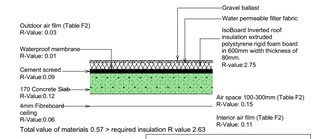



**EXTERNAL WALL**
COMMON BRICKS
AND PLASTER 460mm
**Total R-Value 1.47m²K/W**
**Total CR-Value 318 hours**




**OVER RAFTER ROOF INSULATION**

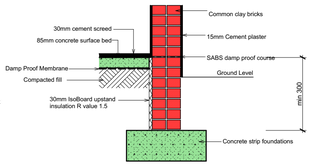
| REQUIRED | ACHIEVED |
|---|---|
| **Total R-Value 3.2** | **Total R-Value 3.29** |



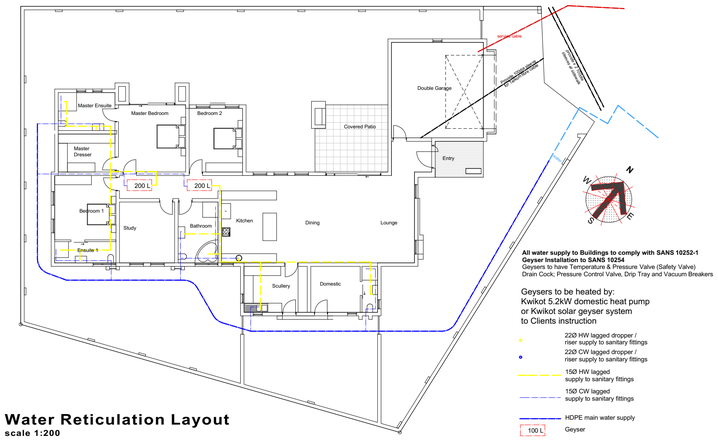

Total value of materials 0.57 > required insulation R value 2.63

**EXPOSED CONCRETE ROOF INSULATION**

| REQUIRED | ACHIEVED |
|---|---|
| **Total R-Value 3.2** | **Total R-Value 3.32** |




**PERIMETER INSULATION IN STRIP FOUNDATIONS**




## Water Reticulation Layout
scale 1:200

### Occupancy Classification of Building

| | | |
|---|---|---|
| Occupancy: | H4 | |
| Building Total Nett Floor Area: | 250 | m² |
| Building Total Floor Area: | 320 | m² |
| Design Occupancy Time: | 24 | Hrs per Day |
| | 7 | Days per Week |

### Climatic Zone of Building

| | | |
|---|---|---|
| Climatic Zone: | 2 | |

### Maximum Energy Demand & Consumption

**Design Assumption for Building Classification**

| | | | |
|---|---|---|---|
| Max. Energy Demand: | Non-specified | VA/m² | *No requirement* |
| Max. Energy Consumption: | Non-specified | kWh/(m².) | *No requirement* |

**Energy Demand & Consumption**

| | | | |
|---|---|---|---|
| Max. Energy Demand: | 0 | kVA (kW) | *No requirement* |
| Max. Annual Energy Consumption: | Non-specified | kWh | *No requirement* |

### Building Orientation

| | | |
|---|---|---|
| Orientation of windows / longer building axis: | North West | |

*Dominant windows of habitable rooms or longer axis of the building to be orientated within 15 deg's of true north.*

### Floor Construction

**Slab-on-ground**

| | | |
|---|---|---|
| Concrete slab-on-ground ? | Yes | |
| In-slab heating to be provided ? | No | |

**Suspended floor**

| | | |
|---|---|---|
| Suspended floor as building envelope ? | No | |
| In-slab heating to be provided ? | No | |

**Insulation Requirements – Floors**

**Slab-on-ground**

| | | |
|---|---|---|
| Perimeter insulation required ? | Yes | *Min. Insulation R-value:1.0 & refer SANS 10400-XA (4.4.2) / SANS 204 (4.3.2)* |
| Under-floor insulation required ? | No | |

**Suspended floor**

| | | |
|---|---|---|
| Insulation of unenclosed perimeter required ? | No | |
| Perimeter & under-floor insulation required ? | No | |

### External Wall Construction

**SANS 10400-XA Required *R*-value**

| | | |
|---|---|---|
| Wall Type ? | Masonry | |
| Minimum R-value required: | 0.35 | *Refer SANS 10400-XA (4.4.3) & SANS 204 - Table 4 and Advisory Note.* |
| Compliant masonry walling: | *Double-skin masonry wall, no cavity, plastered internally or rendered externally, or Single-leaf masonry wall, nominal wall thickness not < 140 mm, plastered internally and rendered externally.* | |

**SANS 204 Required CR-value**

| | | |
|---|---|---|
| Minimum CR-value required: | 80 | Hours |
| Advisory Note - | *Applicable to masonry walls only in terms of SANS 204* | |
| Double brick wall types: | No cavity | CR-value: 40 |
| | | *CR-value of wall insufficient.* |

### Fenestration – *Buildings with Natural Environmental Control*

**Constants**

| | | |
|---|---|---|
| Conductance ( $C_U$ ) constant: | 1.4 | |
| Solar Heat Gain ( $C_{SHGC}$ ) constant: | 0.12 | |

**Storey Conductance / Solar Heat Gain**

**Ground Storey**

| | | |
|---|---|---|
| Net Floor Area of Storey / Room: m² | 250.000 | |
| Fenestration Area of Storey / Room: m² | 34.778 | |
| % Fenestration Area to Net Floor Area: % | 13.9 | |
| ***Permissible*** | FENESTRATION SATISFIES SANS 10400-XA. | |
| Max. Conductance ( $C_U$ ) for Storey / Room: | 350.000 | |
| Max. Solar Heat Gain ( $C_{SHGC}$ ) for Storey / Room: | 30.000 | |
| ***Achieved*** | | |
| Conductance ( CU ) for Storey / Room: | 141.197 | |
| Solar Heat Gain ( CSHGC ) for Storey / Room: | 16.659 | |
| ***Available ( In Hand )*** | | |
| Conductance ( $C_U$ ) for Storey / Room: | 208.803 | Acceptable & refer SANS 204 (4.3.4) |
| Solar Heat Gain ( $C_{SHGC}$ ) for Storey / Room: | 13.341 | Acceptable & refer SANS 204 (4.3.4) |

### Roof Assembly

**SANS 10400-XA Required *R*-value**

| | | |
|---|---|---|
| Minimum Total *R*-value required: | 3.2 | m²·K/W |
| Direction of heat flow: | Up | |

**Construction Type *R*-value**

| | | |
|---|---|---|
| Basic roof assembly: | Clay tile type | |
| *R*-value for roof covering material: | 0.35 | m²·K/W |
| *R*-value for ceiling: | 0.05 | m²·K/W |
| Required added *R*-value for insulation: | 2.8 | m²·K/W |

**SANS 204 Required *R*-value**

**Construction Type *R*-value**

| | | |
|---|---|---|
| Roof venting: | Unventilated | |
| Basic roof construction ? | Metal cladding @ 22-45° pitch w/ cathedral/open beam ceiling | |

**Basic R-value for Roof**

| | | |
|---|---|---|
| Direction of heat flow: | UP | |
| Outdoor air film (7m/s) | 0.03 | |
| Metal cladding | 0 | |
| Roof air space (30 mm to 100 mm, non-reflective) | 0.16 | |
| Plasterboard, gypsum (10 mm, 880 kg/m³) | 0.06 | |
| | | |
| Indoor air film (still air) | 0.11 | |
| Total R-value | 0.36 | m²K/W |

**Thermal Insulation**

| | | |
|---|---|---|
| Minimum added *R*-Value of insulation required: | 2.84 | m²K/W |
| Generic insulation product added ? | Rigid extruded polystyrene (XPS) | |
| Density of generic insulation added: | 32 | kg/m³ |
| Thickness of generic insulation required: | 80 | mm |

### Services

**Lighting and Power**

| | | |
|---|---|---|
| Max. Energy Demand: | 1600 | W – Permissible |
| Max. Energy Consumption per Annum: | 1600 | kWh – Permissible |

| Lamp power (W) rating: | No. of lamps: | Hours in use / day: |
|---|---|---|
| 15 | 5 | 5 |
| 20 | 2 | 5 |
| 20 | 3 | 5 |
| 6 | 75 | 5 |
| 60 | 1 | 5 |
| 0 | 0 | 0 |
| 0 | 0 | 0 |
| 0 | 0 | 0 |
| 0 | 0 | 0 |
| 0 | 0 | 0 |

| | | |
|---|---|---|
| Total lamp energy demand (W): | 685 | *Energy demand acceptable.* |
| or | | |
| Total energy demand (W/m²): | 2.14 | *Energy demand acceptable.* |
| Available Energy Demand for Lights : | 915.00 | W |
| Total energy consumption – Lights (kWh): | 1246.70 | *Energy consumption acceptable.* |
| or | | |
| Total energy consumption – Lights (kWh/m²): | 3.90 | *Energy consumption acceptable.* |
| Available annual energy consumption – Lights: | 353.30 | kWh |

**Hot Water Services** *(Use actual measured data where available.)*

| | | |
|---|---|---|
| Type of Accommodation ? | Dwelling houses - Medium rental : 115-140 L/capita/day | |
| Assumed Hot Water Consumption ? | 115 | L |
| No. of Persons: | 7 | Per Day |
| Assumed Daily Hot Water Consumption: | 805 | L |
| Assumed Annual Hot Water Consumption: | 293.02 | kL – *Based on daily design occupancy per week* |
| 50 % of Annual Hot Water Consumption: | 146.51 | kL – *Minimum volume of hot water to be heated by means other than electrical resistance heating* |
| or | | |
| Daily Hot Water Consumption: | 402.5 | L – *To be heated by means other than electrical resistance heating* |

**Insulation Requirements**

| | | |
|---|---|---|
| Internal diameter of Hot Water Service Pipe ? | ≤ 80 | mm |
| Minimum Required *R*-value for Pipe Insulation ? | 1 | *Refer SANS 204 (4.5.2)* |

**Hot Water Vessels / Tanks**

| | | |
|---|---|---|
| Minimum Required *R*-value for Vessel / Tank ? | 2 | *Additional insulation to manufacturer's insulation may be required to achieve this value.* |



**OVER PURLIN INSULATION NOTES**
isoBoard high density rigid extruded polystyrene 100% closed cell insulation board of 60mm thickness and 600mm wide, with T&G grove joints, fixed concurrently with roof covering over steel purlins at approx 1500mm ccc with 5mm gap between boards butt-joined on top of purlins. All strictly to Manufactures installation and usage guides.

**CONCRETE ROOF INSULATION NOTES**
isoBoard high density rigid extruded polystyrene 100% closed cell insulation board of 80mm thickness and 600mm width with shiplap joint all round laid tightly butted on waterproofing membrane.

**SURFACE BED INSULATION NOTES**
isoBoard high density rigid extruded polystyrene 100% closed cell insulation board of 30mm thickness and 600mm width with T&G joints laid on plastic damp proof membrane under reinforced concrete beds.

**PERIMETER INSULATION NOTES**
isoBoard high density rigid extruded polystyrene 100% closed cell insulation board of 30mm thickness and 600mm width installed upright against outer foundation wall to depth of 600mm secured with soil ballast

**CAVITY WALL INSULATION NOTES**
isoBoard high density rigid extruded polystyrene 100% closed cell insulation board of min 40mm thickness and 600mm wide, with T&G grove joints, fixed to inner skin of block cavity wall such as to shed moisture. Glavanized mild steel ties 150mm built into horizontal joints in wall at max 300mm c/c along top and bottom edges, including neatly notching board edges around wall ties, window and door frames. Alternate ties are used to secure boards to inner leaf. All strictly to Manufactures installation and usage guides.

**GEYSER & WATER PIPE INSULATION NOTES**
Isover 50mm thick non-combustible, lightweight Glasswool foil faced geyser insulation blanket, R value:2, size 3500 x 1200mm with edges sealed with binding tape including 15 x 20mm Glasswool Snap-on pipe insulation (R-value 1.0) on hot and cold water pipes, all installed in accordance with manufacturer`s recommendations.
All hot water pipe reticulation to have the shortest distance runs from geysers to sanitary fittings.

**ELECTRICAL LIGHT FITTINGS**
No icandescent light fittings to be installed.
LED for recessed downlighters: 6W
Diffused LED bulbs for surface and pendant fittings: 20W max
CFL (Compact Flourescent Light)
Tube lamps 20Wmax
Globe lamps 15W max
Flood lamps 20W max

**WINDOW NOTES**
Aluminium Frame: To be thermal break frame and single
Low E (emissivity) glass with a total U-value of 4,06 and SHGC of 0,63
GLASS VALUES
*SOLARVUE Neutral U-value of 5.8 and SHGC of 0,57
*SOLARSHIELD* Grey S10 U-value of 5.8 and SHGC of 0,3
*COOLVUE E RANGE* Clear U-value of 3.4 and SHGC of 0,49

**AIR INFILTRATION LEAKAGE NOTES**
A rubber/polyutherane foam seal to edges of external door frames, external window. External swing doors to be fitted with a draught protection device to the bottom edge of each leaf.
Roof and wall construction to be sealed by methods of caulking, additions of skirtings, architraves and rubber seals.

http://mohsinsujee.wixsite.com/architecturestudio
www.instagram.com/mohsinsujee
cell 082 969 7352
fax 086 613 6914
e-mail mohsinsujee@vodamail.co.za
GPS S 25°47'33.6" E 28°06'00.9"
mohsIn sujee archItecture studIo
Pr.Snr Arch Tech SACAP 0317

Job Title
New House for
GLOTECH SOLUTIONS PTY (LTD)
ERF 1106 (6 CHICAGO PLACE)
PEACH TREE X2

Drawing Name
ENERGY EFFICIENCY REPORT
WATER RETICULATION

Drawing Status
COUNCIL SUBMISSION

| | |
|---|---|
| Drawn by: M.Sujee | Date: 28 APR 2017 |
| Drawing scale: 1:100 | Sheet size: A1 |
| Project No.: 217-298 | |
| Drawing No.: 298-203 | Revision: 9 JUNE 17 — 2 |