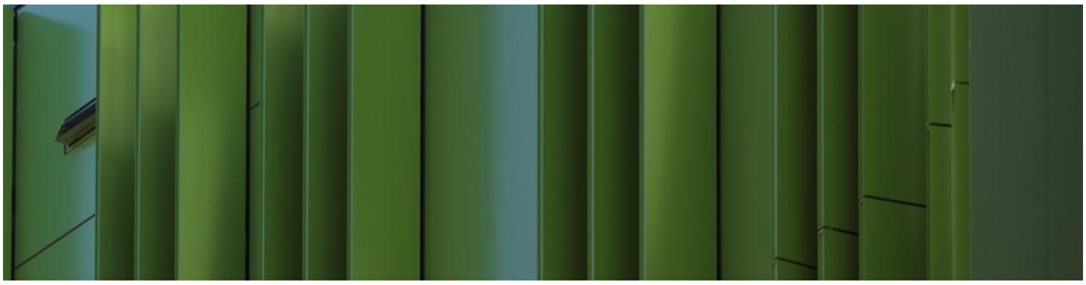
Structural



BYRON SHIRE CENTRAL HOSPITAL
STRUCTURAL DESIGN REPORT – SCHEME DESIGN

for HEALTH INFRASTRUCTURE

31 JULY 2014

141233

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1.0 EXECUTIVE SUMMARY

1.1 General Conditions

The proposed Byron Shire Central Hospital development consists of three buildings connected by linkways. The site of the development is located on the southern side of Ewingsdale Road, Byron Bay approximately 600 m east of the Pacific Highway.

1.2 Geotechnical Conditions

The geotechnical investigation by Geotech Investigations Pty Ltd encountered variable depths of residual stiff to hard clays / silts overlying extremely weathered basalt and bands of silty clay then weathered basalt. The depth of the bedrock is approximately 6 to 9 m.

1.3 Foundation systems

Foundations are proposed to be pad footings integrated where required. Based on the geotechnical report, an allowable bearing capacity of 150 kPa has been adopted. This will need to be confirmed during construction.

1.4 Structural systems

The northern building is proposed to be primarily a two level structure with suspended concrete slab (post-tensioned banded slab) and lightweight steel roof system on load bearing stud walls.

The southern buildings comprise a waffle pad slab on ground on ground with lightweight steel framed roof on load bearing studs.

As discussed and agreed with Health Infrastructure, the general 40 mm integral topping is not to be used for this hospital.

External canopy structures for drop offs were only agreed late in the schematic design stage and are proposed to be steel framed structures tied back to the roof framing system to provide stability.

2.0 EXISTING CONDITIONS

2.1 General Comments

The Byron Shire Central Hospital development consists of three buildings connected by linkways. The site of the development is located on the southern side of Ewingsdale Road, Byron Bay approximately 600 m east of the Pacific Highway. A recently constructed ambulance station and associated car parking facility occupy the north-eastern portion of the site along with a pond further east. The remainder of the site is vacant.

The current topography of the site is slightly sloping (less than 7 degrees) from the north-western portion towards the eastern boundary.

Figure 1 : Existing Site Plan and Proposed Hospital

2.2 Geotechnical Conditions

A report on geotechnical investigation was issued by Geotech Investigations Pty Ltd in July 2014 which presented subsurface conditions for site preparation in addition to foundation and pavement design parameters.

The site is underlain by soils from the Tertiary aged Lismore Basalt of the Lamington Volcanics which typically comprises basalt, (agglomerate, bole).

2.2.1 Existing Ground Conditions

In summary, the subsurface conditions within the proposed building area can be described as residual stiff to hard clays / silts and extremely weathered basalt, then weathered basalt.

The residual silty clay was stiff to hard and of high plasticity extending from surface level to depths between 2.5 m and 4 m. In some boreholes, a sequence of stiff to very stiff clayey silt was encountered underlying the silty clay material.

Underlying the silty clays and clayey silts, stiff to hard silty clays and clayey silts remoulding extremely weathered basalt were encountered in some boreholes and extremely weathered basalt in others.

These were followed by firm to stiff silty clay and clayey silt typically between 0.3 m and 1.2 m thick in some boreholes.

Underlying the residual soils and extremely weathered basalt, highly weathered to distinctly weathered basalt of low strength were encountered at depths between 5.5 m and 9.1 m. These were followed by moderately weathered to fresh basalt of medium to high strength to termination depths between 6.3 m and 10.3 m.

2.2.2 Ground water

Groundwater levels were measured in a monitoring well at 3.2 m depth. It should be noted that groundwater is affected by climatic conditions and soil permeability, and may vary. However, it is not expected that groundwater will affect the design of the structure.

3.0 DESIGN PARAMETERS

In general all loads and load combinations shall comply with AS/NZS 1170 Parts 0 to 4 Structural Design Actions. Live load reductions can be applied as permitted by AS/NZS 1170.1. Generally the design loads are:

3.1 Design Loads

3.1.1 Permanent Actions - Dead Loads

Dead load shall be considered as the self-weight of the structure plus an allowance for services, toppings, walls and ceilings which vary significantly throughout the site.

The additional dead loads should not be less than the following:

Table 1: - Permanent Actions Dead Loads

Description	Services, ceilings, partitions etc.
Hospital Floors & Office areas	1.5 kPa
Plant and concrete roof areas	2.2 kPa[1]

[1] Loading to be confirmed for allowance of topping slab if required

No façade or masonry wall loading is included in the above loads.

No allowance has been made for an integral topping agreed with Health Infrastructure.

It is assumed that all the façade and internal partitions will be of lightweight stud construction and specific allowance will be made for masonry partitions if required. In particular, masonry walls may be required around services risers and plant areas and in other areas as part of the buildings’ lateral bracing system if required.

3.1.2 Imposed Actions - Live Loads

Design floor live loadings are to generally satisfy the minimum provisions of AS 1170.1 and in particular the following:

Table 2: - Imposed Actions Live Loads

Description	***Uniformly Distributed Actions***	***Concentrated Actions***
General Hospital Floors	3.0 kPa	2.7 kN
Theatres / X-ray Rooms	3.0 kPa	4.5 kN
Stairs & Corridors	4.0 kPa	4.5 kN
Office Areas	3.0 kPa	2.7 kN
Plant and Utility Areas	Plant loads or 5.0 kPa (minimum)	4.5 kN (minimum)
General Store Rooms	5 kPa (Max 2.1 m Storage Height)	7.0 kN
Compactus and Medical Records	7.5 kPa	4.5 kN
Sterile Stock Room	5kPa	7.0 kN
Structural Steel Roof (Non-trafficable)	0.25 kPa	1.4 kN

No live load reductions are to be applied to any floor system elements. Pattern loading will be considered when determining worst case scenarios for strength and serviceability where required by AS1170. Live load reductions can be considered for columns, walls and footing design in accordance with AS1170.1.

It has been assumed that all roofs are non-trafficable in exception to the plant area located on the suspended concrete slab between the imaging and birthing wings. Loads in plant areas are to be confirmed by services engineers once detailed layouts are confirmed.

3.1.3 Wind Loads

Wind loads are to be in accordance with AS1170.2 and based on the following parameters:

Table 3: Wind Load Design Parameters

Region:		B
Importance Level (BCA Table B1.2a):		3[1]
Annual probability of exceedance:	(BCA Table B1.2b)	1:1000 (ultimate)
	(AS1170.0 T3.3)	1:25 (serviceability)
Regional Wind Speed:	(Ultimate limit states)	$V_{1000} = 60\,m/s$
	(Serviceability limit states)	$V_{25} = 39\,m/s$
Terrain Category:		Varies from 2 to 2.5

[1.] An importance level 3 has been nominated as outlined in the BCA for structures that are not essential to post-disaster recovery or associated with hazardous facilities. It is to be confirmed by Health Infrastructure that the new hospital conforms to this description.

3.1.4 Earthquake Loads

Earthquake loadings shall be in accordance with AS1170.4 – 2007 (Earthquake actions in Australia) and AS/NZS1170.0 – 2002.

Table 4: Earthquake Design Parameters

Hazard Factor (Z):	0.05
Site Sub-Soil Class:	C_e (Shallow soil site)
Importance Level (BCA Table B1.2a):	3[2]
Annual probability of exceedance (BCA Table B1.2b):	1:1000
Earthquake Design Category:	II
Probability Factor (k_p)	1.3

[2.] An importance level 3 has been nominated as outlined in the BCA for structures that are not essential to post-disaster recovery or associated with hazardous facilities. It is to be confirmed by Health Infrastructure that the new hospital conforms to this description.

3.1.5 Design Standards

The structural design will be in accordance with the latest revision of all relevant Australian Design Standards, Codes and other statutory requirements. As a minimum requirement, the design shall be based on, but not limited to;

Table 5: Relevant Australian Standards

NUMBER	***EDITION***	**TITLE**
AS/NZS 1170.0	2002	Structural design actions Part 0: General Principles
AS/NZS 1170.1	2002	Structural design actions Part 1: Permanent, imposed and other actions
AS/NZS 1170.2	2002	Structural design actions Part 2: Wind actions
AS 1170.4	2007	Structural design actions Part 4: Earthquake loads
AS 2670.1	2001	Evaluation of human exposure to whole-body vibration
AS 3600	2009	Concrete Structures
AS 3700	2001	Masonry Structures
AS 4100	1998	Steel Structures

3.2 SERVICEABILITY

3.2.1 Deflection Limits

Deflection limits for the concrete and steel structures are generally as follows:

Table 6: Deflection Limits

Description	***Maximum Floor Deflection Limit***			
	Dead	Incremental	Live	DL + LL
Floors supporting masonry walls	Span/360	Span/1000 [1.]	Span/500	Span/300 (25mm max.)
Compactus areas	N/A	Span/750 [2.]	N/A	25mm max.
Other floor areas	Span/360 (20mm max.)	N/A	Span/500	Span/300 (25mm max.)
Roofs	Span/360	Span/360	Span/500	Span/300
Horizontal drift	N/A	Span/150	N/A	N/A

[1.] Areas supporting normal weight masonry partitions.
[2.] Incremental deflection after compactus installed

3.2.2 Durability

For concrete elements this will be achieved by specifying all elements in accordance with section 4 of AS 3600 which sets out requirements for plain, reinforced and post tensioned concrete structures and members with a design life of 40 to 60 years. Exposure classifications are as follows.

Table 7: - Exposure Classification

EXPOSURE CLASSIFICATION	***ELEMENTS***
A2	Internal
B1	In Ground & External

Protective coatings to structural steel elements shall comply with AS/NZS 2312 and ISO 2063 for the long-term protection category.

3.2.3 Occupant Perception of Motion

The vibration criteria being adopted is similar to that being used in the design of major NSW public hospitals. The general design requirement for suspended slabs is RF2. This is a British Standards term that relates to a multiplying factor of 2 on the vibration base curve in AS 2670.2-1990 and ISO 10137-2007.

The limits to be set on the vibration analysis and slab design are in accordance with Australian Standards and the International Standards Organisation where applicable. The design criteria are also informed by the report "Floor Vibration due to Human Activity" by Thomas Murray, David Allen and Eric Ungar.

In general, the Byron Shire Central Hospital all floors are to be designed to the following response factor RF2 (200 µm/s amplitude).

Stricter vibration limits required for areas in the imaging facility but since these are supported on a slab on ground, it is anticipated that this will not be an issue. Should imaging equipment be roof mounted, we recommend separate steel frames from the roof structure to minimise the impact of wind induced deflections.

3.2.4 Fire Resistance Levels

The BCA type of construction required for this building will be type B. Fire Resistance Levels (FRL) for the structural elements will need to be in accordance with Specification C1.1 of the BCA. Typically the FRL (minutes) for concrete structural elements is 120/120/120.

The roof is not proposed to be fire rated. This is to be confirmed by the BCA consultant and Health Infrastructure.

At this stage, TTW is not aware of any areas which require an FRL in excess of 120/120/120. Particular attention will be required for the design of fire walls and the interaction with the proposed lightweight steel framed system.

3.3 Environmentally Sustainable Design

3.3.1 General

The following sections outline how TTW can contribute to the Green Star rating and also lists any constraints that may arise when attempting to achieve the targeted points.

Two specific categories are presented, those being:

- Concrete (Mat-4)
- Steel (Mat-5)

3.3.2 Concrete

The aim of the GBCA Mat-4 Concrete Credit is to help reduce greenhouse gas emissions and resource use associated with the use of concrete. One target point can be achieved by reducing the Portland cement content by at least 30% by mass when measured against a reference case. If a post tensioning option is adopted for suspended slabs, there will be restrictions on how much Portland cement can be replaced with industrial by products and still achieve the required early age strength requirements. This is particularly relevant for slabs cast in the colder months.

In addition to the above initiatives, one of the best ways to minimise resource use is to provide an efficient structural design. For concrete structures this is best achieved through the use of post tensioning as structural depths and concrete volumes can be reduced by 10 - 25% when compared to a reinforced structure. This would result in even less Portland cement and less materials overall being. Unfortunately it is not currently acknowledged by the GBCA Green Star credit rating.

3.3.3 Steel

The aim of the GBCA Mat-5 Steel Credit is to encourage environmentally responsible production, design and fabrication methods that result in efficient use of steel as a building material. One point is available for structures where structural steel comprises 60% of the total steel tonnage. It is expected that this credit could be achieved considering that a large percentage of the steel used will be structural. Note that post tensioning tendons are not included in these calculations.

Depending on the comparable tonnages for the steel elements mentioned; for a combined tonnage credit:

- At least 95% of the roof sheeting, wall sheeting must be 550MPa grade
- At least 95% of the purlins, girts and light-steel framing must be 450MPa grade
- At least 25% of Hot-rolled structural steel (including plate) must be 350MPa grade
- At least 25% of Cold-formed sections (including hollow sections) must be 450MPa grade
- At least 25% of welded sections must be 400MPa grade
- Supplied reinforcement has a strength grade of at least 500MPa, and 60% of the reinforcement is produced using energy reducing processes in its manufacture.
- All structural steel is to be permanently marked with their nominated strength grade

Depending on the final quantities of steel used it is possible that 1 point would be available for this GBCA credit if it were to be used.

Note: A “responsible steelmaker” must be considered as a source of steel for the purpose of Greenstar credits.

4.0 FOUNDATION SYSTEM

The geotechnical investigation carried out by Geotech Investigations Pty Ltd considered shallow foundations in the form of strip and pad footings would be typically achievable and provided preliminary parameters for design of piles if required where the loads or settlements are too high.

In order to provide a suitable base for the placement of 'controlled' fill and to provide suitable support for the buildings and pavements, any existing topsoil containing organics will need to be removed and replaced with compacted suitable material.

4.1 Proposed Foundations

It is proposed that two foundation systems be adopted, those being:

- A waffle slab of approximately 400 mm depth where a single story steel roof is present
- Pad footings to support concrete column loads integrated in a waffle slab where suspended concrete slabs are present. Pad footings will vary in plan size dependent on column loads

Typically, the schematic design drawings have adopted an allowable bearing capacity of 150 kPa based on the geotechnical report.

All footings, edge beams and internal beams are to be founded in uniform material to limit the potential for differential settlements that are likely to damage the structures, i.e. not partially in fill and partly in residual soils or weathered rock. This may require the use of deepened footings to transfer loads where the 'very stiff' or better residual soils are not exposed in the footings.

5.0 STRUCTURAL SYSTEMS

5.1 Structural Scheme

The structure of the Byron Shire Central Hospital has a basic structural form with concrete columns located on an approximate 7.8 m x 8.2 m grid (varies across buildings). There are no transfers in the concrete structure. For the steel structure, if a load-bearing cold-formed steel truss system is adopted, then trusses will be required at a smaller spacing of the order of 1200 mm.

5.2 Structural Floor Systems

For the selected grid, there are multiple options available for the construction of the floor system. A banded slab is traditionally the most cost effective option for these spans. The cost saving is primarily achieved by reduced formwork costs and the improvement in onsite trade coordination.

A maximum of 50 mm set downs have been allowed for in the preliminary dimensioning of the floor system. As part of the Schematic Design Phase, TTW have investigated two floor options, those being:

Option 1 – Post Tensioned Concrete Banded Slab

Post-tensioned banded slab consisting of 2400mm wide band beams was considered. This requires a band beam thickness of 400 mm and a slab thickness of 220mm.

This system is considered to be the most efficient solution based upon cost, speed of construction and overall weight of materials used.

A post-tensioned system does result in some limitations with regards to future services penetrations, as the stressed tendons within the slab cannot be compromised without detriment to the capacity of the slab. As such it is recommended that the tendon layouts for the slab are marked on to the formwork and then permanently to the underside of the slab in order to locate tendons in the future. Future penetrations up to 1m x 1m (TBC) can usually be accommodated between tendons without additional strengthening. Additionally, post tensioning systems allow tighter deflection limits.

Option 2 – Reinforced Concrete Banded Slab

This option requires thicker floors and bands and a higher rate of reinforcement to control deflection and achieve crack control for the size of the structural grid under consideration.

Historically health projects in NSW have generally adopted a reinforced slab system as it is considered to be more flexible for the installation of future penetrations. Whilst this is correct to some extent there are still limitations on where penetrations can be installed. Post tensioned slab systems are now being used in health projects more regularly due to the reduced slab depths, speed of construction and lower costs.

Preferred Option

Taking the above into consideration, a post tensioned banded slab design (Option 1) was adopted as the most appropriate slab system for the proposed column grid.

5.3 Structural Roof System

Two roof framing options were investigated as part of the schematic design, those being:

Option 1 – Steel Frame Option

This option consists of steel beams typically 310 UB beams spanning continuously on the grids with 89 SHS columns placed inside internal walls and 150 RHS's in external walls. Typically a 250 PFC with an intermediate column running around the perimeter of the building is required to provide structural support for the facade. To ensure stability, this option requires wall bracing in selected areas in addition to roof bracing. It is possible with this system to keep the bracing outside walls incorporating medical services in order to allow for the ease of installation and access for maintenance and upgrades.

This option requires a relatively small structural depth and provides flexibility for the installation and access to services installed in the roof throughout the design life of the structure.

Option 2 – Load-bearing Cold Formed Steel Truss Option

This option consists of closely spaced load-bearing steel trusses spanning across the width of the building and supported on internal columns or load bearing walls. Note that only indicative drawings have been provided in Appendix A but the final design, layout and location of the bracing walls, load bearing walls and trusses is to be provided by truss design contractor.

Although more cost effective than Option 1, this option makes the installation and coordination of the services a more difficult task.

Additional steel framing will be required in the canopy areas due to the irregularities in the shape and possibly at the intersection of roofs sloping in different directions. The details and extent of this is to be coordinated with the truss design contractor at later stages of the design.

Preferred Option

TTW has been advised by Health Infrastructure that the load-bearing truss option (Option 2) is to be adopted. In this case, the drawings reflect this scheme.

5.4 Lateral Stability of the Structure

Overall, lateral stability of the steel structures in IPU building will be provided by the reinforced block wall lift core as well as the services riser and a series of bracing walls. The stability of the Birthing and Imaging wards will be ensured by the suspended plant slab and bracing walls. The remainder of the buildings which include the Emergency, Ambulatory care and mental health buildings will be stabilised laterally via bracing frames. The nature of the bracing walls has not been defined at this stage but is most likely to be lightweight braced steel partitions designed by the truss design contractor.

The stability of the concrete structure in the IPU building will be provided by the combination of the reinforced block wall lift core wall and frame action in the concrete structure elsewhere. In regards to the imaging and birthing building, lateral stability will be achieved via frame action in the concrete structure. Strip footing and pad footing that support the walls and columns will transfer the lateral load via shear and side bearing into the soil.

5.5 Roof System

Given that the structural roof system will be composed of closely spaced trusses, the structural system supporting the roof cladding and any insulation will be lightweight top hat sections running perpendicular to the direction of the roof fall.

5.6 External Canopy Structures

The final extent and shape of the external canopy structures was only agreed late in the schematic design process. During detailed design stage the roof framing to meet the architectural intent will require development. Spans are currently proposed up to nearly 20m, which will result in substantial beams – currently proposed of the order of 460 – 530mm deep. These canopies will need to be tied into the roof bracing system to provide stability.

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Appendix A:
Schematic Design Drawings

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING NO. S001

SHEET LIST	
Drawing No.	Drawing Name
SK000	NOTES SHEET
SK201	LOWER GROUND FLOOR PLAN
SK301	GROUND FLOOR PLAN NORTH
SK302	GROUND FLOOR PLAN CENTRAL
SK303	GROUND FLOOR PLAN SOUTH
SK401	ROOF PLAN NORTH EAST TRUSS OPTION
SK402	ROOF PLAN NORTH WEST TRUSS OPTION
SK403	ROOF PLAN CENTRAL TRUSS OPTION
SK404	ROOF PLAN SOUTH TRUSS OPTION
SK501	STEELWORK ELEVATIONS SHEET 1

BYRON SHIRE CENTRAL HOSPITAL

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GENERAL NOTES

1. These drawings are for structural purposes only and are to be read in conjunction with the specification, architectural drawings, other contract documentation and the requirements of the relevant authorities.
2. Verify all setting out dimensions with the Architect.
3. Do not obtain dimensions by scaling the structural elements.
4. Should any ambiguity, error, omission, discrepancy, inconsistency or other fault exist or seem to exist in the contract documents, immediately notify in writing to the Superintendent.
5. Maintain the structure in a stable condition during construction. Temporary bracing/shoring shall be provided by the contractor to keep the structure and excavations stable at all times, ensuring that no part of the documented structure becomes overstressed. For all temporary batters obtain geotechnical engineer's recommendations.
6. All workmanship and materials shall be in accordance with the requirements of current SAA codes and the bylaws, ordinances or other requirements of the relevant building authorities.
7. All proprietary items are to be installed and fixed in accordance with the manufacturers specifications and instructions.
8. All work is to be carried out in accordance with all Workcover requirements and occupational health and safety act regulations
9. Construction using these drawings shall not commence until a Construction Certificate is issued by the Principal Certifying Authority.

DESIGN LOADS:

Floor loads (kPa):		S.D.L	L.L.
	General	1.5	3.0
	Plant	2.2	5.0
	Storage	1.5	5.0
	Compactus	1.5	7.5

Wind Loads : V_R = 60m/s Where R = 1000 years
Region = B
Terrain Category = 2 to 2.5

Earthquake Loads: Design Category = II
Site Sub-soil class = Ce
Hazard Factor Z = 0.05
Probability Factor kp = 1.3

SAFETY IN DESIGN

Taylor Thomson Whitting (NSW) Pty Ltd operates under Safe Work Australia's Code of Conduct for the Safe Design of Structures.
These drawings shall be read in conjunction with the Taylor Thomson Whitting Transfer of Information Letter and Structural Risk and Solutions Register.
Under the Code of Conduct it is the Client's responsibility to provide a copy of the Structural Risk and Solutions Register to the Principal Contractor.
It is the Principal Contractor's responsibility to review the hazards and risks identified during the design process to ensure a safe workplace is maintained for the construction, maintenance and eventual demolition of the structure.

SLAB ON GROUND NOTES

Refer to Geotechnical Report No. GI 1375_A dated July 2014 by Geotech Investigations Pty Ltd. for all subgrade and subbase/Basecourse requirements and unless directed otherwise the following requirements apply.

1. Strip all topsoil from the construction area and remove from the site.
2. Before placing fill, proof roll exposed subgrade with 6 passes of a 10 tonne minimum roller to test subgrade and then remove soft spots (areas with more than 3mm movement under roller). Soft spots to be replaced with select fill as per table:

SIEVE APERTURE (mm) TO AS1152	PERCENTAGE PASSED (BY MASS)
75.0	100
9.5	100 to 50
2.36	100 to 30
0.6	50 to 15
0.075	<25

Plasticity index to be > or = 2% and < or = 15%
Non dispersive (a rating of nil as defined by the "dispersion" test AS1289.3.8.1) Submit proposed select fill for Engineers approval.

3. Compact fill areas and subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
4. All basecourse material to comply with the following table below and compacted to minimum 98% modified standard dry density in accordance with AS 1289 5.2.1.

SIEVE APERTURE (mm) TO AS1152	PERCENTAGE PASSED (BY MASS)
26.5	100
19.0	95 to 100
13.2	75 to 90
9.5	60 to 90
4.75	42 to 76
2.36	28 to 60
0.425	10 to 28
0.075	2 to 10

- Plasticity Index: Not greater than 10%
- Liquid Limit: Not greater than 25%
- California Bearing Ratio: Not less than 35%
- Unsound rock: Not greater than 20%
- Nondispersive (a rating of nil as defined by the dispersion test AS1289.3.8.1)
- Submit proposed basecourse for Engineers approval.

5. Place sand blinding to areas where Concrete underlays are required.

FOOTING NOTES

1. Foundations have been designed for:
   Allowable Bearing Pressure - 150 kPa
   Reactivity Class M to H2 to AS 2870
2. Foundation material is to be inspected and approved by the geotechnical engineer before casting footings.
3. Refer to geotechnical report No. No. GI 1375_A dated July 2014 by Geotech Investigations Pty Ltd.
4. Locate all pipes, retaining walls and excavation outside a 1:2 (vertical:horizontal) zone of influence from the bottom edge of the footing.
5. Where side shear is required to be developed, clean and roughen the sides of the excavation to the satisfaction of the geotechnical engineer.
6. Footings shall be located centrally under walls and columns unless noted otherwise.
7. Footings to be constructed and backfilled as soon as possible following excavation to avoid softening or drying out by exposure.
8. Contractor is to allow for cost of geotechnical inspections and any required certification.

CONCRETE NOTES

EXPOSURE CLASSIFICATION : External - B1
Internal - A2

CONCRETE
Place concrete of the following characteristic compressive strength f'c as defined in AS 1379.

Location	f'c MPa at 28 days	Specified Slump	Nominal Agg. size
General	S32	80	20
Columns	S40	80	20

1. Use Type 'GP' cement, unless otherwise specified.
2. All concrete shall be subject to project assessment and testing to AS 1379.
3. Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
4. For all falls in slab, drip grooves, reglets, chamfers etc. refer to Architects drawings and specifications.
5. Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
6. No holes or chases shall be made in the slab without the approval of the Engineer.
7. Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
8. Slurry used to lubricate concrete pump lines is not to be used in any structural members.
9. All slabs cast on ground require sand blinding with a Concrete Underlay
10. 175 Indicates slab or band thickness

FORMWORK
1. The design,certification,construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. The proposed method of installation and removal of formwork is to be submitted to the Superintendent for comment prior to work being carried out.

REINFORCEMENT NOTES

1. Fix reinforcement as shown on drawings. The type and grade is indicated by a symbol as shown below.
   On the drawings this is followed by a numeral which indicates the size in millimetres of the reinforcement.

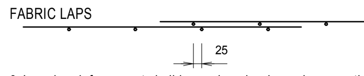
   N. Hot rolled ribbed bar grade D500N
   R. Plain round bar grade R250N
   SL. Square mesh grade 500L
   RL. Rectangular mesh grade 500L

2. Provide bar supports or spacers to give the following concrete cover to all reinforcement unless otherwise noted on drawings.

   Footings - __ top, __ bottom, __ sides.
   Slabs - __ top, __ bottom, __ sides.
   __ when exposed to weather or ground.
   Beams - __ bottom, __ sides, __ top to ties
   Columns - __ to ties and spirals.
   - __ when exposed to weather or ground.
   Walls - __ generally
   - __ when cast in forms but later exposed to weather or ground
   - __ when cast directly in contact with ground

3. Cover to reinforcement ends to be 50 mm u.n.o.
4. Provide N12-450 support bars to top reinforcement as required. Tension Lap U.N.O.
5. Maintain cover to all pipes, conduits, reglets, drip grooves etc.
6. All cogs to be standard cogs unless noted otherwise.
7. Fabric end and side laps are to be placed strictly in accordance with the manufacturers requirements to achieve a full tensile lap. Fabric shall be laid so that there is a maximum of 3 layers at any location.

FABRIC LAPS



8. Laps in reinforcement shall be made only where shown on the drawings unless otherwise approved. Lap lengths as per table below.

TENSION LAPS

BAR SIZE	TOP BARS IN BANDS AND BEAMS	ALL OTHER BARS
N12	570	480
N16	800	700
N20	1150	950
N24	1500	1250
N28	1850	1500
N32	2250	1800
N36	2700	2100

COMPRESSION LAPS

BAR SIZE	
N16	640
N20	800
N24	960
N28	1120
N32	1280
N36	1440

RETAINING WALL NOTES

1. Drainage shall be provided as shown on the drainage drawings.
2. Backfilling shall be carried out after grout or concrete has reached a minimum strength of 0.85 f'c. Backfilling shall be approved granular material compacted in layers not exceeding 200mm to 95% Standard compaction unless noted otherwise.
3. Provide waterproofing to back of walls as specified or noted.
4. Where retaining walls rely on connecting structural elements for stability, do not backfill against the wall unless it is adequately propped or the elements have been constructed and have sufficient strength to withstand the loads.
5. For all temporary batters obtain geotechnical engineers recommendations.

MASONRY NOTES

1. Temporary bracing shall be provided by the contractor to keep the masonry stable at all times.
2. Masonry to be in accordance with AS 3700
3. Masonry units shall comply with AS/NZS 4455 and as follows:

Type of masonry unit	Characteristic unconfined compressive strength (f'uc)	Characteristic lateral modulus of rupture (f'ut)
Clay & Calcium silicate	15 MPa	0.8 MPa
Concrete (used in non-loadbearing internal walls)	4.5 MPa (hollow units) 3.0 MPa (solid or cored units)	0.8 MPa
Concrete (used in unreinforced loadbearing walls, reinforced masonry and non-loadbearing external walls)	15 MPa (hollow units) 10 MPa (solid or cored units)	0.8 MPa

4. Mortar shall consist of the following:
   M3 for general applications
   1 part Type GP cement: 5 parts sand plus water thickener
   M4 for elements in interior environments subject to saline wetting and drying; below a damp-proof course or in contact with ground in aggressive soils; in severe marine environments; in saline or contaminated water including tidal splash zones; and within 1km of an industry producing chemical pollutants.
   1 part Type GP cement: 4 parts sand plus water thickener
5. Provide vertical control joints in masonry over permanent floor joints and as per the architectural drawings.
6. Masonry walls shown on the structural plans are load-bearing UNO. Non-loadbearing walls shall be separated from the concrete structure above with 20mm compressible filler. Masonry walls supporting slabs shall have a layer of mortar troweled smooth on top. Provide M.E.T. slipjoint to separate floor slabs and masonry. Provide Hercules HERCUSLIP COMPOSITE to separate roof slabs and masonry.
7. Other than what is allowed in the specification no chasing or rebates may be made in masonry walls without written approval.
8. The contractor shall provide records that demonstrate all masonry bed joint reinforcement, masonry ties and masonry wall stiffeners have been installed in accordance with the drawings and specification.
9. All load bearing concrete masonry walls shall have all cores filled with grout UNO. Core filling grout shall be thoroughly compacted. Grout to be in accordance with AS3700 and as follows:

Location	f'cg MPa	Specified Slump	Max' Aggregate size
Grout	20	230	10mm

10. All core filled blockwalls shall be constructed with "Double U" blocks
11. In core filled blockwalls cleanout openings shall be provided at the bottom of each core and shall be cleaned of mortar protrusions before grouting.
12. All core filled block walls shall have all cores filled with grout UNO. Core filling grout to be in accordance with note 4.
13. Cover to reinforcement to be 50mm to face of block UNO.
14. Provide bed joint reinforcement as follows
    M.E.T. galvanized masonry reo where M3 mortar is used (supplied by DUNSTONE MAZE in NSW)
    Ancon CCL stainless steel where M4 mortar is used and located as follows
    - in 2 bed joints below and above head and sill flashings to openings
    - in 2 bed joints below and above openings
    - in third bed joint above bottom of wall
    - in second bed joint below top of wall

STEEL WALL FRAMING / TRUSS NOTES

1. All design, materials and workmanship shall be in accordance with AS 4600 Cold Formed Steel Structures Code.
2. Unless noted otherwise on the drawings all wall framing and roof trusses shall be designed and installed by the manufacturer in accordance with the specification and relevant Australian Standards. Refer to General Notes for Design Loads.
3. All framing shall be designed to carry the dead load of all framing members, cladding, linings, folding doors, services etc. as shown on the Architects and other Consultants drawings.
4. All framing dimensions shall be obtained from the Architectural drawings.
5. All wall framing shall be designed as loadbearing to resist all lateral loads. Sufficient bracing shall be provided to resist the full wind load effects from both the walls and roof of the building in all directions.
6. In addition to other design loads all wall framing shall be designed to support the following loads:
   - Up to two rows of 300mm wide shelves. Each row of shelves shall be capable of supporting a vertical load of 50 kg per metre length of the shelf.
   - Comply with the requirements of BCA specification C1.8
7. In addition to the deflection limits specified in the relevant Australian Standards, wall framing shall be designed to achieve the following additional deflection limits:

ELEMENT	MAXIMUM DEFLECTION
Supporting frame masonry walls	Span / 1000

8. The contractor must submit a design certificate to certify the wall framing design is in accordance with AS 4600 for the relevant loads signed by a NPER registered engineer.

STRUCTURAL STEELWORK NOTES

1. Provide temporary bracing to maintain stability of steelwork during construction.
2. Unless noted otherwise.
   (a) Use 10mm thick gusset, fin & end plates welded all round.
   (b) All welds 6mm continuous fillet made with E48XX electrode or W50X
   (c) All bolts 20mm dia.
   (d) All bolts grade 8.8/S. (including purlin / girt bolts)
   (e) All holding down bolts are grade 4.6 U.N.O
   (f) All bolts, including holding down bolts are to be hot dip galvanized.
   (g) All fillet welds to be category GP.
   (h) Butt weld all flanges at end plates and at all mitre cuts. Gussets to end plates to be butt welded. All butt welds shall be full penetration, grade SP.
   (i) All connections to have a minimum of 2 bolts.
   (j) Provide all cleats and holes necessary for fixing Timber and other elements to the steel whether or not detailed on the Structural drawings.
   (k) Studs fabricated to AS1554.2
   All shear studs (composite slab to steel) grade 410 MPa.
   All threaded studs (steel to steel) grade 380 MPa.
   (l) Turnbuckles to be quality grade `S' to AS2319
   (m) Stainless steel to be grade 316
3. Bolting categories are identified on the drawings in the following manner.

   4.6/S Commercial bolts of grade 4.6 snug tightened.
   8.8/S High strength bolts of grade 8.8 snug tightened.
   8.8/TB High strength bolts of grade 8.8 fully tensioned to AS4100 as a bearing type joint.
   8.8/TF High strength bolts of grade 8.8 fully tensioned to AS4100 as a friction type joint with faying surfaces left uncoated.
   Note: Grade 8.8 bolts are NOT to be welded.

4. Chip all welds free of slag.
5. Contractor is to confirm with Architect as to where exposed welds are to be ground flush / smooth.
6. Do not grout under base plates until first level steelwork is plumb and fixed by welding or bolting.
7. Submit all shop drawings to the Superintendent before commencing fabrication.
8. Unless noted otherwise, the fixing of purlins, girts, bridging, sheeting and any other component shall be in accordance with the Manufacturer's specification and recommendations.
9. Sheeting / cladding is to be screw fixed to the purlins / girts to provide lateral restraint to the purlins/girts in accordance with the Manufacturer's requirements.
10. Provide double purlins at expansion joints in roof sheeting.
11. Purlin / girt sizes shown are based on the current BLUESCOPE LYSAGHT design data, including restraint from roof sheeting and bridging. The manufacturer should confirm any alternative systems used are equivalent or r edesign the purlins / girts to provide an equivalent system.
12. Purlin / girt cleats are to be in accordance with the Manufacturers details. Where the distance between the bottom flange of the purlin and the rafter is greater than 100mm use 75 x 75 x 8EA cleats.
13. Provide 75 x 75 x 4 duragal galvanized angle trimmers to support roof sheeting edges at all hips,valleys and angled sheet edges. Fix to each purlin with one No. 14 Tek screw.
14. Bridging shall be designed and erected in accordance with the Manufacturer's requirements. Rod bridging is not acceptable unless approved in writing.
15. For bridging members to purlins at curved roof areas provide bridging suitable for curved roofs to Manufacturer's details.

STEELWORK FINISHES

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PRELIMINARY

Rev	Description	Eng	Draft	Date
A	SCHEMATIC DESIGN	A.J	N.A	31.07.14

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Project
BYRON SHIRE CENTRAL HOSPITAL
54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject
NOTES SHEET

Scale : A0	Drawn	Authorised
1 : 1	N.A	R.M

Job No	Drawing No	Revision
141233	SK000	A

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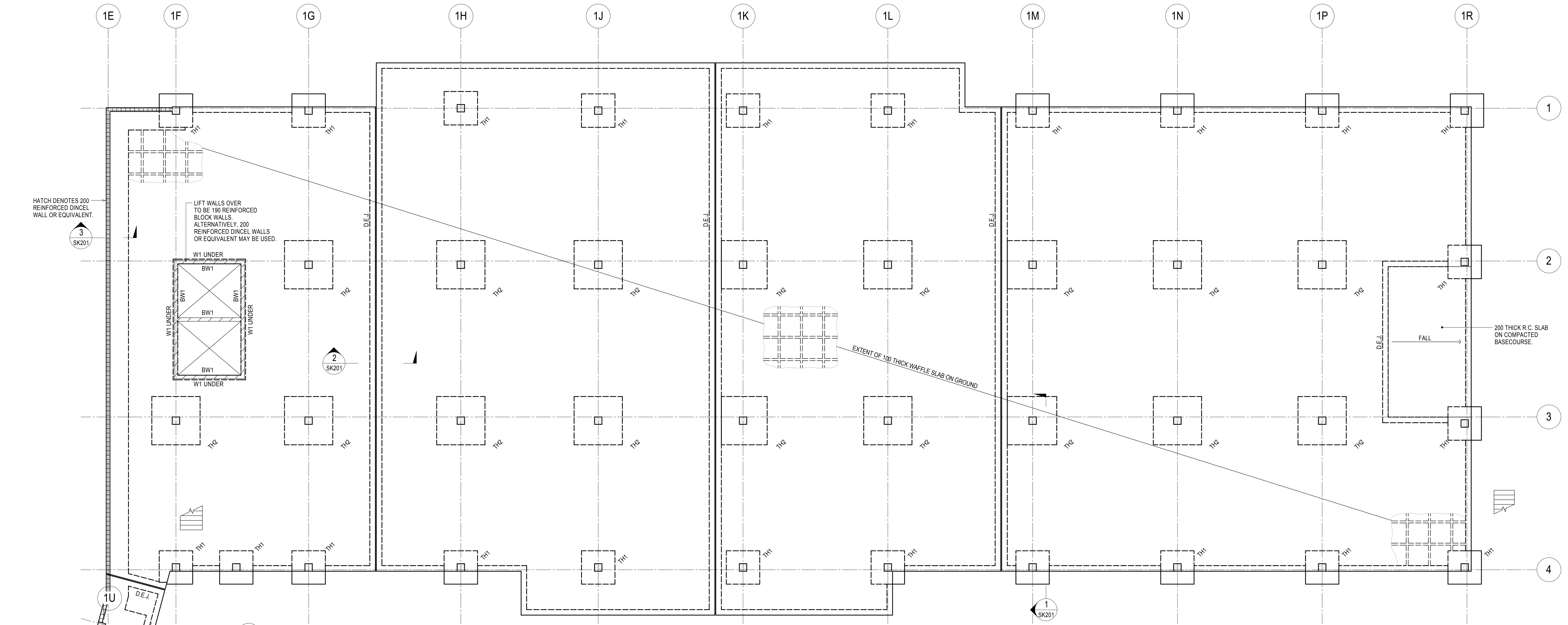
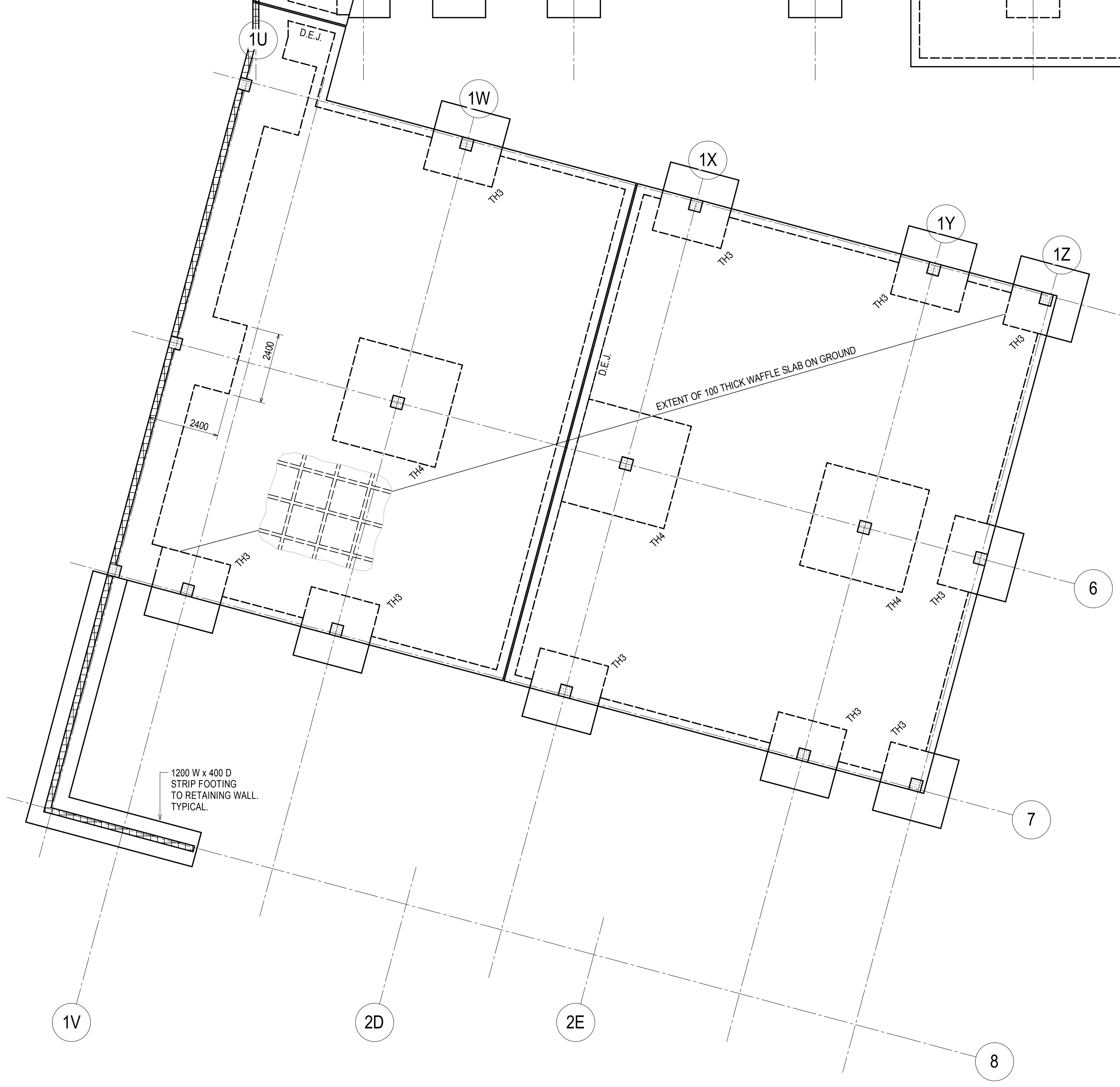
THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING NO. S001

LOWER GROUND FLOOR PLAN - 100 WAFFLE SLAB U.N.O.

SCALE 1:100

NOTE:

1. SLABS ON GROUND TO BE CAST ON A CONCRETE UNDERLAY (0.2mm THICK HIGH IMPACT RESISTANCE FILM TO AS/NZS 4347) OVER A 100mm BASECOURSE BLINDED WITH SAND.
2. REINFORCE SLABS ON GROUND WITH 1 LAYER OF SL92 FABRIC TOP THROUGHOUT.
3. ALL LEVELS AND FALLS TO ARCHITECTS DETAILS.
4. REFER TO HYDRAULIC ENGINEERS DETAILS FOR ALL SUB SOIL DRAINAGE, SUMPS, PITS AND GRATED DRAINS U.N.O.
5. REFER TO THE GEOTECHNICAL ENGINEER FOR ALL SUBBASE REQUIREMENTS.
6. DOWEL JOINT LOCATIONS ARE INDICATIVE ONLY.

ALLOW FOR MINIMUM 120 THICK SLAB IN PLANT AREAS. TYPICAL.

COLUMNS:

- 400 x 400 U.N.O.
- f'c 40 MPa U.N.O.

SLABS:

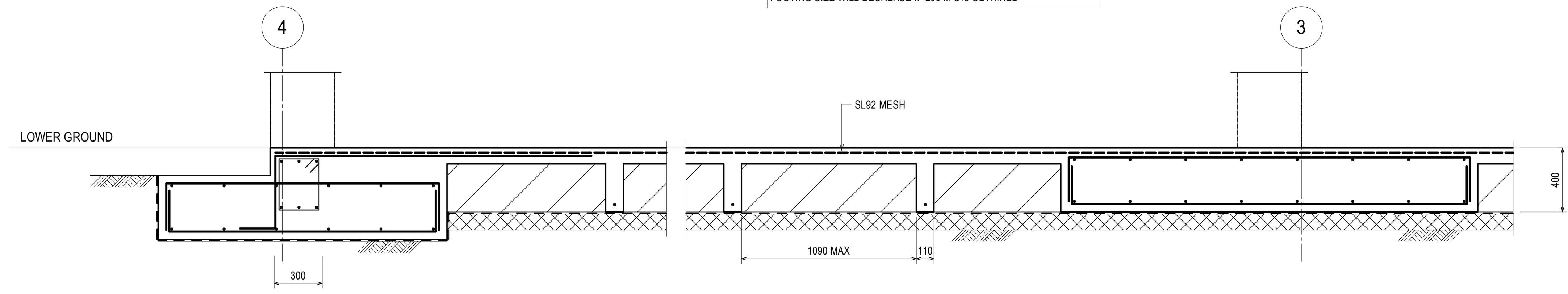
- f'c 32 MPa U.N.O.

REINFORCED MASONRY WALL SCHEDULE			
MARK	THICKNESS	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT
BW1	190		

WALL SCHEDULE			
MARK	THICKNESS	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT
W1	250		

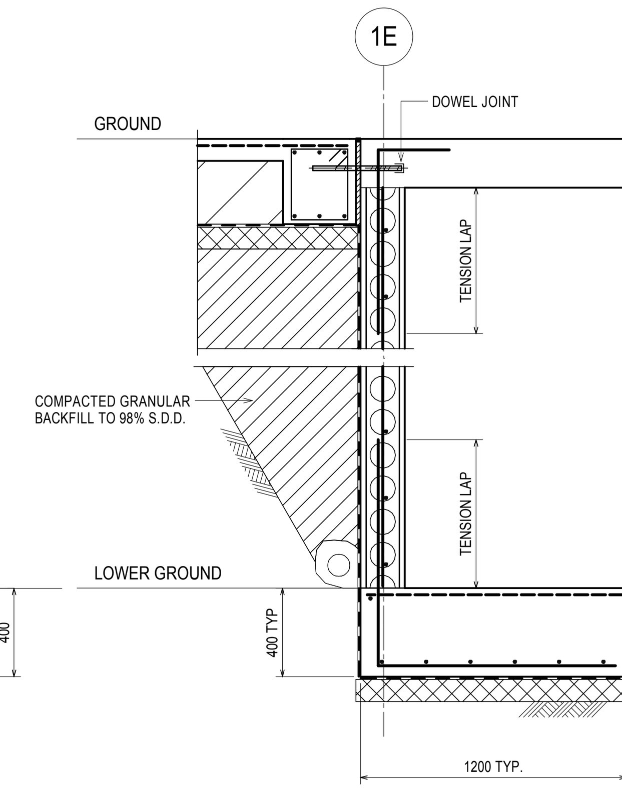
INTEGRAL FOOTING SCHEDULE			
Mark	LENGTH	WIDTH	THICKNESS
TH1	1800	1800	400 MIN
TH2	2600	2600	400
TH3	2400	2400	400 MIN
TH4	3600	3600	400

FOOTING SIZE BASED ON ALLOWABLE BEARING PRESSURE OF 150 kPa.
FOOTING SIZE WILL DECREASE IF 200 kPa is OBTAINED

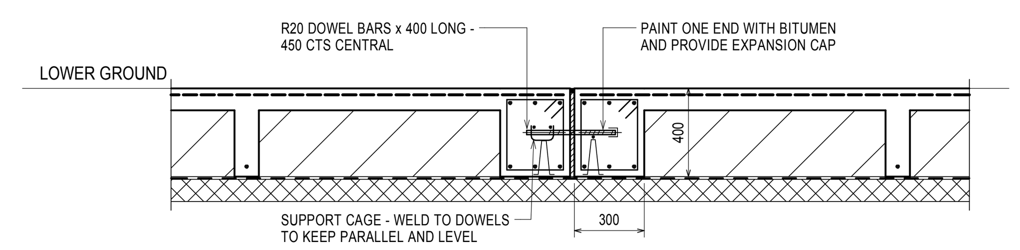


TYPICAL WAFFLE SLAB / INTEGRAL FOOTING DETAIL

SECTION 1
Scale 1 : 20
SK201



SECTION 3
Scale 1 : 20
SK201



TYPICAL DOWELLED EXPANSION JOINT - D.E.J.

SECTION 2
Scale 1 : 20
SK201

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Project
BYRON SHIRE CENTRAL HOSPITAL
54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject
LOWER GROUND FLOOR PLAN

Scale : A0	Drawn	Authorised
As indicated	N.A	R.M

Job No	Drawing No	Revision
141233	SK201	A

31/07/2014 2:21:32 PM

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING NO. S001

FOR CONTINUATION REFER TO DRAWING SK302

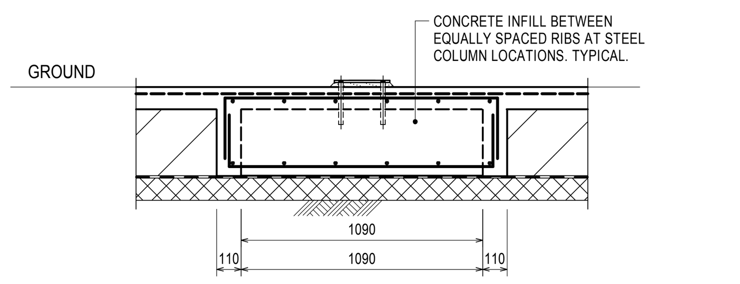
GROUND FLOOR PLAN NORTH

SCALE 1:100

NOTE:
1. SLABS ON GROUND TO BE CAST ON A CONCRETE UNDERLAY (0.2mm THICK HIGH IMPACT RESISTANCE FILM TO AS/NZS 4347) OVER A 100mm BASECOURSE BLINDED WITH SAND.
2. REINFORCE SLABS ON GROUND WITH 1 LAYER OF SL82 FABRIC TOP THROUGHOUT.
3. ALL LEVELS AND FALLS TO ARCHITECTS DETAILS.
4. REFER TO HYDRAULIC ENGINEERS DETAILS FOR ALL SUB SOIL DRAINAGE, SUMPS, PITS AND GRATED DRAINS U.N.O.
5. SETDOWNS TO BE FORMED IN TOP OF SLAB. SETDOWN LOCATIONS T.B.C.
6. SUSPENDED SLAB DESIGN HAS BEEN BASED ON POST TENSIONED BANDS AND SLABS.
7. DOWEL JOINT LOCATIONS ARE INDICATIVE ONLY.

COLUMNS:
- 400 x 400 U.N.O.
- f'c 40 MPa U.N.O.

SLABS:
- f'c 32 MPa U.N.O.



TYPICAL INTEGRAL PAD AT STEEL COLUMN LOCATIONS

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PRELIMINARY

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Project: BYRON SHIRE CENTRAL HOSPITAL, 54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject: GROUND FLOOR PLAN NORTH

Scale : A0	Drawn	Authorised
As indicated	N.A	R.M

Job No	Drawing No	Revision
141233	SK301	A

31/07/2014 2:21:33 PM

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING NO. S001

FOR CONTINUATION REFER TO DRAWING SK301

FOR CONTINUATION REFER TO DRAWING SK303

GROUND FLOOR PLAN CENTRAL

SCALE 1:100

NOTE:
1. SLABS ON GROUND TO BE CAST ON A CONCRETE UNDERLAY (0.2mm THICK HIGH IMPACT RESISTANCE FILM TO AS/NZS 4347) OVER A 100mm BASECOURSE BLINDED WITH SAND.
2. REINFORCE SLABS ON GROUND WITH 1 LAYER OF SL82 FABRIC TOP THROUGHOUT.
3. ALL LEVELS AND FALLS TO ARCHITECTS DETAILS.
4. REFER TO HYDRAULIC ENGINEERS DETAILS FOR ALL SUB SOIL DRAINAGE, SUMPS, PITS AND GRATED DRAINS U.N.O.
5. SETDOWNS TO BE FORMED IN TOP OF SLAB. SETDOWN LOCATIONS T.B.C.
6. SUSPENDED SLAB DESIGN HAS BEEN BASED ON POST TENSIONED BANDS AND SLABS.
7. DOWEL JOINT LOCATIONS ARE INDICATIVE ONLY.

COLUMNS:
- 400 x 400 U.N.O.
- f'c 40 MPa U.N.O.

SLABS:
- f'c 32 MPa U.N.O.

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54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject
GROUND FLOOR PLAN CENTRAL

Scale : A0	Drawn	Authorised
As indicated	N.A	R.M

Job No	Drawing No	Revision
141233	SK302	A

31/07/2014 2:21:33 PM

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COLUMNS:
- 400 x 400 U.N.O.
- f'c 40 MPa U.N.O.

SLABS:
- f'c 32 MPa U.N.O.

GROUND FLOOR PLAN SOUTH

SCALE 1:100

NOTE:
1. SLABS ON GROUND TO BE CAST ON A CONCRETE UNDERLAY (0.2mm THICK HIGH IMPACT RESISTANCE FILM TO AS/NZS 4347) OVER A 100mm BASECOURSE BLINDED WITH SAND.
2. REINFORCE SLABS ON GROUND WITH 1 LAYER OF SL82 FABRIC TOP THROUGHOUT.
3. ALL LEVELS AND FALLS TO ARCHITECTS DETAILS.
4. REFER TO HYDRAULIC ENGINEERS DETAILS FOR ALL SUB SOIL DRAINAGE, SUMPS, PITS AND GRATED DRAINS U.N.O.
5. SETDOWNS TO BE FORMED IN TOP OF SLAB. SETDOWN LOCATIONS T.B.C.
6. DOWEL JOINT LOCATIONS ARE INDICATIVE ONLY.

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Sheet Subject
GROUND FLOOR PLAN SOUTH

Scale : A0	Drawn	Authorised
As indicated	N.A	R.M

Job No	Drawing No	Revision
141233	SK303	A

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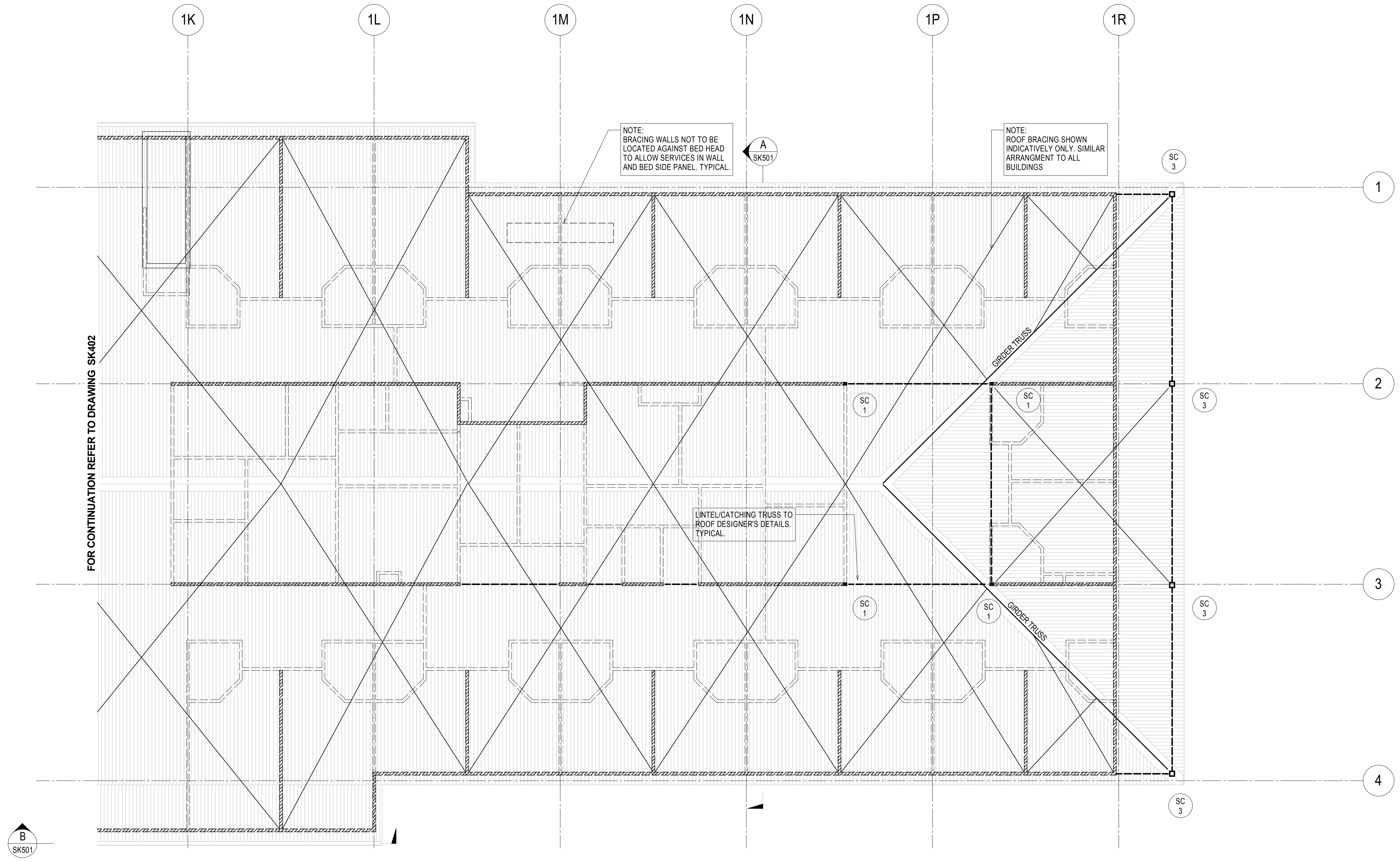

ROOF PLAN - NORTH EAST

SCALE 1:100

TRUSS NOTES:

1. DESIGN, CONSTRUCTION AND CERTIFICATION OF ROOF TRUSSES, EXTERNAL WALLS AND LOAD BEARING STUD WALLS (INCLUDING WINDOW HEADERS AND SUPPORTS) BY SPECIALIST CONTRACTOR. (ALL WORKS ABOVE CONCRETE SLAB)
2. ALL BRACING IN WALLS TO BE DETERMINED BY CONTRACTOR.
3. LOCATION OF LOAD BEARING STUD WALLS SHOWN INDICATIVELY ONLY. FINAL LOCATION T.B.C. BY CONTRACTOR.
4. TRUSS DESIGN TO BE COORDINATED WITH SERVICES AND ADDITIONAL SUPPORT COLUMNS
5. REFER TO STEEL WALL FRAMING NOTES ON SK000

TRUSS OPTION LEGEND:

1. DENOTES LOADBEARING STUD WALL / BRACING WALL UNDER.
2. DENOTES ASSUMED INDICATIVE STEEL BEAM / CATCHING TRUSS

STEEL COLUMN SCHEDULE...

Mark		Type
SC	1	89x89x6.0 SHS
SC	2	150x100x6.0 RHS
SC	3	200x200x6.0 SHS

PLOTTED BY: N.A ON 31/07/2014 2:21:33 PM

A0 0 1 2 3 4 5 6 7 8 9 10

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A	SCHEMATIC DESIGN	A.J.	N.A	31.07.14

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Project
BYRON SHIRE CENTRAL HOSPITAL
54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject
ROOF PLAN NORTH EAST TRUSS OPTION

Scale : A0	Drawn	Authorised
As indicated	N.A	R.M

Job No	Drawing No	Revision
141233	SK401	A

31/07/2014 2:21:33 PM

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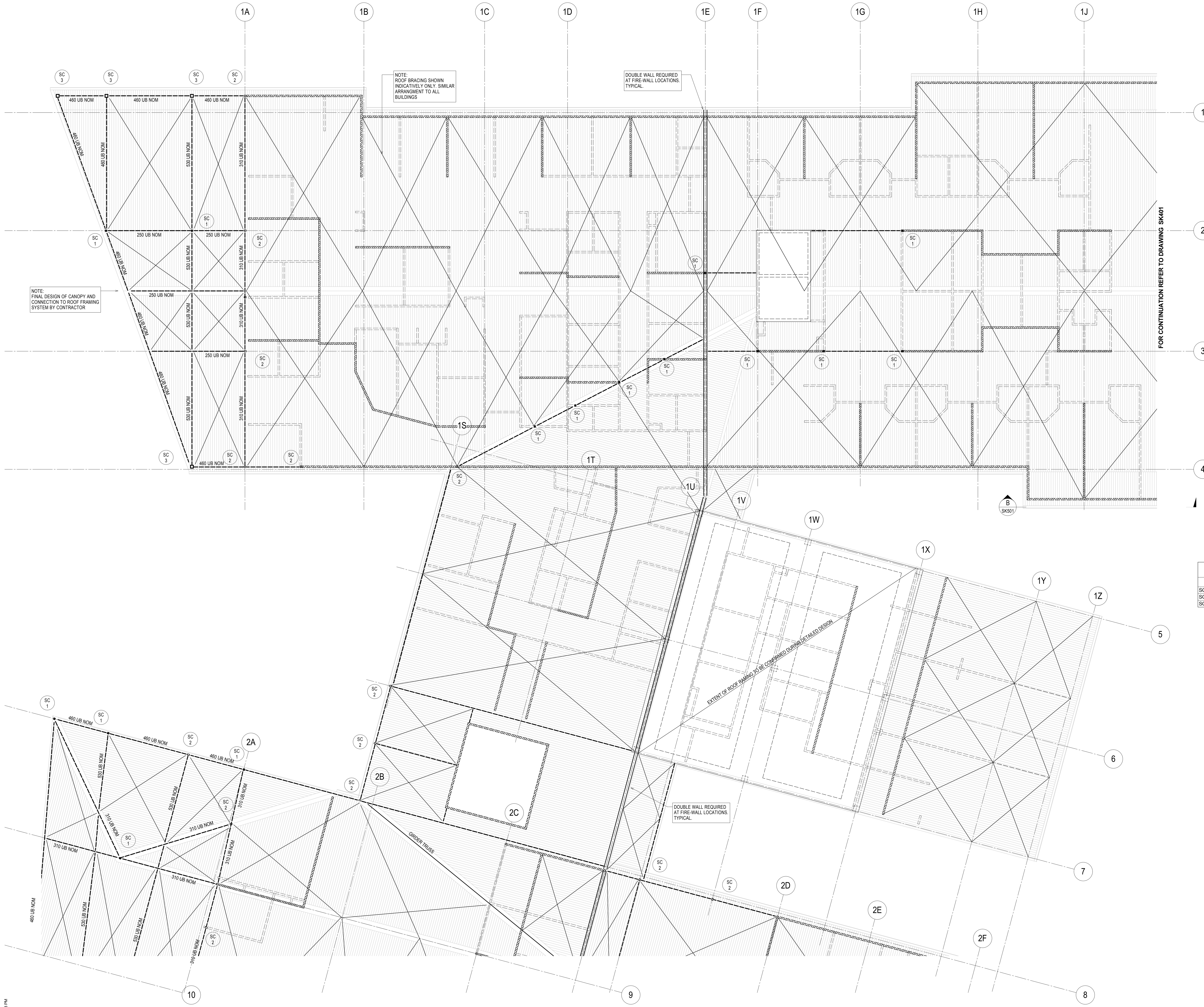

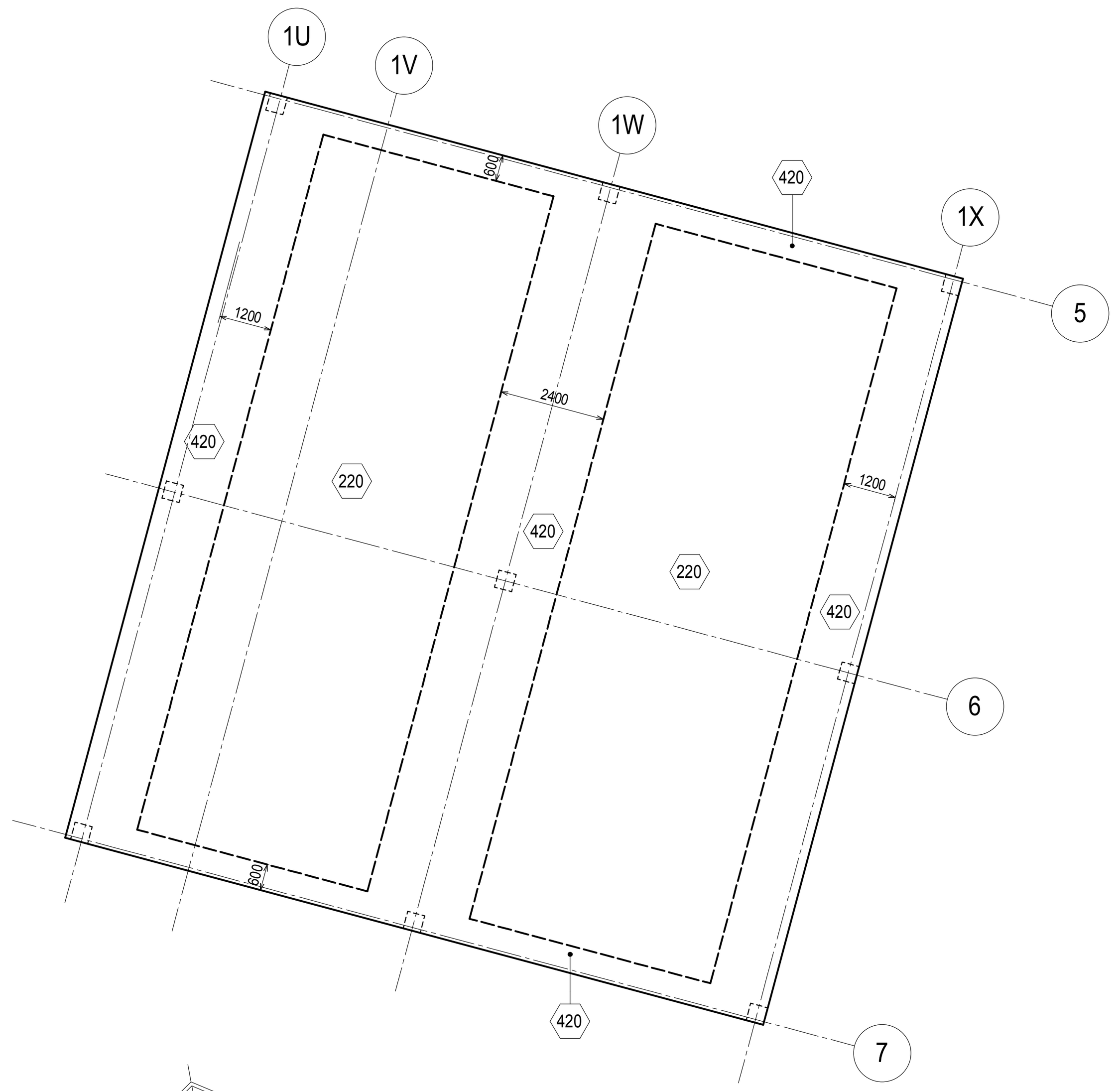

PLANT SLAB PART PLAN
SCALE 1:100

STEEL COLUMN SCHEDULE...		
Mark		Type
SC	1	89x89x6.0 SHS
SC	2	150x100x6.0 RHS
SC	3	200x200x6.0 SHS

ROOF PLAN - NORTH WEST
SCALE 1:100

TRUSS NOTES:
1. DESIGN, CONSTRUCTION AND CERTIFICATION OF ROOF TRUSSES, EXTERNAL WALLS AND LOAD BEARING STUD WALLS (INCLUDING WINDOW HEADERS AND SUPPORTS) BY SPECIALIST CONTRACTOR. (ALL WORKS ABOVE CONCRETE SLAB)
2. ALL BRACING IN WALLS TO BE DETERMINED BY CONTRACTOR.
3. LOCATION OF LOAD BEARING STUD WALLS SHOWN INDICATIVELY ONLY. FINAL LOCATION T.B.C. BY CONTRACTOR.
4. TRUSS DESIGN TO BE COORDINATED WITH SERVICES AND ADDITIONAL SUPPORT COLUMNS
5. REFER TO STEEL WALL FRAMING NOTES ON SK000

TRUSS OPTION LEGEND:
1. DENOTES LOADBEARING STUD WALL / BRACING WALL UNDER.
2. DENOTES ASSUMED INDICATIVE STEEL BEAM / CATCHING TRUSS

PLOTTED BY: N.A ON 31/07/2014 2:21:33 PM

A0 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
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Project
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54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject
ROOF PLAN NORTH WEST TRUSS OPTION

Scale : A0	Drawn	Authorised
As indicated	N.A	R.M

Job No	Drawing No	Revision
141233	SK402	A

31/07/2014 2:21:33 PM

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING NO. S001

ROOF PLAN - CENTRAL

SCALE 1:100

TRUSS NOTES:

1. DESIGN, CONSTRUCTION AND CERTIFICATION OF ROOF TRUSSES, EXTERNAL WALLS AND LOAD BEARING STUD WALLS (INCLUDING WINDOW HEADERS AND SUPPORTS) BY SPECIALIST CONTRACTOR. (ALL WORKS ABOVE CONCRETE SLAB)
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3. LOCATION OF LOAD BEARING STUD WALLS SHOWN INDICATIVELY ONLY. FINAL LOCATION T.B.C. BY CONTRACTOR.
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TRUSS OPTION LEGEND:

1. DENOTES LOADBEARING STUD WALL / BRACING WALL UNDER.
2. DENOTES ASSUMED INDICATIVE STEEL BEAM / CATCHING TRUSS

STEEL COLUMN SCHEDULE...

Mark		Type
SC	1	89x89x6.0 SHS
SC	2	150x100x6.0 RHS
SC	3	200x200x6.0 SHS

PLOTTED BY: N.A ON: 31/07/2014 2:21:34 PM

PRELIMINARY

Rev	Description	Eng	Draft	Date
A	SCHEMATIC DESIGN	A.J	N.A	31.07.14

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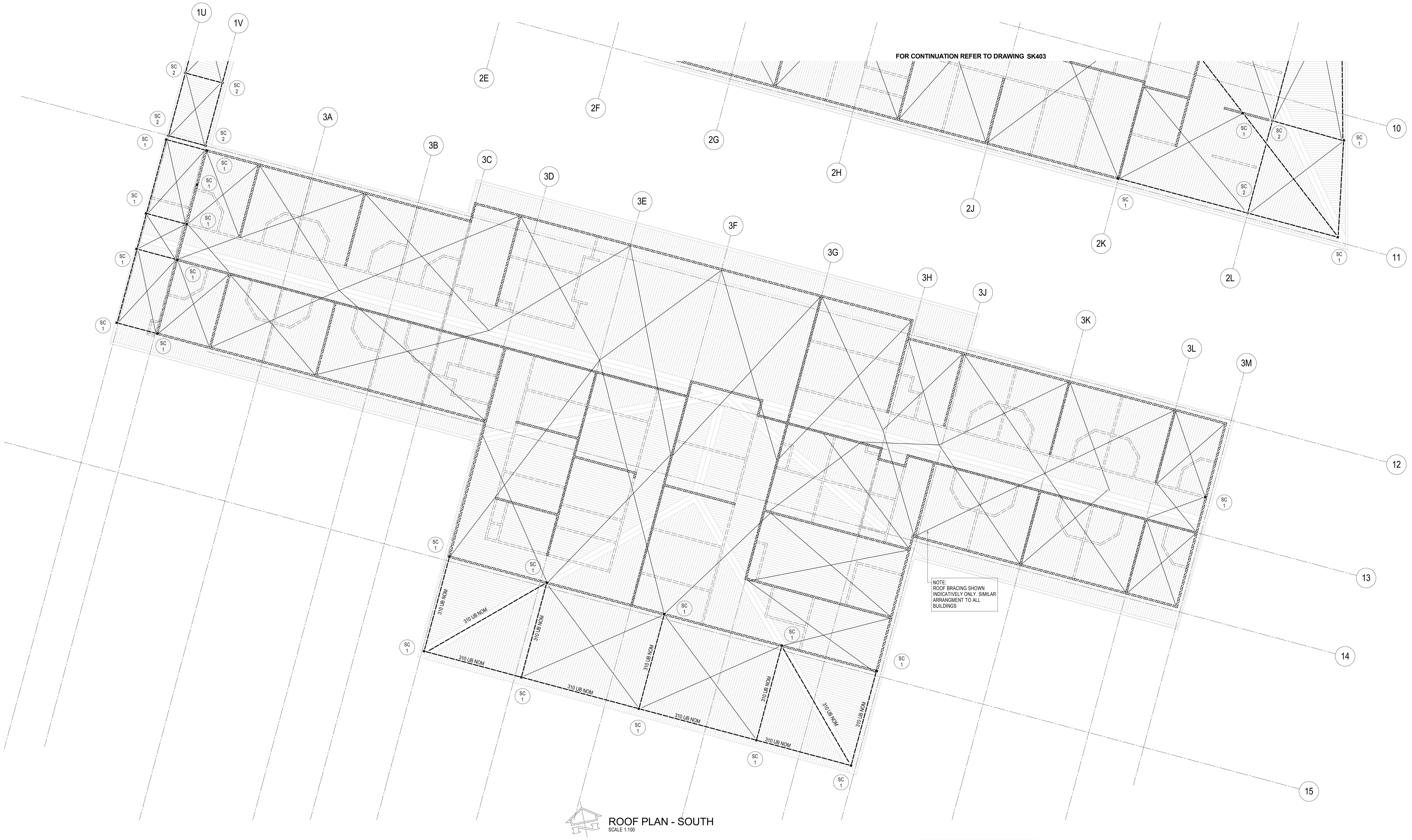
Project
BYRON SHIRE CENTRAL HOSPITAL
54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject
ROOF PLAN CENTRAL TRUSS OPTION

Scale : A0 As indicated | Drawn N.A | Authorised R.M
Job No 141233 | Drawing No SK403 | Revision A
31/07/2014 2:21:34 PM

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING NO. S001



ROOF PLAN - SOUTH

SCALE 1:100

TRUSS NOTES:

1. DESIGN, CONSTRUCTION AND CERTIFICATION OF ROOF TRUSSES, EXTERNAL WALLS AND LOAD BEARING STUD WALLS (INCLUDING WINDOW HEADERS AND SUPPORTS) BY SPECIALIST CONTRACTOR. (ALL WORKS ABOVE CONCRETE SLAB)
2. ALL BRACING IN WALLS TO BE DETERMINED BY CONTRACTOR.
3. LOCATION OF LOAD BEARING STUD WALLS SHOWN INDICATIVELY ONLY. FINAL LOCATION T.B.C. BY CONTRACTOR.
4. TRUSS DESIGN TO BE COORDINATED WITH SERVICES AND ADDITIONAL SUPPORT COLUMNS
5. REFER TO STEEL WALL FRAMING NOTES ON SK000

TRUSS OPTION LEGEND:

1. DENOTES LOADBEARING STUD WALL / BRACING WALL UNDER.
2. DENOTES ASSUMED INDICATIVE STEEL BEAM / CATCHING TRUSS

STEEL COLUMN SCHEDULE...

Mark		Type
SC	1	89x89x6.0 SHS
SC	2	150x100x6.0 RHS
SC	3	200x200x6.0 SHS

PLOTTED BY: N.A ON 31/07/2014 2:21:34 PM

A0 0 1 2 3 4 5 6 7 8 9 10

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Sheet Subject
ROOF PLAN SOUTH TRUSS OPTION

Scale : A0	Drawn	Authorised
As indicated	N.A	R.M

Job No	Drawing No	Revision
141233	SK404	A

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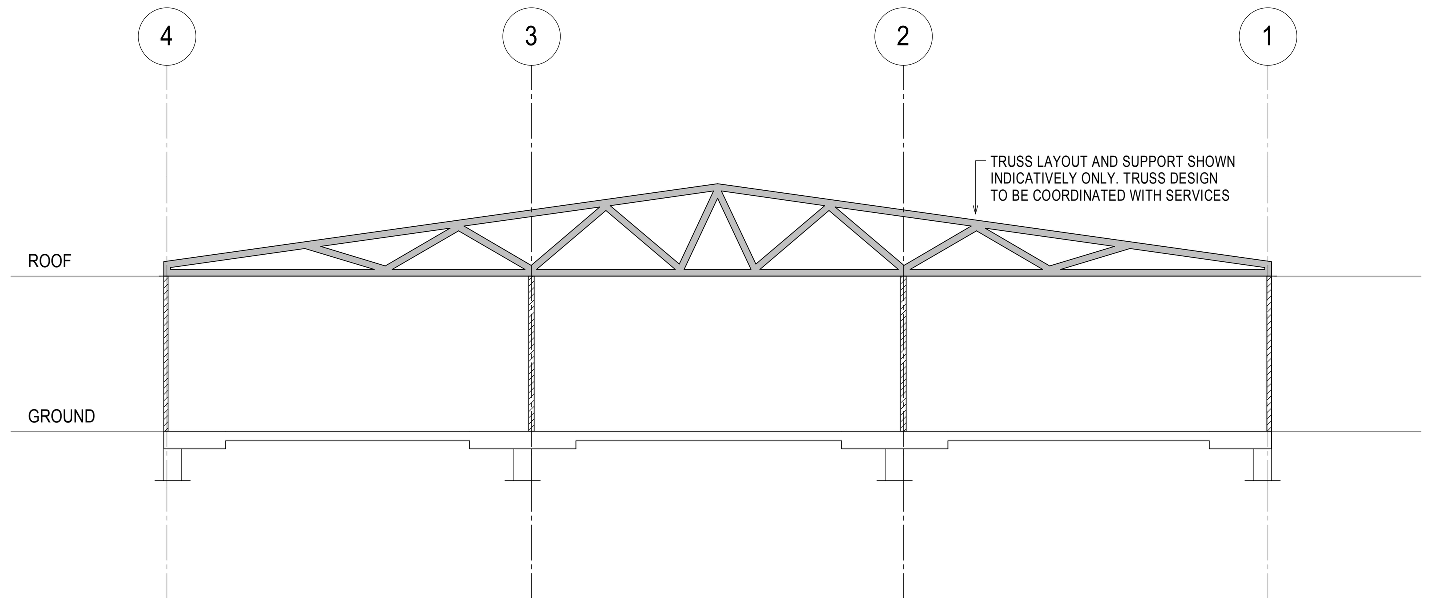
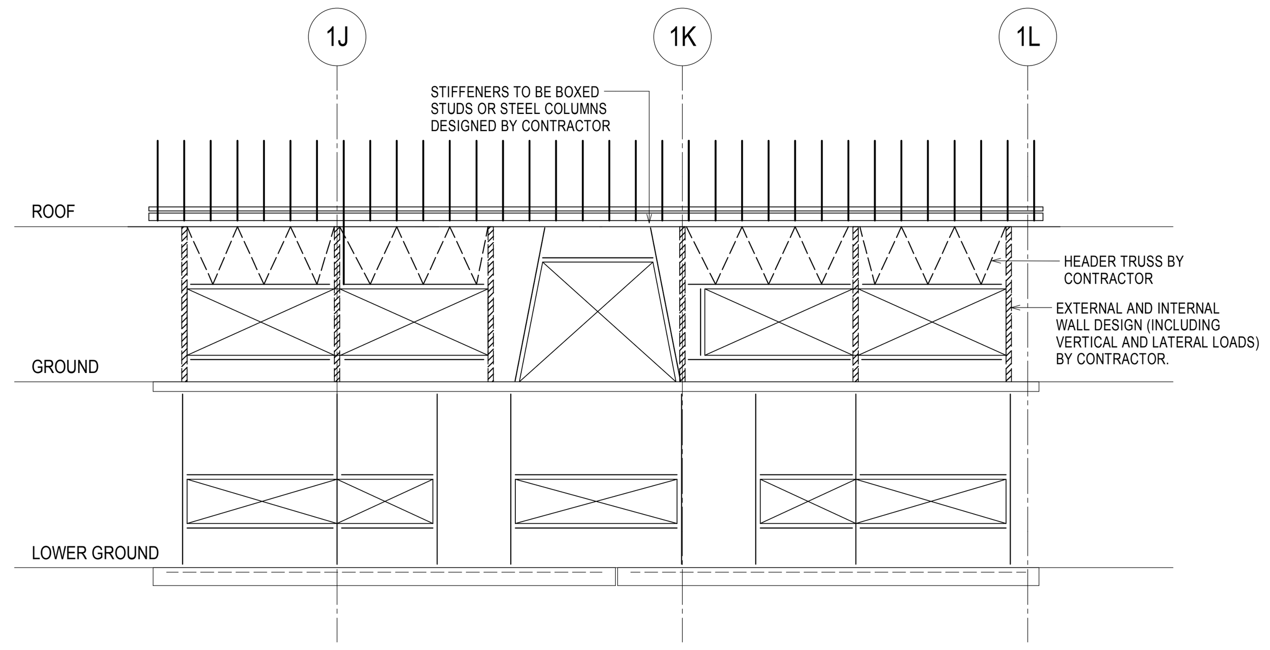


TRUSS OPTION

ELEVATION A
Scale 1 : 100 SK401



TYPICAL FACADE FRAMING - TRUSS OPTION

SECTION B
Scale 1 : 100 SK401

PLOTTED BY: N.A ON 31/07/2014 2:21:34 PM

A0 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
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Project
BYRON SHIRE CENTRAL HOSPITAL
54 EWINGSDALE ROAD, EWINGSDALE

Sheet Subject
STEELWORK ELEVATIONS SHEET 1

Scale : A0	Drawn	Authorised
1 : 100	N.A	R.M

Job No	Drawing No	Revision
141233	SK501	A

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