GLENWOOD HIGH SCHOOL

FINAL SSDA REPORT - STRUCTURAL

Prepared for: School Infrastructure NSW
By: **en**struct group pty ltd

GLENWOOD HIGH SCHOOL

FINAL SSDA REPORT – STRUCTURAL

ISSUE AUTHORISATION

PROJECT: Glenwood High School
Project No: 6393

Rev	Date	Purpose of Issue / Nature of Revision	Prepared by	Reviewed by	Issue Authorise by
A	22/09/21	DRAFT SSDA ISSUE	GPT	MOS	MOS
B	01/11/21	UPDATED DRAFT SSDA ISSUE	GPT	MOS	MOS
C	10/11/21	FINAL SSDA ISSUE	GPT	MOS	MOS

Executive Summary

This structural report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of a State Significant Development Application (SSD - 23512960).

This report describes the proposed structural engineering strategy to meet the requirements of the project covering the following:

- Structural engineering options and principles for the proposed new buildings;
- Key structural engineering issues and risks;

This SSDA Design Report has been prepared to set the basis for design and delivery phases in relation to the structural engineering for Glenwood High School.

The structural schemes developed during the Concept Design phase of the project specifically address issues in designing in accordance with the National Construction Code (NCC) and relevant Australian Standards and the EFSG.

The proposed structural system for the development at this stage is as follows:

- Standard 7.5 x 9m suspended floor plates with a 2.5m corridor adjacent to the classrooms
- Lateral system achieved via shear walls in the stair and lift locations
- Suspended structure on ground due to the high shrink/swell movements as detailed in the geotechnical report;
- Piled foundations under the multistorey new block
- Lightweight steel roof for multistorey new block
- Steel framing for performance building
- Strip footings and waffle slabs under the performance space

The following schemes have previously been developed during the Concept phase for the suspended floor plates for the standard 7.5x9 grid:

- Post-Tensioned (P/T) flat plates
- P/T band beams and one-way P/T slabs
- Precast P/T beams and one-way precast P/T slabs
- Timber beams and floor plates
- Composite floor system with steel beams and metal-decked concrete slabs.

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Contents

1 Project Overview

enstruct group have been engaged by Schools Infrastructure NSW as civil and structural engineering consultants on Glenwood High School.

The development is for upgrading works comprising alterations and additions to Glenwood High School at 85 Forman Avenue, Glenwood. The site is legally described as Lot 5227 DP 868693.

The site is roughly rectangular in shape, with a total area of 60,790m2 and street frontages to Forman Avenue to the south and Glenwood Drive to the east. Glenwood Reserve adjoins the northern and western boundaries of the school.

The proposed development seeks to upgrade Glenwood High School. The upgrade consists of the following alterations and additions:

- Construction of a new three-storey building at the north-eastern portion of the site facing Glenwood Park Drive which will accommodate new learning spaces;
- Construction of one storey performance pavilion;
- Refurbishment of existing Building Block A (ground floor only) to provide one new support unit within the space of an existing general learning space;
- Refurbishment of Building Block D (ground floor only) to provide an additional office space and storeroom;
- Refurbishment of Building Block E to re-purpose it on the ground floor for computer learning spaces, staff and administration spaces as well as upgrades to the library on the first floor;
- Refurbishment of Building Block J to re-purpose it from visual arts and performing arts to learning spaces and workshops for food tech and woods/metal unit;
- Demolition of existing botany room and construction of a new single storey pavilion comprising of interview rooms and end-of trip facilities; and
- The proposed development will also involve ancillary works at the site associated with the proposed upgrades.

The structural design shall consider a number of key principles including:

- Future flexibility.
- Materials and construction cost.
- Fire protection.
- Reducing maintenance requirements

2 Site Description

2.1 Site Description

Glenwood High School is located at 85 Foreman Avenue, Glenwood, within the Blacktown City Council Local Government Area (LGA). The overall site is approximately 6.20ha in area. The site is bounded by Glenwood Park Drive on the east, Foreman Avenue to the south, and Glenwood Reserve to the north and western boundaries. The site generally grades from the south-west corner to the north-east.

The site is bound by residential development and Forman Street to the south; Glenwood Reserve to the north and west with residential development beyond; and Glenwood Park Road to the east, with a drainage channel and residential development beyond. The built form and land use character surrounding the site is predominantly low scale, 1-2 storey dwelling houses.

Additional site details are included in Table 2.1 below.

Attribute	Detail
ADDRESS	85 Forman Avenue, Glenwood, NSW 2768
SITE AREA	Approximately 6.2ha
SUBURB	Glenwood
LOCAL GOVERNMENT AREA	Blacktown City Council
SURROUNDING LAND USES	**North**: Glenwood Reserve (generally at lower ground levels) bounded by caddie's creek and Glenwood Lake.
	South: Forman Avenue (Main school entry) Low-density residential, detached dwellings.
	East: Glenwood Park Drive (main road) Low-density residential, detached dwelling. Large, open drainage reserve flowing north to Glenwood Lake
	West: Glenwood Reserve (generally at higher ground level) bounded by Caddies Creek.

Table 2.1 – Site Description

Figure 1: Site Location (Source: Six Maps)

2.2 Existing Topography

The site is bounded by Glenwood Park Drive on the east, Foreman Avenue to the south, and open space to the north and western boundaries. The site generally grades from the south-west corner to the north east. There is an open drainage reserve to the east that flows into Glenwood Lake.

The proposed main works enclose a depression in the existing ground levels populated by large native trees and low-level shrubs. The area is currently fenced off to students. The depression acts as a natural water catchment for overland flow and careful consideration will be required to maintain the habitat during and after construction of the new structure.

2.3 Existing Built Structure

Glenwood High School is currently a co-educational high school and includes the following existing buildings and facilities:

- Ten (10) existing buildings comprising:
  - Building A and B: double storey classroom building;
  - Building C: double storey classroom building with a fitness laboratory on the ground floor;
  - Building D: double storey building with administration and staff facilities on the ground floor and classrooms on the first floor;
  - Building E: double storey building with classrooms and science laboratories on the ground floor and main library on the first floor;
  - Building F: staff building;
  - Building G, H and J: single storey classroom buildings (Block J contains school canteen);
  - Building K: single storey gymnasium; and
- There is an existing single storey childcare centre (known as Building L) at the southwestern corner of the site;
- Nineteen (19) single-storey demountable buildings, seventeen (17) of which comprise general learning spaces and two (2) which comprise of staff rooms;
- On-grade carpark providing for 93 car parking spaces accessed from two separate vehicular access points on Forman Avenue for high school staff;
- Three (3) support learning units.
- Existing on site bicycle parking racks are provided in the south east corner of the school near the staff parking facility;
- Outdoor spaces comprising:
  - Quadrangle space between Buildings C, B and E;
  - Playing Field at the north-western corner of the site;
  - Games Court to the east of the playing field;
  - Covered outdoor space adjacent to the canteen
  - Grassed open play area in the centre of the site.

3 Existing Geotechnical Conditions

A Geotechnical Investigation has been undertaken by Douglas Partners (94626.00 R.001.Rev0). The report was prepared following field works and laboratory testing from samples taken from thirteen boreholes across the site.

3.1 General Soil Conditions

In general, the site is underlain by Ashfield Shale, consisting of shale, siltstone and laminate weathering to residual clay profiles in the top layers. The clays on site are typically reactive and of high plasticity. The report has assumed a maximum 1.5m depth for cut and fill.

The ground is considered unlikely to contain Acid Sulphate Soils and is in an area of moderate to high salinity.

3.2 Subsurface Conditions

The report identifies that the site has silty clay topsoil fill to depths of between 0.1m and 0.2m atop fill comprising of silty clay or sandy silt material to depths of 0.9m. Below, natural soil exists which is typically stiff silty clay to depths of up to 4.6m alongside low to medium strength siltstone of varying strength to depths of 3m. High strength siltstone is found below, to depths of up to 5.1m.

3.3 Ground Movements

Due to the medium plasticity of the clays the site is likely to be susceptible to shrink-swell movements. The report has classed the site as H1 as per AS2870 and that movements (y_s) of up to 75mm are expected.

The site has been designated as “P” classification (as per AS2870) due to the proximity of close trees and abnormal moisture conditions as well as larger layers of uncontrolled fill. For footings/slabs at ground level a further 15mm of movement needs to be allowed for in the design to account for the tree roots.

Due to these large movements the main building is expected to be built as suspended slab on void former to avoid unnecessary stresses on the structural and non-structural elements in the building. The one storey structures (performance space) will be built on waffle slabs and strip footings to mitigate the ground movements.

3.4 *Foundations*

The building structure is to be founded on uniform founding layer of siltstone bedrock for multistorey buildings due to higher loads. Based on the rock profiles at roughly 5m deep piling is expected to be required. Due to predicted high ground water levels Douglas Partners have suggested that either CFA piles or bored piles with temporary or permanent liners are used to avoid issues from water seepage.

For all slabs on grade/waffle slabs refer to section 8.3.2 of the geotechnical report for detailed ground preparation requirements. Shallow foundations should be designed for a maximum allowable bearing pressure (ABP) of 150kPa.

Douglas Partners note that careful consideration be given to shallow foundations due to expected large shrink-swell movements of the clays.

Refer to table 3.1 provided by Douglas Partners (94626.00 R.001.Rev0) for foundation parameters.

Foundation Design Parameters					
Unit	Working Stress Design Values		Limit State Design Values		Elastic Modulus (MPa)
	ABP (kPa)	Shaft Adhesion (kPa)	Ultimate End Bearing Pressure (kPa)	Shaft Adhesion (kPa)	
Very Low to Low Strength Siltstone	1000	100	3000	300	100
Low to Medium Strength Siltstone	2000	200	18000	450	800
High Strength Siltstone	3500	350	30000	600	1200

Table 3.1 – Foundation Design Parameters

3.5 *Site Preparation*

Douglas Partners have proposed extensive ground preparations to stabilise the underlying natural ground for all subgrade/Slab on Grade structure or site platforms.

All deleterious, soft, wet or highly compressible material rich in organics including topsoils are to be removed – generally ranging between 0.1-0.2m in depth. Rolling and layers of filling are to be placed to the approved methodology as outlined by the geotechnical report. Site preparation will need to be reviewed by an appropriate geotechnical engineer.

All soils exposed in cuts will require long term support, either by battering slopes or with retaining structures. Cantilevered retaining walls will be appropriate in areas where batters cannot be achieved, with appropriate drainage layers to prevent any hydrostatic pressures.

3.6 *Seismic Design Parameters*

The site has been assessed as a Site Sub-Soil Class of C_e in accordance with 1170.4 – 2007 for earthquake design.

4 Proposed Works

4.1 Scope of Works

The proposed development seeks to upgrade Glenwood High School. The upgrade consists of the following alterations and additions:

- Construction of a new three-storey building at the north-eastern portion of the site facing Glenwood Park Drive which will accommodate new learning spaces;
- Construction of one storey performance pavilion;
- Refurbishment of existing Building Block A (ground floor only) to provide one new support unit within the space of an existing general learning space;
- Refurbishment of Building Block D (ground floor only) to provide an additional office space and storeroom;
- Refurbishment of Building Block E to re-purpose it on the ground floor for computer learning spaces, staff and administration spaces as well as upgrades to the library on the first floor;
- Refurbishment of Building Block J to re-purpose it from visual arts and performing arts to learning spaces and workshops for food tech and woods/metal unit;
- Demolition of existing botany room and construction of a new single storey pavilion comprising of interview rooms and end-of trip facilities; and
- The proposed development will also involve ancillary works at the site associated with the proposed upgrades.

5 Structural Engineering Design Principles

This Section outlines the structural engineering design principles that will be adopted for the project as design progresses.

5.1 Design Standards

The structural design shall be in accordance with the latest issue of all relevant structural Australian Standards, relevant structural sections of the NCC and other statutory requirements.

In particular, the structural design will be in accordance with the following relevant Australian Standards:

Standard	Year	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	2011	Structural Design Actions Part 2 Wind Loads
AS 1170.4	2007	Structural Design Actions Part 4 Earthquake Actions in Australia
AS 2159	2009	Piling – Design and Installation
AS 2670.1	2001	Evaluation of Human Exposure to Whole-Body Vibration – General Requirements
AS 2670.2	1990	Evaluation of Human Exposure to Whole-Body Vibration – Continuous and Shock-Induced Vibration in Buildings (1 to 80Hz)
AS 3600	2018	Concrete Structures
AS 3700	2011	Masonry Code
AS 4100	1998	Steel Structures
AS 4678	2002	Earth Retaining Structures
BCA	2019	Building Code of Australia

5.2 NCC Provisions

The building is assessed as being Importance Level 3, for the purpose of wind and earthquake design in accordance with the NCC.

Event	Annual Probability of Exceedance
Earthquake Wind (non-cyclonic)	1:1000 1:1000

5.3 Design Life

The building structure will be designed to provide adequate performance for a minimum period of 50 years with a typical structural maintenance system.

5.4 Materials

The following structural materials are proposed to be used in the works. Typical values for the properties of these materials are listed. These values are to be adjusted where appropriate.

5.4.1 Concrete

5.4.1.1 Properties

Co-efficient of thermal expansion	$12x10^{-6}$ per ^{0}C
Basic shrinkage strain	In accordance with AS 3600 Clause 3.1.7
Basic creep factor	In accordance with AS 3600 Clause 3.1.8
Poisson's ratio	0.2
Density	24 kN/m^3

5.4.1.2 Proposed Concrete Grades

Footings	40 MPa
Suspended Slabs and Beams	40 MPa
Transfer Beams	50 MPa
Columns	40 MPa
Walls	40 MPa
Other areas (UNO)	40 MPa

5.4.1.3 Reinforcement

Plain bars (R)	fsy = 250 MPa
Deformed bars (N)	fsy = 500 MPa
Welded wire fabric (L)	fsy = 500 Mpa
Young's modulus	200 x 10^3 MPa

5.4.1.4 Structural Steel

Grade (UNO)	300MPa
Steelwork density:	7850 kg/m^3
Young's modulus:	2.05 x 10^5 MPa
Poisson's ratio:	0.3
Coefficient of thermal expansion:	12 x 10^{-6}

5.4.1.5 Blockwork

Characteristic Strength	15 MPa.
Mortar mix (cement:lime:sand)	1 : 1 : 6 Unreinforced Blockwork 1 :0.5: 4.5 Reinforced Blockwork
Core fill grout	20 MPa

5.5 Loading

5.5.1 Vertical

The structure will be designed for the following imposed loads as outlined in 1170.4 or as required by EFSG - DG21 Structure, whichever is more stringent.

Area	Superimposed Dead Load (SDL)	Live Load
Classrooms	1.5 kPa	3.0 kPa
Corridors	1 kPa	4.0 kPa
Library	2.0 kPa	7.5 kPa
Hall	1.0 kPa	5.0 kPa
Stairs	1.0 kPa	4.0 kPa
Fire Stairs	0 kPa	4.0 kPa
COLAs	1.0 kPa	4.0 kPa
Storage	1.0 kPa	5.0 kPa
Stage	TBC	5.0 kPa
Visual Arts	1.5 kPa	5.0 kPa
Gymnasium	1.0 kPa	5.0 kPa
Office/Admin	1.0 kPa	3.0 kPa
Toilets/Bathrooms	3.0 kPa	2.0 kPa
Lightweight Facade	1.0 kPa on elevation	-
Brick Façade	2.1kPa on elevation	

Live load reduction to be adopted as permitted by AS/NZS1170.1

5.5.2 Wind

Wind loading is in accordance with AS/NZS 1170.2 – Structural Design Actions – Wind Actions with the following parameters;

- Importance Level: 3
- Annual probability of exceedance – 1:1000;
- Region – A2;
- V1000 – 46m/s;
- Terrain Category – 3;

5.5.3 Robustness

Robustness loading in accordance with AS/NZS 1170.0 – Structural Design Actions General Principles with the following parameters:

1.5% of ($G + \psi cQ$) load case;

5.5.4 Earthquake

Earthquake loading in accordance with AS 1170.4 – Structural Design Actions – Earthquake Actions for Australia with the following parameters:

- Importance Level: 3
- Annual probability of exceedance – 1:1000;
- $k_p = 1.3$;
- $Z = 0.08$;
- Site Sub-Soil Class: Ce
- Earthquake Design Category: EDCII

5.5.5 Horizontal Imposed Loads

All horizontal imposed loads are to be in accordance with AS/NZS 1170.1 or as outlined by the EFSG. The following categories must be addressed individually:

- Handrails generally – in accordance with C3 usage
- Carpark parapets, walls, barriers – 1.5kN/m.

Walls and barriers acting as car barriers in the carpark areas to be designed for a load of:

- 30kN (Based on clause 3.8 of AS/NZS1170.1) at a height of 0.5m above floor level typically;
- 240kN (Based on clause 3.8 of AS/NZS1170.1) at a height of 0.5m above floor level at end of ramps exceeding 20m in length.

5.6 Serviceability

5.6.1 Deflection limits

5.6.1.1 Vertical

Maximum vertical deflections shall be in accordance with Table 2.3.2 of AS 3600 – 2018 or as outlined in EFSG - DG21 Structure, whichever is the more stringent.

5.6.1.2 Lateral

- The lateral drift of the building will be limited to the following:
- Under Serviceability Wind Actions – Height/500
- Under Earthquake Actions (AS 1170.4 clause 7.5) – Height/67

5.6.2 Floor Vibrations

The design of the floor structure will ensure that vibration due to footfall excitation is kept within acceptable limits. These limits will be based accepted good practice and the recommendations of AS 2670.2 adjusted for the intended occupancy and approximate duration of vibration.

All floorplates will be checked in accordance with the Cement and Concrete Industry publication “A Design Guide for Footfall Induced Vibration.”

The vibration design parameters proposed for the project will be as follows.

Area	Damping	Footfall Frequency (Hz)	Response Factor
Office/Classroom Areas	3.0%	2.2Hz Typically 2.5Hz Corridors	8

It is assumed that all equipment which may be a possible source of vibration will be isolated from the structure through the provision of isolation mounts.

5.6.3 Imposed Movements

The effect of imposed movements on the structure will be considered in the calculations. These include the following types of movement:

Settlement	either absolute or differential
Temperature range	either absolute or differential
Shrinkage	when restrained between stiff elements
Foundation movement	include shrink/swell under slab on grade

5.7 *Fire resistance levels for structural elements*

Fire resistance levels for structural elements will be in accordance with the structural requirements of the NCC and will developed with the project BCA consultant. Design of individual structural elements to achieve the required FRL will be in accordance with the appropriate materials design code.

5.8 *Foundations*

Based on the current geotechnical report the following has been assumed:

- Piles – under new 3 storey structure
- Strip Footings/Waffle Slabs – Light-weight single storey structure.

5.9 *Retaining Walls*

The structural and civil design will likely utilise conventional blockwork or concrete retaining formed in soil batters where possible. Noting also the current masterplan has no basement levels included and will most likely be built all on or above existing ground level. Where excavation is close to the boundaries or the presence of adjacent structures or services preclude batters, a temporary and/or permanent retention system in the form of soldier piles with close shuttering or shotcrete infill panels or contiguous piling may be necessary.

5.10 *Lateral System*

The building lateral structure will typically be reinforced concrete shear walls in the stair and lift locations. Other alternatives include sway frames which utilise the floorplates and columns. This will be confirmed with further development of the architectural scheme.

5.11 *Vertical Structure*

It is expected that all columns for the primary building structure will be constructed from reinforced concrete. The Performance Space will be a steel framed structure.

5.12 *Column Grid*

The current architectural design is based on a 7.5m x 9.0m grid with a 2.5m corridor typically, noting that there are several locations with non-standard grids due to the building form and geometry.

5.13 *On-Grade slabs*

On grade concrete floor slab system requires less structural material than a suspended system and could be used at ground floor level. However due to the sloping site this will require extensive cut and fill. Further development in schematic design to accommodate appropriate costing feedback and construction methodology will likely determine the best-fit ground floor system.

5.14 *Suspended Floor Plates*

The suspended floorplates of the new building have been detailed as one-way banded post-tensioned slabs. Note that multiple structural systems during concept design were developed and upon feedback from the architect and SINSW the post-tensioned concrete option was chosen as the structurally most-efficient design. The other schemes developed included:

- Post tensioned concrete flat plate;
- Post tensioned concrete band beams with one-way slabs;
- Timber floor plate utilizing CLT flooring supported on glulam (glue laminated) timber beams (note this option is the sole option requiring columns at the façade line to support the corridor);
- Precast post-tensioned beams and slabs with an in-situ topping;
- Composite steel framed floor plate with concrete slab formed on self-supporting on metal decking.

These floorplate structural systems have their own unique advantages and disadvantages and will need to be weighed up wholly to determine the most desirable outcome. Such criteria are, amongst others:

- Cost of materials;
- Speed of structural program;
- Construction cost;
- Temporary works considerations;
- Vertical loads on foundations;
- Architectural finish;
- Integration with services;
- Amenity for students;
- Design issues such as achieving fire resistance and acoustic performance.
- Long term maintenance and handover to the PPP partner.

5.15 *Roof Structure*

The roof structure to the building generally is proposed to be lightweight steelwork. The steelwork will be designed as appropriate for the loading on the roof (ie. PV Cells). It is recommended that the PV cells are flush mounted to reduce the applied wind loads.

5.16 *Future Expansion*

Structurally we recommend that allowances for future expansion be made for horizontal expansion with vertical expansion allowance avoided where possible.

Vertical expansion over existing structures typically causes unavoidable disruptions to operating facilities below. To avoid future impacts to the school's operation we recommend that vertical expansion is avoided.

5.17 *EFSG Non-Compliance*

No structural non-compliances have been identified at this point in the design.

APPENDIX A

STRUCTURAL DRAWINGS

A1

GLENWOOD HIGH SCHOOL

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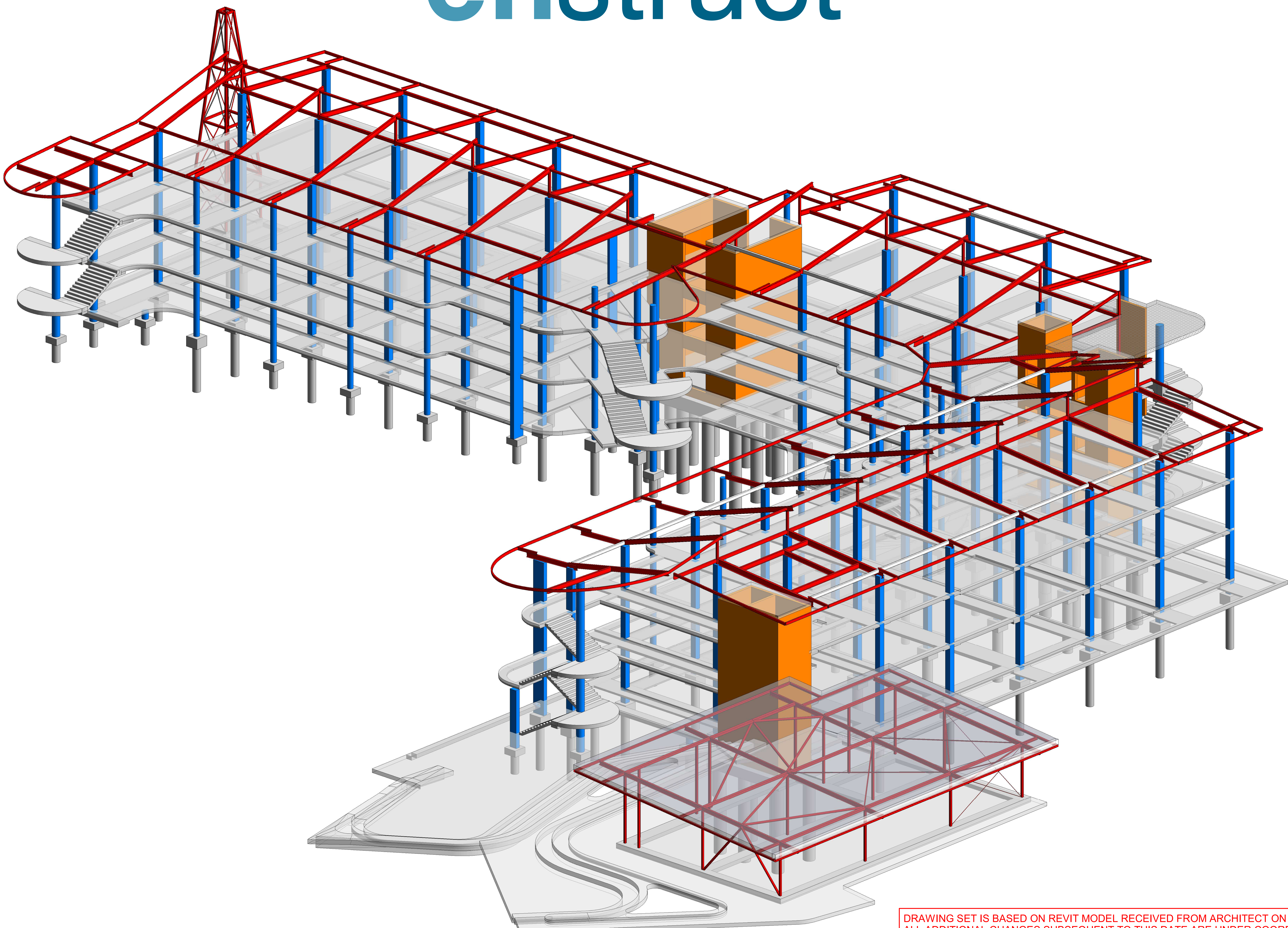

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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CLIENT

NSW GOVERNMENT | Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

COVER SHEET

SCALE AT A1:
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

DRAWING NUMBER: ST-000-00

REV. B

DRAWING SET IS BASED ON REVIT MODEL RECEIVED FROM ARCHITECT ON 21.09.21
ALL ADDITIONAL CHANGES SUBSEQUENT TO THIS DATE ARE UNDER COORDINATION.
REFER TO CLOUDS AND NOTES ON DRAWINGS FOR AREAS UNDER DESIGN DEVELOPMENT

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STRUCTURAL DRAWING LIST

SHEET NUMBER	SHEET NAME
000-00	COVER SHEET
000-01	DRAWING LIST
000-05	SITE PLAN
001-01	GENERAL NOTES - SHEET 1
001-02	GENERAL NOTES - SHEET 2
003-00	FOUNDATION GENERAL ARRANGEMENT
003-31	TYPICAL PILE DETAILS - SHEET 1
003-51	TYPICAL PAD AND STRIP FOOTING DETAILS - SHEET 1
003-60	CORE FOUNDATION REINFORCEMENT PLAN
005-01	COLUMN SCHEDULE
005-31	COLUMN DETAILS
005-41	COLUMN TRANSITION DETAILS
005-51	TYPICAL R.C. WALL DETAILS
005-52	TYPICAL R.C. WALL DETAILS
005-53	TYPICAL R.C. WALL DETAILS - PENETRATIONS
005-54	TYPICAL R.C. WALL LINK BEAM DETAILS
005-60	CORE WALL ELEVATIONS - SHEET 1
005-61	CORE WALL ELEVATIONS - SHEET 2
005-62	CORE WALL ELEVATIONS - SHEET 3
005-64	CORE WALL ELEVATIONS - SHEET 4
005-65	CORE WALL ELEVATIONS - SHEET 5
005-66	CORE WALL ELEVATIONS - SHEET 6
009-00	STAIR 1 - PLAN AND ELEVATIONS
009-01	STAIR 2 - PLAN AND ELEVATIONS
009-02	STAIR 3 - PLAN AND ELEVATIONS
009-03	STAIR 4 - PLAN AND ELEVATIONS
009-31	TYPICAL STAIR DETAILS
010-31	TYPICAL BLOCKWORK DETAILS SHEET 1
010-32	TYPICAL BLOCKWORK DETAILS SHEET 2
010-33	TYPICAL BLOCKWORK DETAILS SHEET 3
010-34	TYPICAL BLOCKWORK DETAILS SHEET 4
010-35	TYPICAL BLOCKWORK DETAILS SHEET 5
012-31	TYPICAL SUSPENDED SLAB DETAILS SHEET 1
012-41	TYPICAL BRICKWORK DETAILS
099-31	TYPICAL SLAB ON GRADE DETAILS
100-00	GROUND FLOOR GENERAL ARRANGEMENT
100-01	PERFORMANCE HALL - GROUND FLOOR GENERAL ARRANGEMENT
100-51	GROUND FLOOR SECTIONS AND DETAILS - SHEET 1
101-00	LEVEL 01 - GENERAL ARRANGEMENT
101-01	PERFORMANCE HALL - ROOF LEVEL GENERAL ARRANGEMENT
101-51	PERFORMANCE HALL - ROOF ELEVATIONS - SHEET 1
101-52	PERFORMANCE HALL - ROOF ELEVATIONS - SHEET 2
102-00	LEVEL 02 - GENERAL ARRANGEMENT
103-00	ROOF LEVEL - GENERAL ARRANGEMENT
103-51	ROOF LEVEL - SECTIONS - SHEET 1
103-52	ROOF LEVEL - SECTIONS - SHEET 2
103-81	TYPICAL STEEL SECTIONS AND DETAILS SHEET 1
103-82	TYPICAL STEEL SECTIONS AND DETAILS SHEET 2
103-83	TYPICAL STEEL SECTIONS AND DETAILS SHEET 3
103-85	PURLIN SECTIONS AND DETAILS
103-91	KILN STEELWORK - PLAN AND ELEVATIONS
300-00	LOADING DIAGRAM - GROUND FLOOR
301-00	LOADING DIAGRAM - LEVEL 01
302-00	LOADING DIAGRAM - LEVEL 02
303-00	LOADING DIAGRAM - ROOF LEVEL
SK-003-01	PERFORMANCE HALL - FOUNDATION GENERAL ARRANGEMENT
SK-003-71	CORE FOUNDATION SECTIONS - SHEET 1

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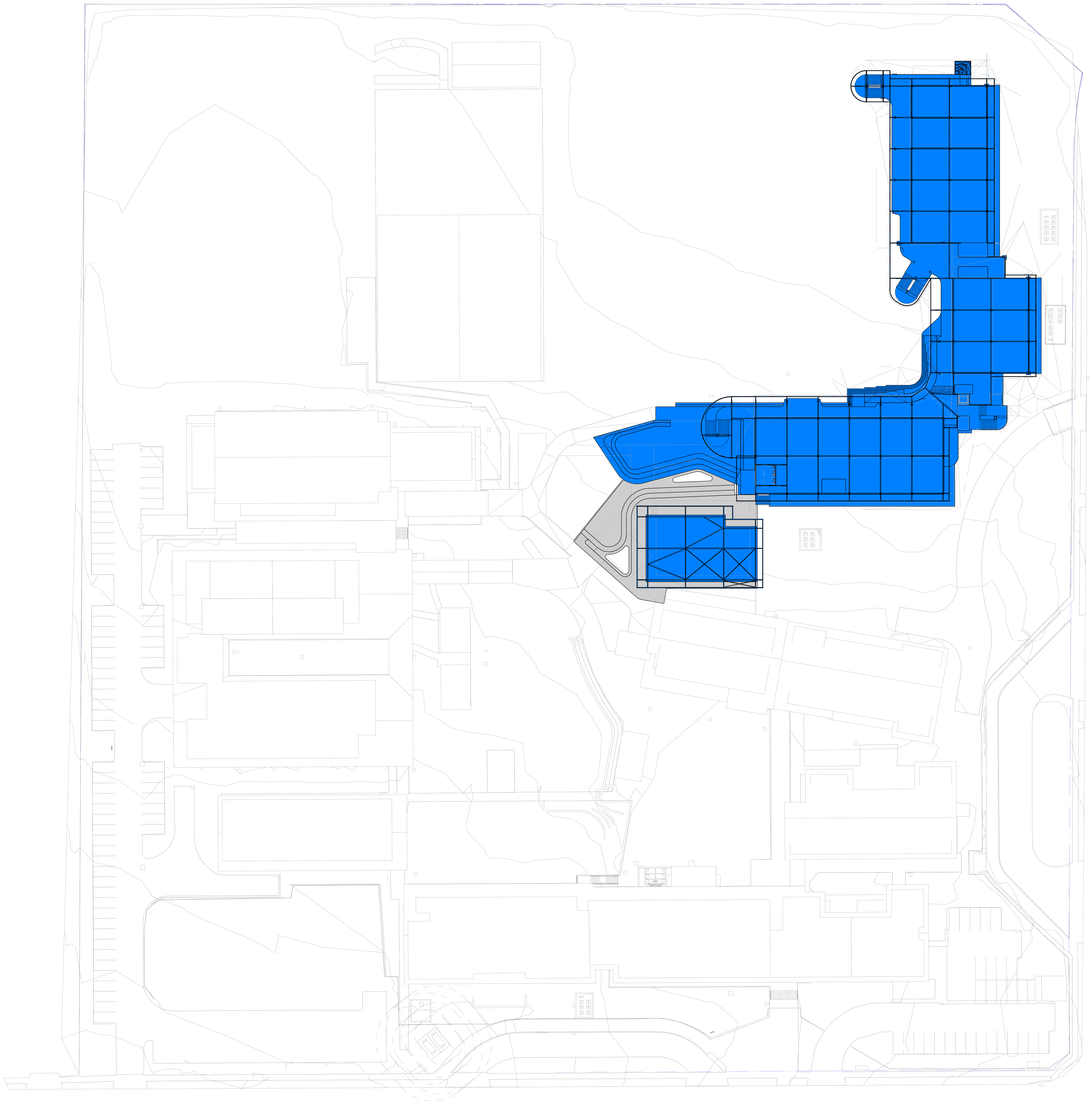
DRAWING NUMBER: ST-000-01

REV. B

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



SITE PLAN

SCALE: 1 : 500

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CLIENT

NSW GOVERNMENT | Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

SITE PLAN

SCALE AT A1: 1 : 500
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

DRAWING NUMBER: ST-000-05

REV.: B

GENERAL

1. Structural drawings to be read in conjunction with the structural specification and all documents produced by all other consultants.
2. The contractor shall obtain a copy of the enstruct Safety in Design report and adhere to the recommendations of that report.
3. When considering discrepancies between drawings, notes and specifications, the drawings shall take precedence over the notes and specifications and the notes shall take precedence over the specifications.
4. Refer to the architectural documents for all setting out dimensions. Any discrepancies shall be reported to the architect.
5. The documents describe the as completed structure. The contractor shall be responsible for the stability of the structure during erection. No part of the structure is to be overstressed during construction. The contractor shall provide a proposed construction sequence prior to the commencement of works. A submission of a proposed method of construction by the contractor and acceptance by the engineer does not absolve the contractor from accepting full responsibility for the submitted document. If required by the engineer, the contractor shall submit calculations justifying the adequacy of the structure to carry the loads from construction procedures.
6. The engineer shall be given the opportunity to inspect all structural works prior to their concealment; 48 hours notice for inspection shall be provided. The contractor remains responsible for the works notwithstanding any inspection by the engineer.
7. All workmanship and material shall be in accordance with the current Australian Standards and Codes of Practice.
8. Any variation to the structure, as described in the documents, shall be via a written request, copied to the architect, and work related to the variation shall not proceed prior to the receipt of written approval.
9. Any changes to the structural drawings required by the contractor including but not limited to changes to the building services, architectural design or detailing will be charged at the applicable hourly rate.
10. Should the contractor require the engineer to provide advice on temporary works, buildability, construction sequencing, temporary loading on alternate materials, applicable hourly rate charges will apply.
11. The engineer will provide periodic site attendance to confirm the design intent shown on the drawings is being carried out on site (excluding floor plates).
12. It is the contractors responsibility to carry out a pre-pour inspection of reinforcement and confirm in writing that the reinforcement is installed in accordance with the drawings prior to the engineers inspection. Rectification work required to be carried out by the engineer where the contractors works are defective will be charged at the applicable hourly rate.
13. Full services design including fully dimensioned shop drawings showing all service penetrations or holes is required prior to pouring concrete. Any request for approval to core hole will be charges at the applicable hourly rate.
14. All Precast elements are to be designed and detailed by the precast supplier.
15. All dimensions are expressed in millimetres. All levels are expressed in metres.
16. No contract work is to commence until formal approval is received from the relevant authorities.
17. Drawing status noted on the drawings must be 'FOR CONSTRUCTION' before being used for permanent works.
18. The structural drawings do not show all relevant fixings, cleats, openings, etc. necessary for the completion of the works, including work by other trades.
19. The tender price must allow for all details necessary for the completion of the works, whether shown on the drawings or not.
20. All loading applied to the structure during construction requiring assessment by the engineer,whether shown on the drawings or not, shall be liable for charging by the engineer at current hourly rates. Submission of items for approval must be made a minimum of 7 working days before incorporation in the works.
21. Design of all formwork and falsework shall remain the responsibility of the contractor and shall comply with the relevant Australian Standards.
22. Finish to formed and unformed surfaces shall be described by the architect and in accordance with AS 3610.
23. The use of proprietary products shall be in strict accordance with manufacturer's recommendations and instructions and is subject to engineer's approval where relevant.
24. All materials and workmanship shall be in accordance with Australian standards and codes of practice except where varied by the specification and/or drawings. The applicable Standards shall be the referenced Standards current at commencement of construction. These Standards for this project shall be determined by reference to the document history on the Standards Australia website. This determination of applicable Standards shall be carried out during the Tender period and any queries relating to the appropriate Standard shall be raised with Enstruct during this period.
25. Works shall be carried out in accordance with all Work cover requirements and the Work Health and Safety Act and the Work Health and Safety regulation.
26. Structure has not been designed to be water retaining. All waterproofing is the responsibility of the Architect and the Contractor
27. The structural engineer is not responsible for the design of bracing as per NCC requirements for non-structural elements

LOADING

1. All loadings have been assessed in accordance with AS1170.0 National Construction Code of Australia (NCC) and EFSG DG21 - STRUCTURE.
2. Refer to loading diagrams for the structural components designed for.
3. The design wind criteria to AS1170.2 are as follows:
   - Design Life: 50 years
   - Region: A2
   - Importance Level: 3
   - Terrain Category: 3
4. The design earthquake criteria to AS1170.4 are as follows:
   - Importance Level: 3
   - Probability Factor, kp: 1.3
   - Hazard Factor, Z: 0.08
   - Site Subsoil Class: Ce
   - Earthquake Design Category (EDC): III
5. Do not place or store building materials on concrete members without the contract administrator's approval.

FIRE RESISTANCE LEVELS

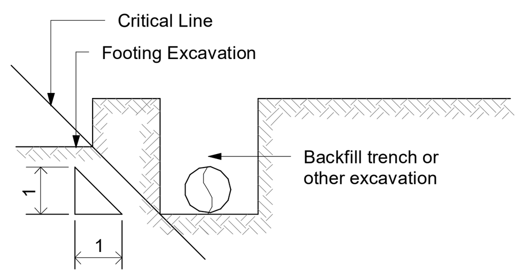
Fire resistance levels of the structural elements to comply with BCA Report 020-215524
Dated 2nd July 2021 by Philip Chun Associates

REINFORCEMENT RATES

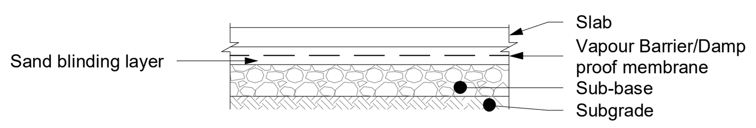
ELEMENT	LEVEL	RATE REINF.	UNIT
PILE CAPS	TYPICAL	180	kg/m3
CORE BASE	TYPICAL	195	kg/m2
CORE WALLS AND LINK BEAMS	TYPICAL	195	kg/m3
STAIRS	TYPICAL	TBA	kg/m3
CORE LIDS	TYPICAL	TBA	kg/m3
PAD FOOTINGS	TYPICAL	190	kg/m3

FOUNDATIONS

1. The contractor shall obtain a copy of the site geotechnical report and adhere to the recommendations of that report.
2. All foundation works shall be inspected and approved by the geotechnical engineer. The contractor shall allow for these costs in the tender.
3. Refer to the site geotechnical report for allowable bearing pressures and founding levels. The contractor shall report founding levels to the engineer prior to pouring footings.
4. No excavation shall fall within the zone of influence of any adjacent foundation without prior approval.



5. Subgrade:
   a. Natural Subgrade shall be proof-rolled with a roller of 80 kN minimum static weight, (minimum of10 passes), unless otherwise stated in the site geotechnical report, to detect soft or loose areas. Such areas should be treated in accordance with the geotechnical engineer's recommendation.
   b. All proof rolling should be completed in the presence of an experienced geotechnical engineer or geotechnician. Where soft or heaving zones are identified they should be excavated down to a sound base and replaced with engineered fill as described below.
   c. Where fill is placed against slopes, such as the backfilling of temporary batters associated with the realignment of the stormwater system, benches should be formed in the batter slopes. This will allow the fill to be compacted as described below in *Engineered Fill.*
   d. Unless otherwise specified the subgrade below base courses for slabs shall be suitable density material compacted to 100% std as determined by test AS 1289.5.1.1 or 70% minimum index for cohesionless soils.
6. Sub-base: Unless otherwise specified
   a. Base shall be approved well graded slag aggregate or crushed rock (maximum size of 40mm)spread and compacted to 98% mod as determined by test AS 1289.5.2.1 or 80% minimum density index for cohesionless soils.



Industrial slab and pavements

7. Cohesive (Loamey and Clayey) Soils:
   a. Underside of footings to be a minimum of 600mm below natural ground level.
   b. Excavate to firm ground and maintain the excavation in a dry condition Remove any soft ground as directed by the geotechnical engineer.
   c. Where over-excavation in soft ground is required, filling to the correct level shall be with concrete of f'c = 15 MPa.
   d. Blinding of 50mm concrete (f'c = 15 MPa) to be placed in footing excavations as soon as the foundations have been inspected by the geotechnical engineer.
8. Non-Cohesive (Sandy) Soils:
   a. Compaction under footings and slabs to be measured using a penetrometer in accordance with AS 1289.F3.2 or AS 1289.F3.3. Compaction under footings and slabs to be 10 blows per 300mm measured from 150mm to 750mm deep. Results to be submitted to the geotechnical engineer.
   b. Penetrometer testing to be carried out as follows:Under pad footings : One per ten square metres or one per pad. Under strip footings : One per five metre length. Under slabs : One per twenty square metres.

FORMWORK

1. The contractor shall be fully responsible for the design of all formwork, unless a product is specified on the drawings as being the responsibility of the engineer e.g.. a profiled steel decking acting compositely with the concrete, such as Bondek, Condek or Kingflor.
2. All formwork shall be designed in accordance with AS 3600 and AS 3610.
3. Formwork for reinforced concrete structure shall remain in place undisturbed for the following minimum periods:
   a. Slab edges - 2 days
   b. Beams and slabs - 7 days
   c. Backprops to beams and slabs - 28 days
4. In multi-level construction, the contractor shall take into account the age of the floors previously cast, necessary to support the weight of the wet concrete along with any applied load due to be placed on the freshly cast concrete, before the slab achieves sufficient strength to contribute to carry load. A minimum concrete strength of 32 MPa is required before the slab can contribute to carry load
5. The contractor shall submit for review by the engineer, full details of the propping system proposed to be used. This shall include the weight of the formwork system to be used and any heavy loading such as reinforcement bundles or bins to be placed on the slab. Review by the engineer does not diminish the contractors full responsibility for the design of the formwork system. Details submitted shall indicate the means by which formwork is to be raised to the required position and transported across the freshly cast slab, including the weight of equipment proposed to be used for that purpose.
6. The contractor shall be liable for the engineers costs associated with assessing the impact of any construction loading on the structure, including inspection of works required by the engineer arising from the review. These costs will be charged at current hourly rates.
7. All exposed formed edges shall have 20mm x 20mm timber fillets or chamfers added to formed or cast edges, unless noted on the architectural drawings.
   a. All drip grooves required as noted on the architectural drawings shall be constructed with reinforcement adjusted to ensure correct minimum cover is maintained across the drip groove. Refer to concrete notes for cover requirements.

CONCRETE

1. All works to be in accordance with AS 3600, AS 3610 and the specification.
2. Beam dimensions on the documents indicate the depth first, width second. Normal downturn beam depth includes slab thickness. Upstand beam depth includes slab depth.
3. Dimensions for all concrete elements do not include thickness of applied finishes.
4. Refer to drawings for notes on cambers.
5. Construction joints, where not indicated on the drawings, shall be approved by the engineer.
6. Remove all formwork, to engineer's approval, prior to the construction of masonry above.
7. Concrete shall conform to the following unless noted otherwise:
   a. Cement : Type SL to AS 3972\
   b. Ready-mixed concrete : AS 1379
   c. Concrete aggregates : AS 2758.1
   d. Slump: 80mm
   e. Maximum aggregate size: 20mm
   f. Maximum drying shrinkage strain (to AS 1012 Part 13) less than 650 microstrain at 56 days.
   g. Strength Grades: S32, S40 or S50 as shown on the drawings.
8. All concrete is to be properly cured using an approved method within 2 hours of finishing. Curing shall be continuous for 7 days by one of the following methods:
   a. Ponding with water or continuous spraying with water
   b. Use of continuous absorptive cover, such as hessian, kept continuously wet
   c. Coating with an approved curing compound compatible with any applied finish
   d. Use of an approved impervious covering to the whole of the surface of the concrete, securely kept in position to prevent passage of air between the concrete and the covering. The covering is to remain undisturbed in place for the duration of the curing period.
9. If plastic shrinkage of the concrete is observed due to rapid drying shrinkage or other conditions, apply a single spray coat of aliphatic alcohol evaporation retardant after the initial rough screed, while the concrete is still wet (Masterkure 111CF-Confilm by Master Builders or approved equivalent).
10. Any cast in elements, such as conduits and piping, not indicated on the structural drawings, are to be approved by the engineer. Where pipes and conduits are cast in slabs and walls, these are to be placed in the mid third depth of the member in between the layers of reinforcement. Where conduits are to be cast in slabs on ground and there is only one layer of reinforcement, the minimum gap between the conduit and the reinforcement is to be 50mm.
11. Formwork for all external corners of exposed concrete shall incorporate a 20 by 20 fillet, unless noted otherwise.
12. Unless noted otherwise, the characteristic strength and clear cover to the reinforcement, including fitments shall be as follows

ELEMENT	EXTERNAL	INTERNAL
	Grade (MPa)	Grade (MPa)
Blinding and mass concrete	N25	N25
Footings	S40	S40
Slabs and beams	S40	S40
Columns	S40	S40
Stairs	S40	S40
Retaining walls	S40	S40
Non-Non-load bearing precast walls	S40	S40

ELEMENT	EXPOSURE CONDITION			
	CAST AGAINST FORMS (mm)		CAST AGAINST FORMS WATERPROOF MEMBRANE (mm)	CAST AGAINST GROUND (mm)
	INTERNAL	EXTERNAL		
Footings	50	50	50	75
Slab on ground				
Top	25	40		
Bottom			30	75
Columns	30	40		
Walls	30	40		
Beams	30	40	40	75
Suspended slabs				
Top	30	35		
Bottom	30	35	40	

13. No brickwork or partition walls are to be constructed on suspended slabs until all propping is removed and the slab has undertaken its dead load deflection.
14. All concrete, including slabs on ground, shall be deposited in place using approved methods, in uniform layers and shall be compacted using mechanical means such as insertion vibrators. Insertion vibrators shall not be used to move concrete in the forms. A spare vibrator shall be kept on site at all times during concrete pours.
15. All concrete surfaces required to receive additional concrete from subsequent pours shall be suitable roughened by mechanical means to remove laitance and other soft material.
16. Oil or any other deleterious product spilt on the surface of concrete shall be remove to the satisfaction of the engineer.
17. Provide 2 layers of full width slip joint material such as Alcor or galvanised strip on top of masonry required to support the concrete. The slip joint material shall be properly secured in place to ensure it is not dislodged during concreting.
18. Penetrations through concrete shall be made using percussion drilling. The use of diamond coring for penetrations shall not be permitted without written permission from the engineer. No reinforcement is to be cut in making any penetration without written approval from the engineer. The use of ground penetrating radar is suggested as one means of locating reinforcement and post tensioning ducts in slabs of normal thickness.
19. Requests for approval for any penetration or chasing of concrete shall be submitted to the engineer on a 'Request for Penetration' form and shall describe fully the location and size of the penetration. No penetration shall be made without a 'Request for Penetration' form being signed by he engineer, a copy of which must be kept on the person carrying out the work. A register of 'Request for Penetration' forms must be kept on site for the duration of the works. If coring of the structure is approved by the engineer, the extracted cores are to be logged and kept on site for the duration of the works for review, if deemed necessary by the engineer. Approval to create penetrations through the structure relates only to structural adequacy and does not address other services that may be buried in the concrete. The contractor is to make all necessary enquiries regarding safety for the drilling operator before commencing any drilling or coring.
20. Refer to the specification for placement of concrete during periods of extreme heat or cold.
21. If the concrete strength specified for the floor system is less than 0.75 times that specified for the column, the column shall be mushroomed through the floor with concrete strength greater than or equal to 0.75 times that specified for the column U.N.O.
22. Slurry used to lubricate the pump lines shall not be used in any structural member.

PILING

1. Piles and piling to be in accordance with AS 2159 and are to be designed by the specialist sub-contractor, engaged by the contractor.
2. The contractor shall investigate the presence of any existing services in the ground likely to be affected by the piling operations. Confirmation of the investigation and the final design drawings shall be forwarded to the engineer, in CAD form, prior to commencement of any piling on site.
3. Refer geotechnical information note for site investigation information.
4. The contractor is responsible for the set out of the piles. Maximum acceptable deviation from correct position of piles is 75mm. Maximum acceptable deviation form vertical alignment is 1 in 100.
5. Piles are to be designed for the loads indicated on the engineer's drawings and shall incorporate the maximum out of position eccentricity of 75mm in addition to a lateral stability load of 2.5% of the maximum vertical load in the pile, applied at the top of the pile.
6. Piling is to be designed, constructed and certified in accordance with the specification and requirements set out on the drawings. Details of each pile type and capacity are to be submitted to the superintendent as required before any piling is commenced.
7. All piles are to be inspected by a qualified geotechnical engineer to verify design bearing pressures.
8. All pile borings are to be inspected to ensure they are cleaned and free of loose material and water prior to pouring concrete, which should be with minimal delay and on the same day as boring.
9. The inspection should ensure adequate roughness is achieved in the pile shaft to guarantee shaft adhesion, the use of a roughening tool is recommended.
10. Some groundwater seepage into piles can be expected. Water should be pumped from the piles immediately prior to pouring concrete, Tremie methods should be used if depth of water exceeds 1000mm.
11. Obstructions may be expected when drilling through existing fill.
12. Concrete cover to piles to be 75mm.
13. Minimum concrete strength to be 40 MPa.
14. The contractor should make all necessary site investigations to confirm the accuracy or otherwise of the geotechnical report. Tender to nominate unit rates for variation in pile lengths from estimated values.
15. On completion of piling, a drawing prepared by a registered surveyor shall be prepared giving the position of the piles relative to their nominated position and the level of the top of the piles. The drawing shall be forwarded to the engineer for approval before any further work associated with the piles commences.
16. The contractor shall be responsible for the design and rectification of any work associated with the use of piles exceeding the above tolerances.
    This shall include the following:
    a. Design checking by the engineer
    b. Assessment by the engineer of any rectification proposals
    c. Design of any rectification works
    d. Inspection by the engineer of any rectification works
    e. Costs for any work associated with these activities shall be payable by the contractor to the engineer at current hourly rates.

MASONRY

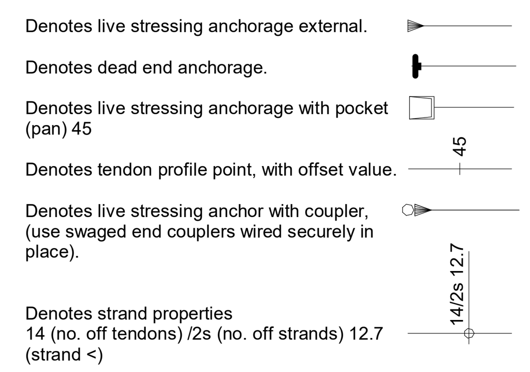
1. All materials and workmanship to be in accordance with AS 3700, AS4455 and AS4773.
2. Minimum durability classification of built in components to be R3 unless noted otherwise to AS 4773.
3. Minimum cover to reinforcement and tendons in grouted cavities or cores to be 30mm unless noted otherwise, measured from inside face of block core.
4. Strengths of bricks, class of blocks, type of mortar and maximum joint spacing shall be as follows:Bricks shall be solid or perforated to a maximum of 25%. The contractor shall submit to the engineer,before construction commences, expected moisture expansion characteristic values for the bricks to be used on the project.

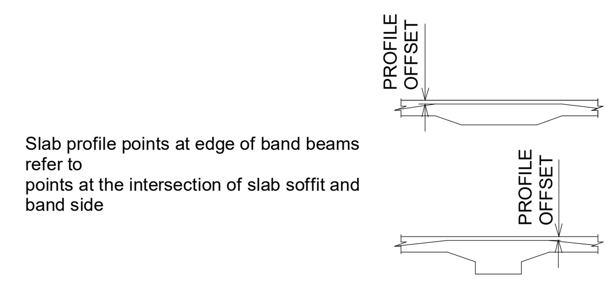
ELEMENT	MATERIAL	Strength (f,uc)	Mortar classifi-cations	Mortar Mix C : L : S	Maximum joint spacing
Reinforced Blockwork	Concrete Block	15 MPa	M4	1 : 0.5 : 4.5	10
Unreinforced Blockwork External face finished, rendered and or painted	Concrete Block	15 MPa	M3	1 : 1 : 6	7
Unreinforced Blockwork External with openings more than 900mm in height	Concrete Block	15 MPa	M3	1 : 1 : 6	5
Unreinforced Blockwork Internal face finished or sheeted	Concrete Block	15 MPa	M3	1 : 1 : 6	6
Unreinforced Blockwork Internal rendered and or painted	Concrete Block	15 MPa	M3	1 : 1 : 6	5
Load-bearing Brickwork	Brick	20 MPa	M3	1 : 1 : 6	6

5. Load-bearing masonry shall have full bedded joint unless noted otherwise. All mortar joints to be finished with standard tooling rods to produce compacted joints to a maximum depth of 3mm. Perpends shall be fully filled.
6. Mortar admixtures shall not be used without the written approval of the engineer.
7. All masonry supporting or supported by concrete floors shall be provided with vertical joints to match any control joints in the concrete.
8. For joint locations in brickwork and blockwork, refer to architectural drawings Joints in straight continuous walls shall not exceed the values given in Note 4.Joints to be 10mm wide unless noted otherwise.
9. No horizontal or diagonal chasing of walls will be allowed. Maximum depth of vertical chasing in core filled blockwork to be 20mm. Chasing of load bearing masonry shall only be permitted where shown on engineering drawings.
10. Reinforced concrete slabs that are to support masonry are not be de-propped for 28 days.
11. Do not load masonry units onto a supporting slab until the slab is de-propped.
12. Load all masonry pallets onto the slab prior to laying and finishing head details.
13. Do not load pallets on cantilevered slabs.
14. Only load-bearing masonry is indicated on the drawings. Refer to architectural drawings for extent of masonry elements.
15. All masonry is to be tied to abutting steel or concrete columns and where relevant provide head restraints attached to underside of structure above. For wall ties and head restraints refer to the specification. Ties to be heavy duty galvanised unless noted otherwise.
16. Grout for core filling, where required, shall have a nominal composition of C1 : S3 : A2 (10mm coarse aggregate). The grout shall have a slump of 230mm plus or minus 30mm and a compressive strength of 25 MPa minimum.
17. Walls to be full height before grouting cores.
18. Clean out openings to be provided at bottom course in all cores.
19. Before placing vertical reinforcement, if any, cores are to be cleaned of all mortar fins and droppings through clean out openings, which are not be closed until inspected by the engineer.
20. Maximum continuous pour height of grout to be 3600mm.
21. Backfill to retaining walls to be free draining granular material unless otherwise noted.
22. Provide subsoil drain to falls or weep holes as noted. Refer also to Note 23.
23. Retaining walls (other than cantilever walls) shall not be backfilled until the (floor) construction at the top and bottom has been completed and has attained adequate strength. Cantilever walls shall not be backfilled until they have attained adequate strength.
24. Ensure free draining backfill and drainage lines to falls (or weep holes) are in place.
25. Refer to architectural drawings for location of all joints in masonry. Control joints to be at 6 metre centres maximum.
26. Vertical control joints are to be as described in AS 4773.1 or as indicated on the drawings. Joints shall be maintained to be free of all non-compressible material.
27. Vertical control joints shall be 20mm wide and be provided with flexible masonry anchors across the joint, placed in accordance with manufacturer's recommendations. Joints are to be treated at the outside using an approved flexible polyurethane base caulking sealant jointing material placed against a 25mm diameter closed cellular polythene foam backing rod.
28. The following conditions must also be satisfied:
    a. Fire rating
    b. Sound insulation
    c. Waterproofing
29. Non-load bearing masonry shall be constructed to within 20mm of the underside of the structure or shelf angles over.
30. Gaps are to be built to a tolerance of -0mm, +3mm.
31. Mortar and other material shall not be allowed to fall into cavities or remain in control joints.
32. Place polystyrene foam in all vertical joints during construction to ensure mortar droppings do not fall into the joints.
33. The contractor shall submit the names of all proprietary products proposed to be used in masonry construction before commencement of the works.
34. Where masonry abuts to the underside of any member, sloping or horizontal, provide flexible perpend fixings at 3 masonry units spacing. Perpend fixings shall be equivalent to M.E.T. 4-3 and shall be secured to the structure over using 2 x 6mm diameter Ramset head drive pins (or approved equivalent).
35. Fixing of masonry ties to steelwork shall be designed by the contractor and shall have load capacity not less than that specified by the manufacturer of the ties.
36. In cavity construction, ties between skins of the masonry shall be rated for the width of the cavity. Spacing of ties shall be designed by the contractor for the wind pressure to which the wall will be subjected. Cavity ties shall be heavy duty, spaced at 600mm x 600mm centres maximum. At control joints, door and window openings the spacing shall be at 300mm centres maximum.
37. In solid masonry construction, ties between contiguous leaves shall be heavy duty spaced at 400mm x 400mm centres.
38. In hollow block construction, grout fill end blocks (or use solid blocks) at control joints,door or window openings.
39. All fixings, drive pins, nails, screws, bolts, nuts and washers into masonry shall be galvanised to R2 level in accordance with AS 3700 and AS 269
40. All steelwork built into or abutting masonry shall be hot dip galvanised.
41. Where needling and propping of openings is required, the builder shall provide all details to the engineer for review before the work commences.
42. In reinforced masonry all reinforcement is to be continuous, fully lapped and anchored. Minimum lap/anchorage length to be 40 x bar diameter. Provide continuous horizontal reinforcement at all 'T' and 'L' junctions as required.
43. Minimum reinforcement in blockwork nominated as core filled to be as follows U.N.O.:
    a. 140 Blockwork - N12-400 each way, central
    b. 190 Blockwork - N16-400 each way, central
    c. 290 Blockwork - N16-400 each way, each face

POST TENSIONING

1. Post tensioning slab system is to be used throughout unless noted otherwise.
2. All strands to be either: 12.7mm diameter, super grade strand, stress relieved with a minimum breaking load of 184 kN. Relaxation 2.5% maximum after 1000 hours at 70% of breaking load unless noted otherwise or 15.2mm diameter, super grade strand, stress relieved with a minimum breaking load of 250 kN. Relaxation 2.5% maximum after1000 hours at 70% of breaking load unless noted otherwise.
3. Duct: flat duct 70mm x 19mm, μ = 0.2 / = 0.020.
4. Dead ends to be onion heads with metal spacers.
5. Procedure:
   a. Stress all tendons to 25% ultimate tensile stress at approximately 24 hours after completion of pour.
   b. Fully stress tendons when concrete attains:f'c = 22 MPa for 12.7mm diameter strand and f'c = 25 MPa for 15.2mm diameter strand
   c. Jack tendons to 85% minimum breaking load 156.4 kN for 12.7mm diameter strand and lock off 212.5 kN for 15.2mm diameter strand and lock off
   d. Tendon profile points are from the slab soffit to underside of duct. Offset points are indicated over supports and at mid span unless noted otherwise. At the end points profile offsets are from the slab soffit to the centre of the anchor Tendon profiles shall be parabolic between high and low points. Jack central tendons first and work progressively outwards on each side of structural elements (alternating).Tendon positions shall be marked on slab soffits by the use of embedded plastic buttons at grid and mid-grid locations; proposed arrangement to be submitted for approval.
6. Stressing equipment calibration records, including jack and gauge numbers, shall be forwarded to the engineer prior to stressing operations commencing.
7. Cables shall be positioned and secured in accordance with the design documents produced by the specialist sub-contractor and profiled to a vertical tolerance of plus or minus 4mm. Cables shall be supported on suitable chairs at 1000mm maximum centres along the full length to prevent the cable from being displaced laterally or vertically during concreting.
8. The specialist contractor shall ensure that experienced workers shall be on site ensuring the proper treatment of post tensioning ducts during all relevant concrete pours.
9. Ducts shall be rigid enough to withstand treatment during concreting and shall be securely taped at joints to ensure slurry does not enter the ducts.
10. Duct profiles shall take precedence over any reinforcement or conduit within the concrete. Any interference with reinforcement positioning shall be brought to the attention of the engineer for review during placing operations.
11. Top reinforcement shall not be laid until after tendons have been placed.
12. Typical anchorage reinforcement details shown on the drawings are for pricing purposes only and the final anchorage reinforcement details shall be the responsibility of the pre-stressing sub-contractor. Distribution reinforcement shall not displace post tensioning ducts from achieving the required drape.
13. Particular care shall be taken during placement and compaction of concrete, especially around post tensioning anchorage locations. All concrete shall be vibrated using insertion vibrators. The use of reduced aggregate size, as well as the inclusion of superplasticiser additives in the concrete to assist placement may be appropriate.
14. Care shall be taken to ensure all grout tubes and cable ducts are not damaged during concreting.
15. Concrete cylinder compressive strength values taken during placement of concrete shall be provided to the engineer before stressing of the strands commences. Concrete test cylinders shall be representative of the area where strands are to be loaded are situated.
16. The sequencing of applying load to the post tensioning strands shall be determined by the post tensioning sub-contractor, taking into account the loads that are to be transferred to the formwork system. The formwork designer and post tensioning sub-contractor shall coordinate to ensure the formwork is sufficient to withstand the applied loads from post tensioning operations.
17. Strand extensions determined during stressing shall be forwarded to the engineer for review within 24 hours of stressing. No strand shall be cut without the approval of the engineer. The engineer may direct additional stressing of strands, or other actions, if the recorded extensions are acceptable.
18. Cables shall not be trimmed without written approval from the design engineer. Grouting of ducts shall be completed within 48 hours of written acceptance of strand extensions. Written confirmation of satisfactory completion of grouting to ducts shall be forwarded to the engineer.





CONCRETE REQUIREMENTS FOR POST TENSIONING

1. All suspended floors shall be f'c = 40 MPa unless noted otherwise.
2. All concrete test cylinders shall be site cured under conditions consistent with the concrete pour.
3. Maximum shrinkage strain at 56 days, measured in accordance with AS 1012 part 13, shall be 650 microstrains.
4. To prevent damage to stressing tendons and reinforcement, concrete pump lines shall be adequately restrained and supported on stools or timber blocks independent of the reinforcement. Pump lines shall not be restrained from lateral movement by tying reinforcement due to be covered during the pour.
5. Slurry used to lubricate the pump lines shall not be used in any structural member.
6. To minimise the propping requirements the suspended floor shall achieve minimum concrete strength f'c = 32 MPa at 7 days.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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CLIENT
NSW GOVERNMENT | Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
GENERAL NOTES - SHEET 1

SCALE AT A1: 1 : 1
DRAWN BY: JWR
CHECKED BY: M.O.S

DRAWING STATUS
PRELIMINARY

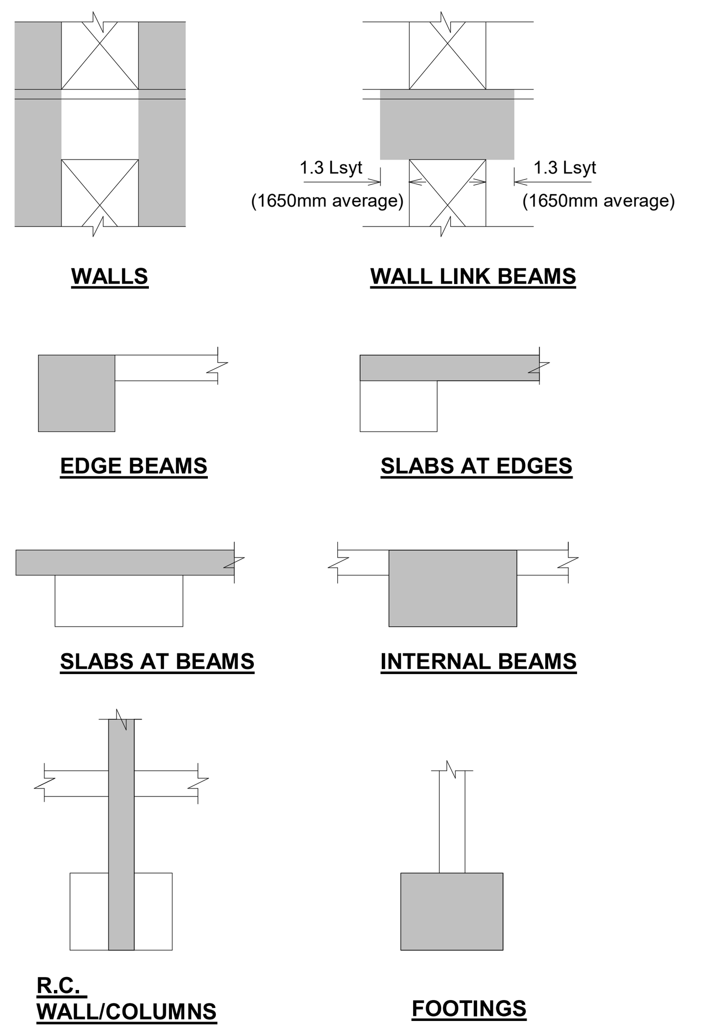
DRAWING NUMBER: ST-001-01
REV. B

REINFORCEMENT

1. Symbols:
   a. R: Structural grade plain bars to AS/NZS 4671, ductility class N (250MPa)
   b. N: Deformed bar to AS/NZS 4671, ductility class N (500 MPa)
   c. TM: Hard drawn steel trench mesh to AS/NZS 4671, ductility class L (500 MPa)
   d. SL: Square rib mesh AS/NZS 4671, ductility class L (500 MPa)
   e. RL: Rectangular rib mesh AS/NZS 4671, ductility class L (500 MPa)
2. All reinforcement bars to be Type N unless noted otherwise.
3. Distribution bars to main reinforcement bars in slabs shall be N12 at 300mm centres unless noted otherwise. Refer to reinforcement lap schedule for lap lengths.
4. Minimum lap for fabric shall be one mesh plus 25mm.
5. Welding of reinforcement is not allowed without prior approval.
6. Top and bottom reinforcement shall be supported in both directions at maximum centres 1000mm.
7. The minimum clear spacing between conduits as per AS3600 but not less than three diameters. Conduits in slabs to be placed above the bottom reinforcement and below the top reinforcement.
8. All re-entrant corners and service holes are to have trimmer bars placed diagonally at corners using two bars (1600mm long), one tied to the underside of top reinforcement and the other tied to the top of the bottom reinforcement. Trimmer bars to be N12 for slabs not thicker than 120mm and N16 for slabs not thicker than 180mm,
9. Where not shown bars to be N20 unless noted otherwise.
10. Abbreviations used for reinforcement:
    a. BB = Bottom Bottom
    b. B = Bottom
    c. TT = Top Top
    d. T = Top
    e. EF = Each Face
    f. EW = Each Way
    g. F = Near Face
    h. FF = Far Face

REINFORCEMENT RATES

1. Floor plate reinforcement rates make no allowance for construction joints or typical penetration trimming reinforcement.
2. Wall reinforcement rates make no allowance for typical penetration trimming reinforcement.
3. Reinforcement rates provided do not allow for site wastage or construction related reinforcement such as but not limited to safety mesh, alimak and crane reaction reinforcement or screen and railing reinforcement
4. In the instance where members such as beams overlap, both beam areas shall be considered separately in the calculation of the total reinforcement and post-tensioning tonnage



TYPICAL REINFORCEMENT AREAS
For reinforcement quantities required refer to tables.

Denotes areas to be used when determining reinforcement quantities for kg/m³ values only.

STRUCTURAL STEELWORK

1. All workmanship and materials in accordance with AS 4100 and AS 4600.
2. Steel shall have the following minimum properties unless noted otherwise:

COMPONENT	STANDARD	GRADE
Plates	AS 3678	350
Hot rolled sections	AS 3679	300
CHS	AS 1163	C350
RHS and SHS	AS 1163	C450
Welded beams and columns	AS 3679	300
Flat bars and Rods	AS 3679	300
Purlins and grits	AS 1397	450

3. All bolts shall be M20 Grade 8.8/s in 22mm diameter holes with a minimum of two bolts per connection unless noted otherwise. A washer shall be placed under the nut in all cases and where the head of the bolt is to be tightened and additional washer is to be placed under the bolt head.
4. Where slotted or oversize holes are permitted, a hardened plate washer of 8mm minimum thickness shall be placed under the nut and the bolt head to completely cover the slot. Unless noted otherwise, the washer shall be 6mm continuous fillet welded to the element containing the slot.
5. After tightening bolts shall project beyond the nut a minimum of 1 full thread.
6. All welding is to be in accordance with AS 1554, special purpose (SP) using E48XXX electrodes in accordance with AS1553. All welding shall be carried out by suitable qualified personnel. Testing of welds to be carried out by qualified testers in accordance with AS 2214 and notes on the drawings.
7. Minimum fillet welds to be 6mm continuous fillet. All butt welds to be full penetration with non-destructive testing in accordance with the specification unless noted otherwise.
8. The following refers to bolting procedures:
   a. 4.6/S - Commercial bolts (or black bolts), Grade 4.6 to AS 1111, tightened to snug tight condition using a standard wrench.
   b. 8.8/S - High strength bolts (or structural bolts), Grade 8.8 to AS 1252, tightened to snug tight condition using a standard wrench.
   c. 8.8/TF - High strength bolts (or structural bolts), Grade 8.8 to AS 1252, fully tensioned to AS 4100, designed as a friction type joint.
   d. 8.8/TB - High strength bolts (or structural bolts), Grade 8.8 to AS 1252, fully tensioned to AS 4100, designed as a bearing type joint.
9. Contact surfaces in connections incorporating 'TF' bolts shall be left unpainted unless noted otherwise. Bolts in 'TF' and 'TB' connections shall be tightened using the part-turn method or load indicating washers. A hardened washer is to be placed under the nut or bolt head, whichever is to be rotated. Bolts that have been fully tensioned shall not be re-used.
10. Shop drawings are to be submitted for approval a minimum of 3 weeks prior to fabrication.
11. No steelwork shall be fabricated until final approval of the shop detail drawings has been received by the builder and all review comments on the workshop drawings have been resolved to the engineer's satisfaction.
12. All plates to be 10mm thick unless noted otherwise.
13. All axial member connections (compression or tension) shall be capable of transferring a force equal to the member capacity.
14. All hollow sections to be sealed with a 3mm plate unless noted otherwise.\
15. Corrosion protection:
    a. Refer to the specification
    b. All members in external masonry walls shall be hot dip galvanised in accordance AS 1650 with a minimum coating of 600 grams per square metre.
    c. Bolts, nuts and washers to be hot dip galvanised to manufacturer's specifications
    d. Exterior, fully exposed pin connection components to be hot dip galvanised with a minimum coating of 600 grams per square metre.
    e. In addition to the specified finish, steelwork in contact with the ground is to be coated with Interzone 954 or approved equivalent, to a minimum thickness of 0.4mm.
    f. steelwork encased in concrete shall be covered with a minimum thickness of 50mm and be wrapped in SL41 galvanised mesh with 1N12 bars inside the 4 corners of the mesh. Lap mesh 150mm minimum. Lap N12 bars 400mm minimum.
    g. All sealed hollow sections to be galvanised shall have vent holes as per manufacturer's
16. Grout under base plates to be high strength cementitious non-shrink grout (Masterflow 870 by Master Builders or approved equivalent).
17. All chemical fixings to existing structure to be formed using Epcon C8 (or equivalent approved in writing)
18. All chemical anchors to existing concrete structure to be site drilled and surveyed prior to steelwork fabrications. Coring of existing structure for anchors is not permitted/
19. Connection of steelwork to concrete or masonry using chemical anchors through steel plates shall have the gap between the bolt holes in the plate and the bolts fully filled with epoxy mortar prior to installing the bolt washers and nuts.
20. Purlins and Girts:
    a. Cleats to be as per purlin manufacturer's specifications. For purlin top flange greater than 250mm above top of supporting steelwork, use 75x75x8 angle unless noted otherwise.
    b. Bridging as per manufacturer's specifications. Bridging to wall girts commence from supporting structure under (slab) and be continuous up to eaves line. Bridging to purlins to be continuous across roof ridges.
    c. Ceiling systems, ductwork etc, to be suspended from purlins web via hook bolts. Bolts supporting services off the bottom flange of purlins will not be permitted.
21. All steelwork connections not indicated in the documentation to be assumed to be standard cleat and end plate member connections in accordance with the Australian Steel Institute design guides for simple connections.
22. Any steelwork to be fire protected by fire rated board to architects detail UNO.
23. All secondary steelwork for support of facade, internal partitions, acoustic panels, balustrades etc. are to the contractors design and detail. Contractor to submit details to engineer prior to fabrication.
24. Bracing turnbuckles must be capable of carrying the full capacity of the brace.

SHOTCRETE

1. General - The concrete in the panels of retaining walls may be placed by the shotcreting process.
2. Definitions - The following definitions explain the meaning of certain words and terms as used in this specification:
   a. Sprayed concrete is a mixture of cement, aggregate and water projected at high velocity from a nozzle into place to produce a dense homogenous mass.
   b. Shotcrete is a term used for sprayed concrete where the maximum aggregate size is not more than 20mm.
   c. Rebound is a term used for all material having passed through the nozzle which does not conform to the definition of sprayed concrete
   d. Nozzle is the attachment at the end of the material hose from which the material is jetted at high velocity.
   e. Nozzleman is the workman who manipulates the nozzle, contains consistency and makes the final disposition of the material.
3. Mix Design - Mix proportions shall be designed by the contractor and shall be to the approval of the engineer. All concrete shall be obtained from an approved concrete supplier and shall be premixed and delivered to site in accordance with AS 1379. Where admixtures are approved by the engineer for addition to the mix to speed the setting rate of the cement, the following setting times and strengths shall apply unless otherwise stated:
   a. Initial set of cement/admixture paste : 3 minutes Final set of cement/admixture paste : 12 minutes
   b. 8 hour strength of concrete : 3 MPa
      24 hour strength of concrete : 10 MPa
      All constituents shall be uniformly dispersed throughout the mix.
4. Qualifications of Operators - All operators shall be to the approval of the engineer prior to commencement of spraying. The contractor shall certify to the engineer that the foreman, nozzleman and delivery equipment operatives have completed satisfactory work in similar capacities elsewhere. Where required by the engineer, the operator shall spray pre-construction panels which shall be approved by the engineer before the operators are employed on the works. Such panels may also be used by the engineer to assess the competence of operators or trainees for whom such certification is not available.
5. Plant - The contractor shall state the numbers and type of plant which he proposes to use for the construction of the works.
6. Substrate Preparation - The surface shall be compacted, tined and graded as required and dampened before the application of sprayed concrete. Natural surfaces must be sufficiently cohesive to prevent erosion when the sprayed concrete is applied.
7. Spraying Procedure - No concrete shall be sprayed in air temperatures less than 1° Celsius. Freshly sprayed concrete shall be protected from rain or water until the surface is of sufficient hardness to prevent damage. Spraying shall be discontinued if wind or air currents cause separation of the nozzle stream during placement. During starting or stopping of the spraying operation or whenever spraying is irregular, the nozzle shall be directed away from the works, all corners and any areas where rebound cannot escape or be blown free, shall be filled prior to general spraying. Rebound shall not be worked into the construction or reused in the works. Guides shall be set up to establish finished surfaces. These guides shall be to the approval of the engineer prior to spraying. Sprayed concrete shall be applied so that it neither sags nor slumps. Sprayed concrete shall be troweled to a smooth surface. Maximum deviation from a 1 metre straight edge shall be 10mm. Full records of all materials delivered to the sprayed concrete mixer shall be kept and made available to the construction manager.
8. Joints - The position and type of all construction joints shall be approved by the engineer.
9. Quality Control - Testing of shotcrete shall be carried out in accordance with the sprayed concrete manual 'Recommended Practice : Sprayed Concrete' Clause A12 of the reference specification prepared by the Concrete Institute of Australia.

GREENSTAR

1. The development shall be designed with environmental initiatives in order to achieve a 5 star rating for Green Star Design and As Built v1.1 rating tool as administered by the Green Building Council of Australia (GBCA).
   The following section outlines the project performance requirements for the targeted Green Star credits that must be adhered to by the all relevant project team members for all project works. The contractor shall provide design and installation as required to achieve the required level of environmental performance.
   Where the Green Star requirements do not correlate with the specification within this documentation, allowance shall be made to meet the general intent of the Green Star requirements and clarification sought from the consultant.
   It is the contractor's responsibility to provide all the listed documentation and request & obtain all documentation from any relevant engaged sub-contractors for provision.

TIMBER

1. All timber design, material and construction shall be to AS1720.1 and AS1720.2.
2. Softwood to be minimum stress grade F7 uno. Hardwood to be minimum grade F14 uno. Submit suppliers
   certificate as to stress grade of timber members. All timber shall be branded.
3. External timber shall be either hardwood durability class i or ii to AS1720.2 or impregnated pine grade F7, pressure treated to AS1604 and re-dried prior to use. Supplementary treatment shall be applied to all cut surfaces. Supply supporting documentation for preservative treatment.
4. All bolts in timber construction shall be minimum M16 unless noted and shall be galvanised. Bolts shall be retightened at the end of the maintainance period. Bolt holes shall be drilled no more than 1 mm oversize Washers under all heads and nuts shall be at least 2.5 times bolt diameter.
   Timber dimensions shall be not less than:

   SEASONED SOFTWOOD..... +5, -0mm
   UNSEASONED SOFTWOOD..... >F7+2,-3mm
   .....<F7+2,-4mm
   SEASONED HARDWOOD..... +2, -0mm
   UNSEASONED HARDWOOD..... +3, -3mm
   (SEE ALSO CLAUSE 1.6.2 IN AS 2082)

5. All timber joints and notches are to be 100mm minimum away from loose knots, severe sloping grain, gum veins or other minor defects.
6. All trusses and rafters shall be fixed to top plate with metal plate connectors.
7. All wall framing to be designed by the manufacturer to AS1720 and AS1684. Manufacturer to supply all necessary design certification to the client prior to erection. All wall tie-downs to be designed and detailed by the manufacturer in accordance with AS1684.
8. Timber tolerances on the finished width and thickness to be in accordance with AS2082, AS1748, AS3519 as appropriate. Cross bracing required for timber structure to be proposed by contractor and approved by Enstruct

TIMBER ROOF

1. Timber roof trusses, anchorages, bracing and lateral stability to truss manufacturers design and detail in accordance with AS1720 & AS1684
2. Truss design Loads:
   Dead - 0.2 kPa (roof sheeting)
   Live - 0.25 kPa
   SDL - 100 kg solar panels (refer to arch drawings for locations)
   - 225 kg photovoltaic panels (refer to arch drawings for locations)
   - 0.5kpa ceilings
   Refer to general notes for the details on wind loading.
3.. The truss manufacturers must submit drawings and calculations for approval. Drawings must nominate layout of all trusses and bracing, all connection and fixing details, timber grade and expected long term deflection.
4. Deflection. Trusses shall be precambered an amount equal to dead load deflection. Maximum total allowable deflection is span/300 and L/150 for cantilevers or 15mm whichever is less.
5. The truss manufacturer is to design roof bracing to transfer loads in the plane of the roof to the bracing walls shown on the structural drawings.
5. The truss manufacturer is to design and detail all roof tie downs.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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CLIENT
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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
GENERAL NOTES - SHEET 2

SCALE AT A1: 1 : 1
DRAWN BY: JWR
CHECKED BY: M.O.S

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-001-02

REV.
B

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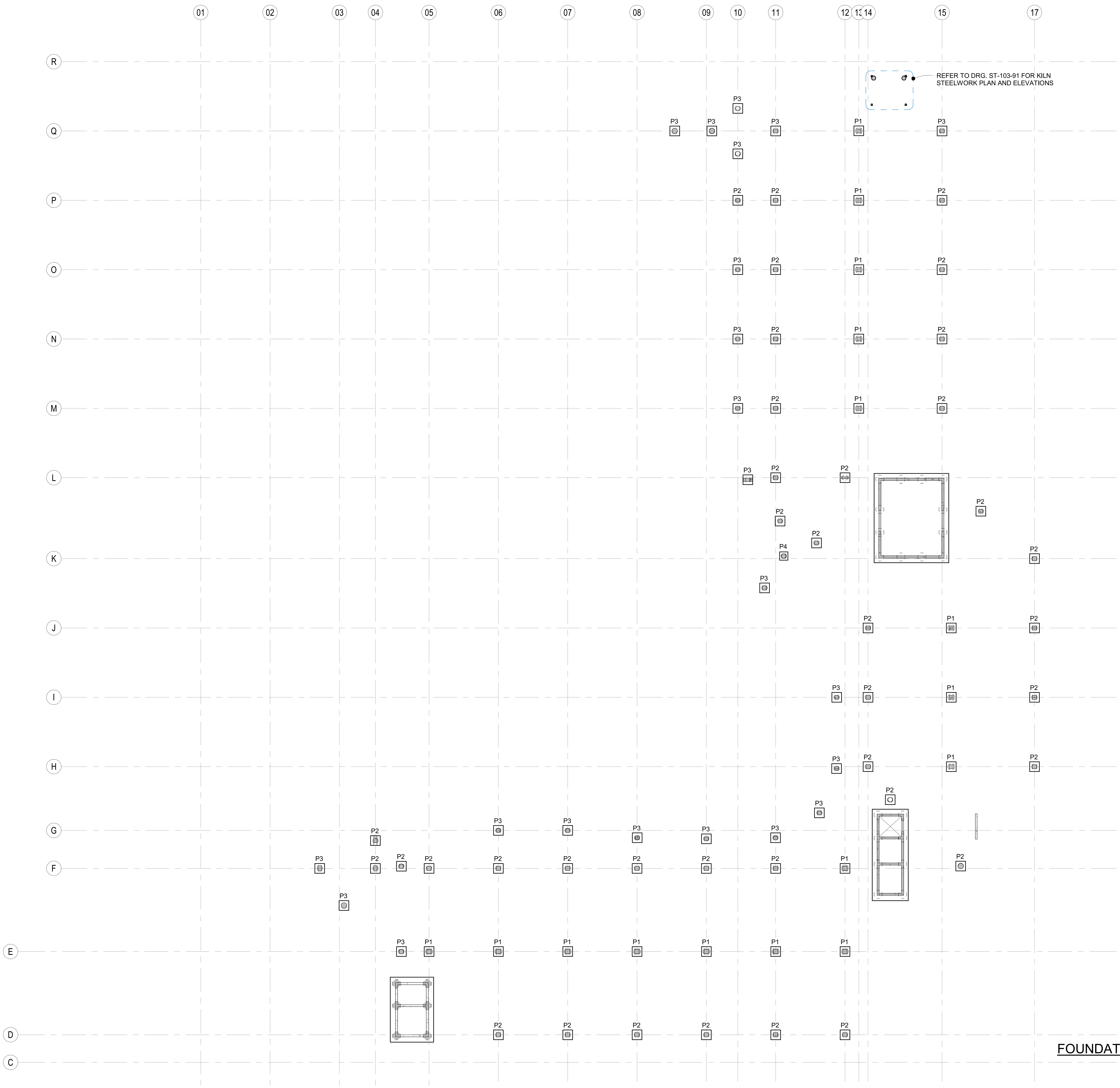
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



FOUNDATION NOTES:
- ALL FOUNDATIONS TO BE FOUNDED IN HIGH STRENGTH SILSTONE (ABP: 3500kPa) OR GREATER UNO.
- REFER TO DOUGLAS PARTERS REPORT 94626 SEPT 2020 FOR ALL GEOTECHNICAL REQUIREMENTS. NOTE THAT FINAL REPORT HAS NOT BEEN PROVIDED YET.
- PILES SHOWN INDICATIVELY. SIZE AND NUMBER TO BE CONFIRMED BY PILING CONTRACTOR.
- FINAL PILE CAP SIZE TO BE DETERMINED ON CONFIRMATION OF PILE SIZE AND NUMBERS.

NOTE ALL FOUNDATION DETAILS SHOWN AS INDICATIVE ONLY. TO BE CONFIRMED ON RECEIPT OF FINAL GEOTECHNICAL REPORT.
PILE SIZE AND NUMBER TO BE CONFIRMED BY PILING CONTRACTOR.

FOUNDATION - GENERAL ARRANGEMENT

SCALE: 1 : 200

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

FOUNDATION GENERAL ARRANGEMENT

SCALE AT A1: 1 : 200
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

DRAWING NUMBER: ST-003-00

REV. B

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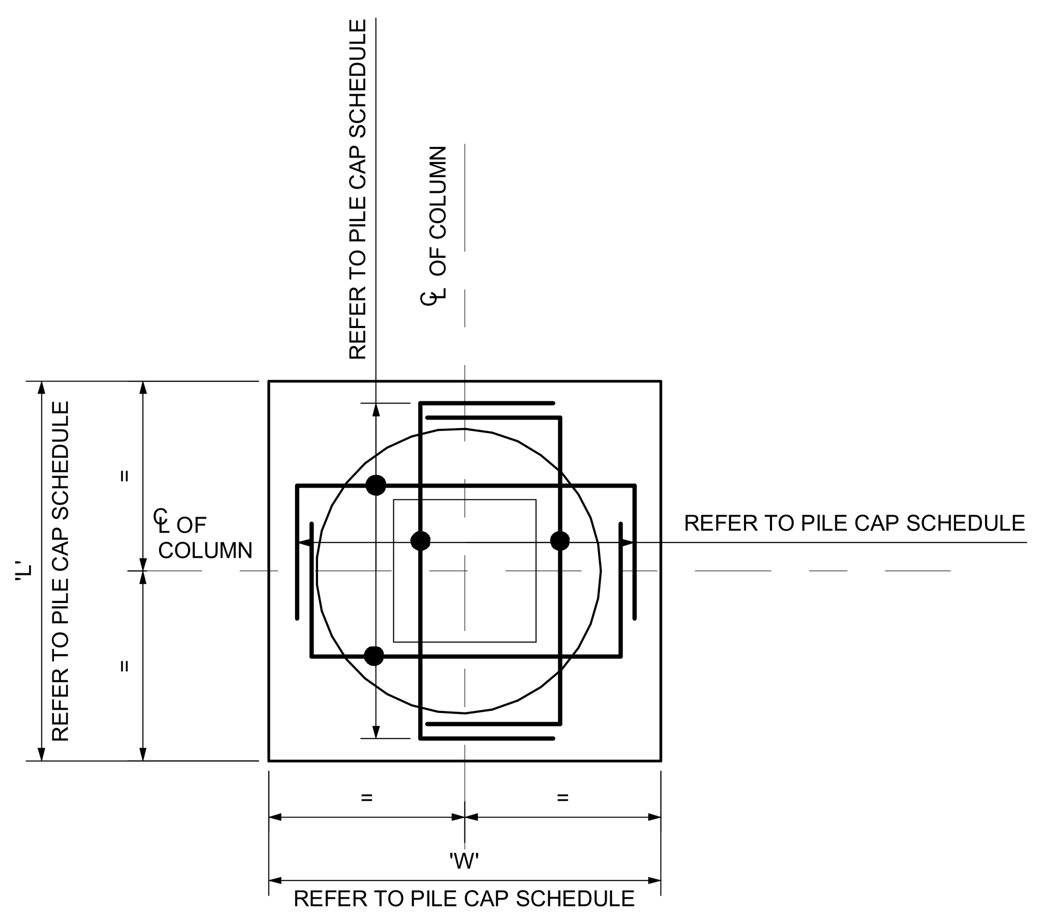
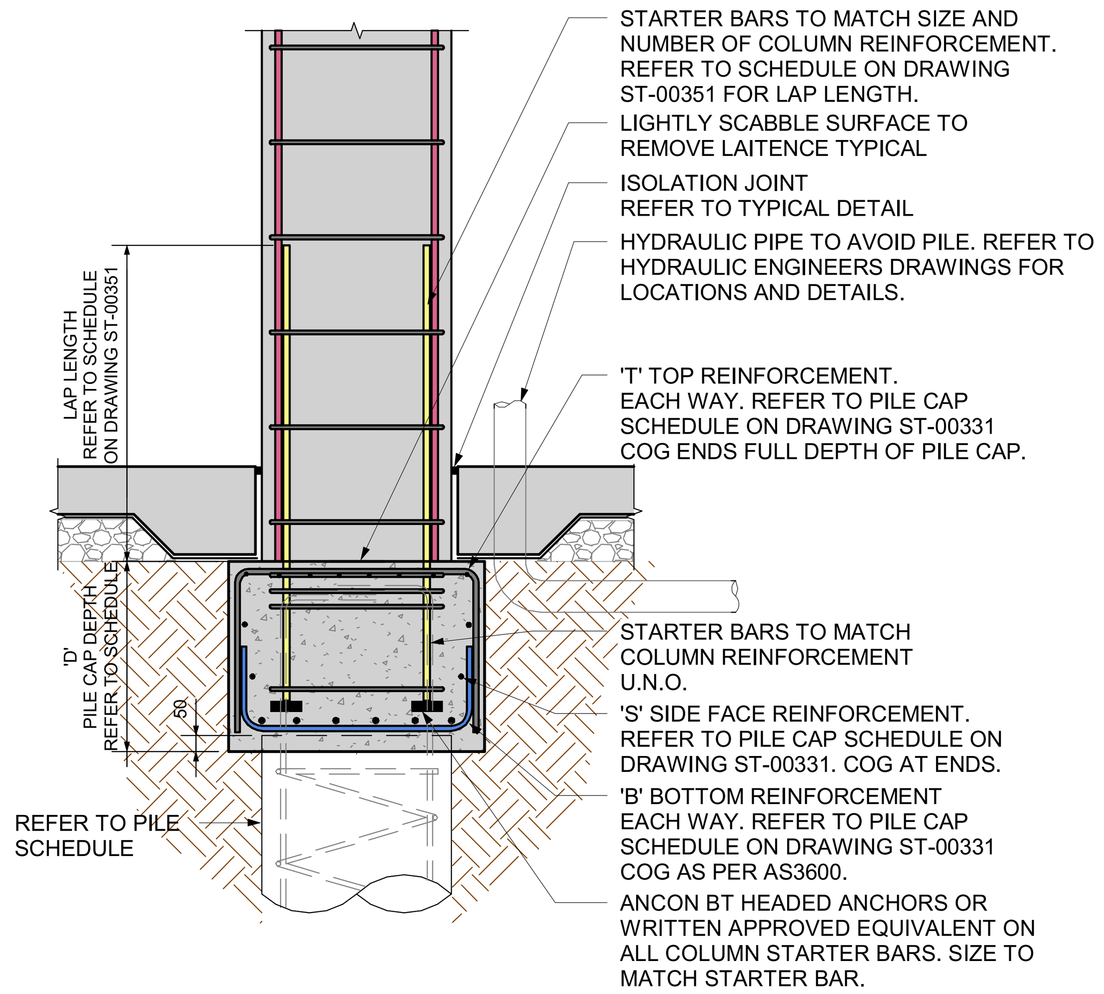
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



TYPICAL PILE CAP PLAN

SCALE = 1:20



TYPICAL SINGLE PILE CAP SECTION

NOTE:
TO BE READ IN CONJUNCTION WITH PILE CAP SCHEDULE
75mm COVER

FOUNDATION LOADS - INDICATIVE PILE DESIGN

TAG	WORKING LOAD	WORKING SHEAR	WORKING MOMENT	ULTIMATE LOAD	ULTIMATE SHEAR	ULTIMATE MOMENT	PILE DIMENSIONS		
	Nw	Vw	Mw	N*	V*	M*	# PILES	PILE DIAMETER	SOCKET LENGTH
	kN	kN	kNm	kN	kN	kNm		mm	mm
PG1	4500	0	0	6000	0	0	1	750	4000
PG2	3000	0	0	4000	0	0	1	600	3500
PG3	1750	0	0	2250	0	0	1	600	1500

NOTES:

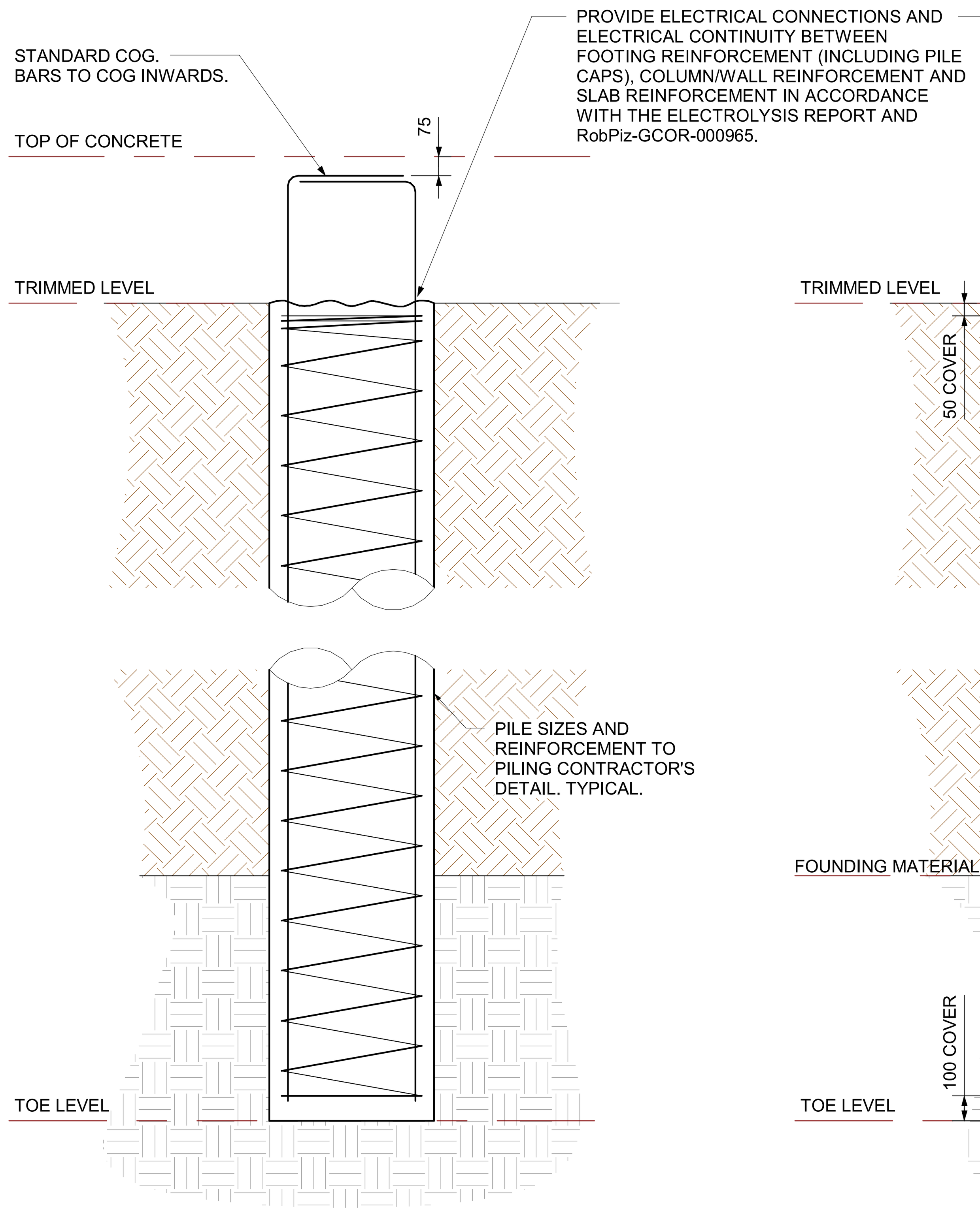
GEOTECHNICAL REPORTS:

DOUGLAS PARTNERS: 94626.00.R.001.Rev[0]

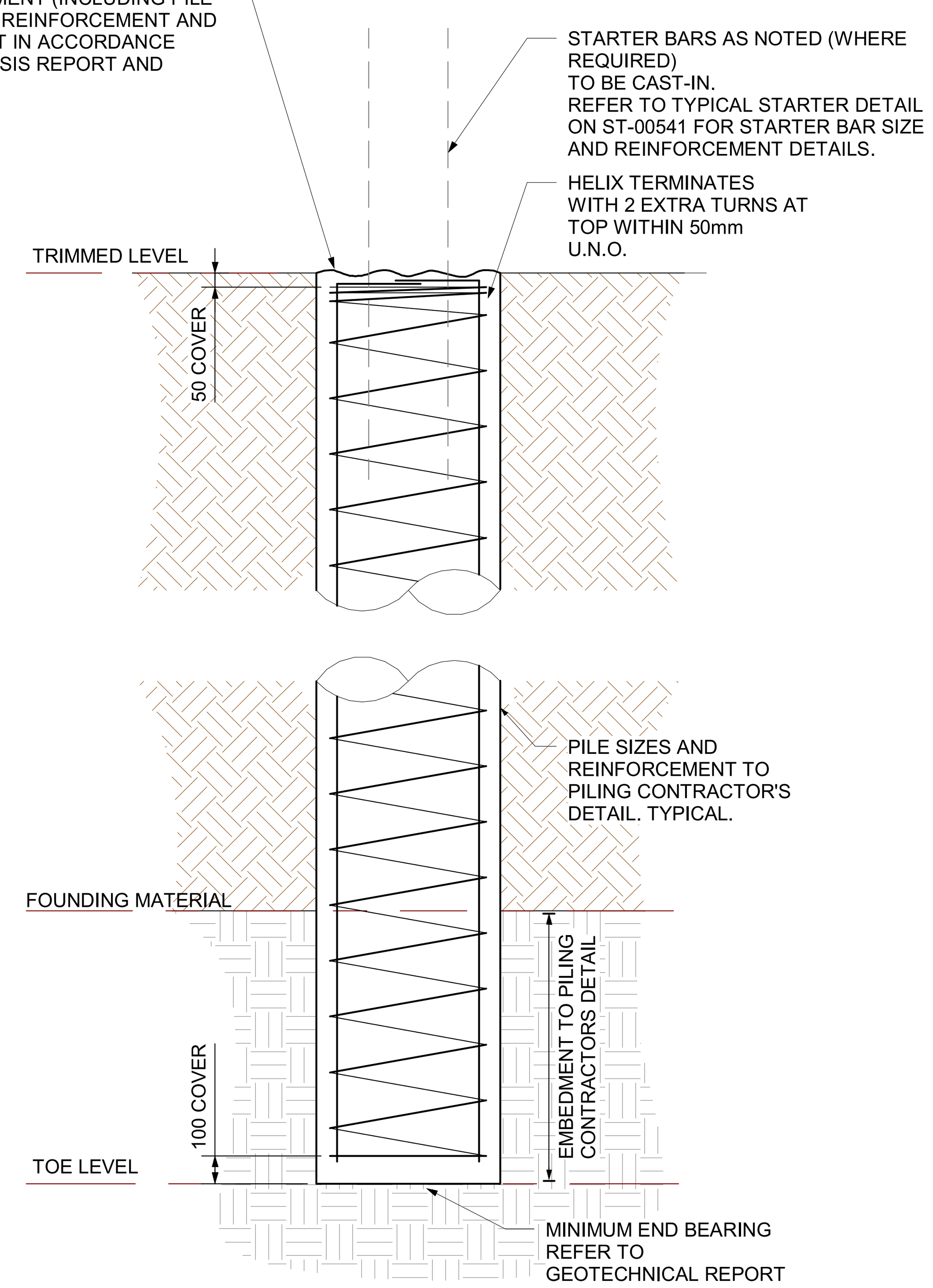
CONTAMINATION REPORT:

DOUGLAS PARTNERS: 94626.00.R.002.Rev[0]

- MOMENT AND SHEAR FORCES CAN OCCUR IN ANY DIRECTION AT THE SAME TIME.
- PILES TO BE THE SAME SIZE OR LARGER THAN THE COLUMN ABOVE U.N.O.
- FINAL PILE DESIGN AND CERTIFICATION BY CONTRACTOR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE AVAILABLE INFORMATION IN THE GEOTECHNICAL REPORTS AND MAKE THEIR OWN ASSESSMENT.
- ALL LOADS PROVIDED IN THE ABOVE TABLE SHOULD BE APPLIED AT THE TOP OF A FOUNDATION GROUP. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE NUMBER OF PILES AND SIZE IS APPROPRIATE.
- ALL LOADS SPECIFIED ABOVE DO NOT INCLUDE SELF WEIGHT OF PAD, PILE CAP OR PILE.
- ALL PILES TO BE FOUNDED IN HIGH STRENGTH SILTSTONE ROCK OR GREATER.
- HIGH STRENGTH SILTSTONE ROCK TO HAVE ALLOWABLE BEARING PRESSURE OF 3500kPa OR GREATER REFER TO GEOTECHNICAL REPORT FOR TESTING REQUIREMENTS.
- PILE LENGTHS ARE MINIMUM LENGTHS INTO HIGH STRENGTH SILTSTONE ROCK AND DO NOT INCLUDE ROCK TRANSITION ZONE. REFER TO GEOTECHNICAL REPORT FOR MINIMUM EMBEDMENT DEPTHS.
- ASSUMED GEOTECHNICAL ULTIMATE FACTOR ϕg = 0.5 FOR ULTIMATE PILE CAPACITY
- ALL FOUNDATIONS TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ALLOWABLE BEARING PRESSURE HAS BEEN ACHIEVED.
- ALL PILE REINFORCEMENT CAGES ARE TO CONTINUE TO THE TOP OF THE PILE CAP AND BE COGGED AS PER AS3600.
- STRIP FOOTINGS WITH LINE LOADS AS SPECIFIED ABOVE MUST HAVE A PILE AT EACH END OF INDIVIDUAL STRUCTURAL ELEMENT
- STRIP FOOTINGS SUPPORTING COLUMNS MUST HAVE PILES UNDER EACH COLUMN.
- PILES AT THE END OF STRIP FOOTINGS MUST HAVE CENTRELINES THAT ARE MIN 300mm BEYOND END OF STRUCTURAL ELEMENT ABOVE.
- ACTUAL GROUND CONDITIONS MAY VARY AND NUMBER OF PILES REQUIRED COULD INCREASE WITH FURTHER SITE INVESTIGATION



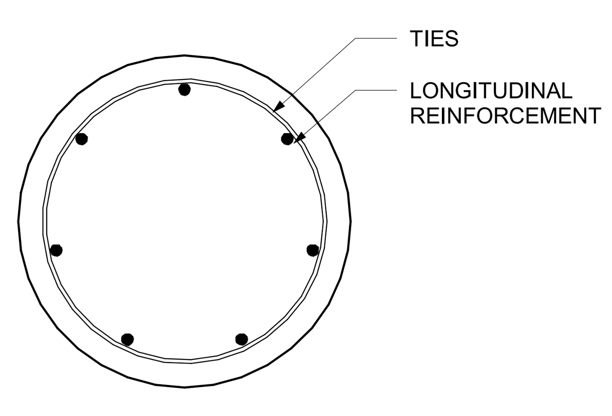
TYPICAL PILE AT SLAB / PILE CAP / BEAM / CORE FOUNDATION



TYPICAL PILE TO CONCRETE COLUMN

PILE NOTES

1. PILES AND PILING TO BE IN ACCORDANCE WITH AS 2159.
2. REFER TO THE PILING CONTRACTORS DOCUMENTATION FOR PILE SIZES.
3. PILES TO BE LOCATED WITHIN 75mm OF POSITION NOMINATED AND BE WITHIN 1:100 FOR PLUMB.
4. ALL PILES TO BE INSPECTED BY A QUALIFIED GEOTECHNICAL ENGINEER TO VERIFY DESIGN BEARING PRESSURES.
5. ALL PILE BORINGS ARE TO BE INSPECTED TO ENSURE THEY ARE CLEANED AND FREE OF LOOSE MATERIAL AND WATER PRIOR TO POURING CONCRETE, WHICH SHOULD BE WITH MINIMAL DELAY AND ON THE SAME DAY AS BORING.
6. THE INSPECTION SHOULD ENSURE ADEQUATE ROUGHNESS IS ACHIEVED IN THE PILE SHAFT TO GUARANTEE SHAFT ADHESION, THE USE OF A ROUGHENING TOOL IS RECOMMENDED.
7. SOME GROUNDWATER SEEPAGE INTO PILES CAN BE EXPECTED. WATER SHOULD BE PUMPED FROM THE PILES IMMEDIATELY PRIOR TO POURING CONCRETE, TREMIE METHODS SHOULD BE USED IF DEPTH OF WATER EXCEEDS 100mm
8. OBSTRUCTIONS MAY BE EXPECTED WHEN DRILLING THROUGH EXISTING FILL
9. THE CONTRACTOR SHALL SATISFY THEMSELVES TO THE CORRECTNESS, OR OTHERWISE, OF THE ESTIMATED TOP OF GEOTECHNICAL MATERIAL LEVELS. THE CONTRACTOR SHALL MAKE ALL ALLOWANCES NECESSARY TO COVER FOR VARIANCE BETWEEN ESTIMATED GEOTECHNICAL MATERIAL LEVELS AND ACTUAL GEOTECHNICAL MATERIAL LEVELS. NO TIME OR COST VARIATION WILL BE GIVEN SHOULD THERE EXIST A DIFFERENCE BETWEEN ACTUAL GEOTECHNICAL MATERIAL LEVELS AND ESTIMATED GEOTECHNICAL MATERIAL LEVELS.
10. ALL PILES MUST BE CAPABLE OF CARRYING THE ULTIMATE LOADS NOMINATED AND IN ADDITION A MINIMUM LATERAL LOAD EQUIVALENT TO THE MAXIMUM OF 2.5% OF VERTICAL ULTIMATE LOAD OR 75k/N U.N.O.
11. ALL PILES MUST BE CAPABLE OF CARRYING THE ULTIMATE LOADS NOMINATED AND IN ADDITION A MINIMUM MOMENT THAT TAKES INTO ACCOUNT THE BUILDING TOLERANCE OF THE PILES.
12. PILES TO BE DESIGNED TO LIMIT SETTLEMENT TO 10mm OR DIFFERENTIAL SETTLEMENT BETWEEN ADJACENT COLUMNS OR WALLS SPACING/1000mm - WHICHEVER IS LESS
13. SHEAR AND TENSION/COMPRESSION IS TO BE CONSIDERED TOGETHER. SHEAR FORCES CANNOT BE DISTRIBUTED BETWEEN PILES.
14. REINFORCEMENT MUST CARRY ALL TENSION LOAD IN PILES.
15. REFER TO ARCHITECTS DRAWINGS FOR ALL LEVELS
16. SELF-WEIGHT OF PILES TO BE ADDED TO ALL COMPRESSION LOADS BY THE PILING CONTRACTOR
17. REFER TO PILING CONTRACTORS DRAWINGS FOR PILE DETAILS
18. PILE DESIGN TO ACCOUNT FOR INTERACTION BETWEEN PILES IN PILE GROUPS
19. ALL CHANGES TO NOMINATED PILE DIAMETERS TO BE SUBMITTED FOR ENSTRUCT REVIEW. CHANGES IN PILE DIAMETER MAY CHANGE LATERAL PILE LOADS.
20. PILES ARE TO BE DESIGNED ASSUMING NO FIXIITY AT THE PILE CAP



TYPICAL PILE DETAIL

NOTE:
PILES TO BE DESIGNED AND CERTIFIED BY PILING CONTRACTOR

NOTE ALL FOUNDATION DETAILS SHOWN AS INDICATIVE ONLY. TO BE CONFIRMED ON RECEIPT OF FINAL GEOTECHNICAL REPORT.
PILE SIZE AND NUMBER TO BE CONFIRMED BY PILING CONTRACTOR.

NOTES:
- FOR PAD FOOTING AND STRIP FOOTING DETAILS AND NOTES REFER TO ST-003-31 TO ST-003-51
- FOR FOUNDATION SECTIONS REFER TO DRG. ST-003-71
- PILE DESIGN BASED ON GEOTECHNICAL CAPACITIES PROVIDED IN THE GEOTECHNICAL REPORTS.
- FOR PILE SCHEDULE AND NOTES REFER DRG. ST-00331
- CURRENT SELECTION OF FOUNDATION TYPE HAS BEEN BASED UPON AN INTERPRETATION OF THE CURRENT GEOTECHNICAL REPORTS. THE CONTRACTOR SHOULD REVIEW THE AVAILABLE INFORMATION IN THE GEOTECHNICAL REPORTS AND MAKE THEIR OWN ASSESSMENT.
- REFER TO DRAWING ST-005-60 TO ST-005-61 FOR RC WALL ELEVATIONS
- REFER TO DRAWING ST-005-01 FOR COLUMN SCHEDULE

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL PILE DETAILS - SHEET 1

SCALE AT A1: 1 : 20
DRAWN BY: JWR
CHECKED BY: M.O.S

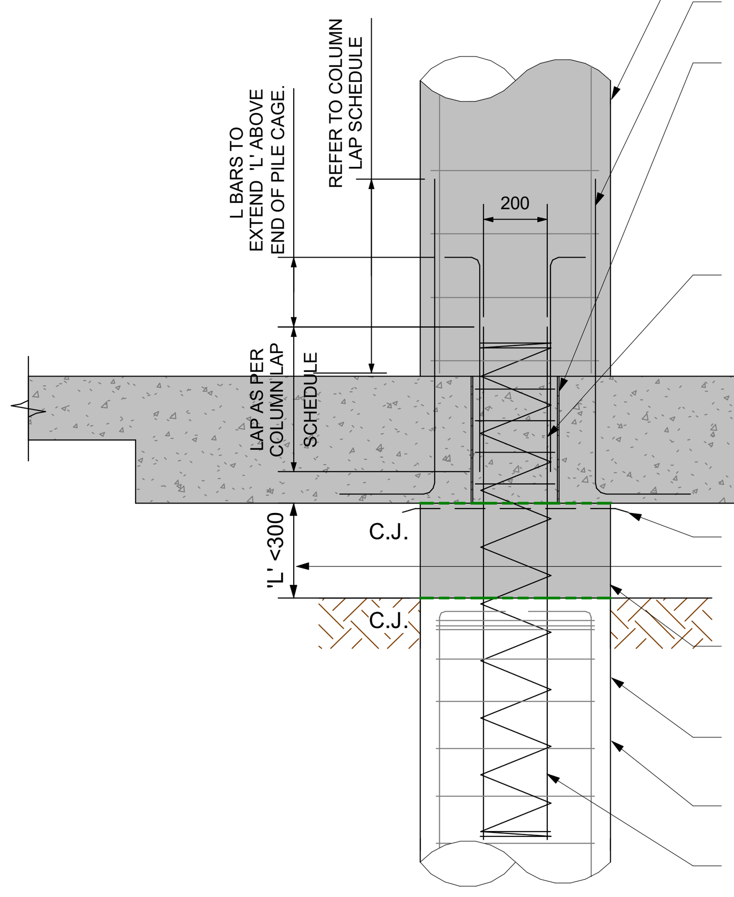
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER ST-003-31
REV. B

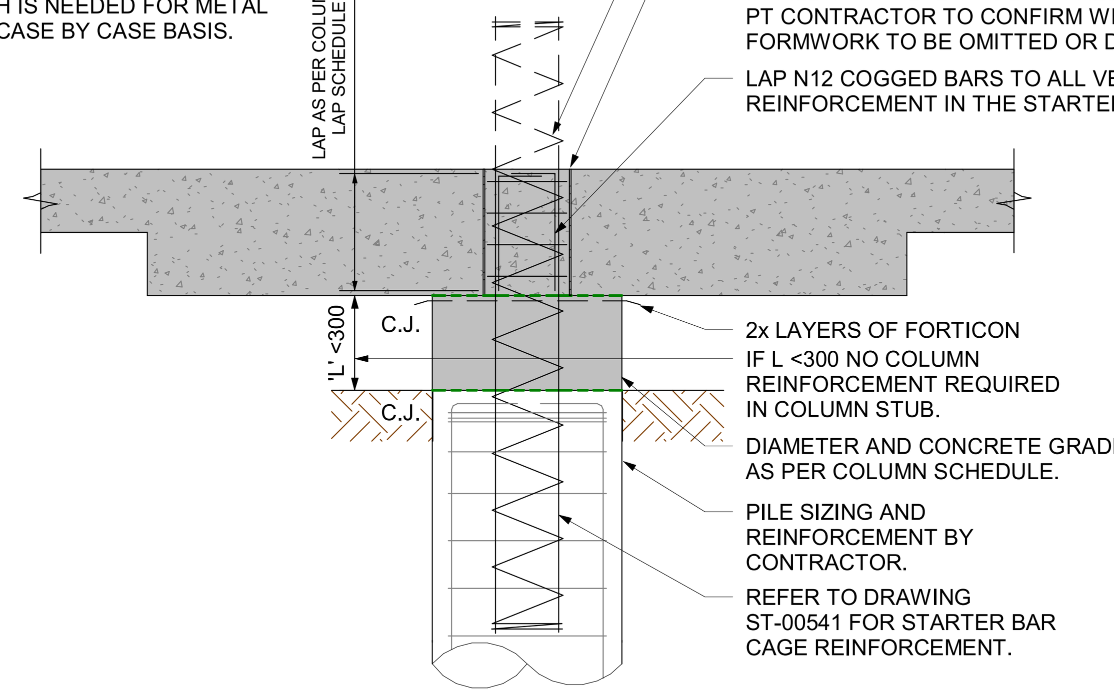
27/10/2021 5:02:52 PM

A1

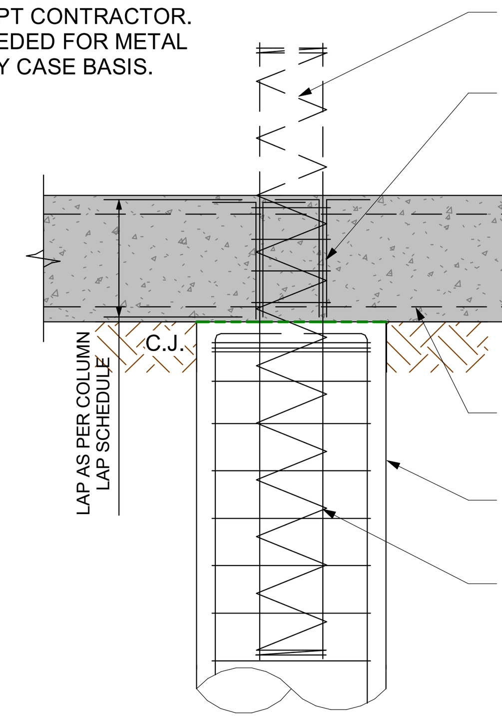
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



PILE TO SLAB CONNECTION
WITH COLUMN ABOVE



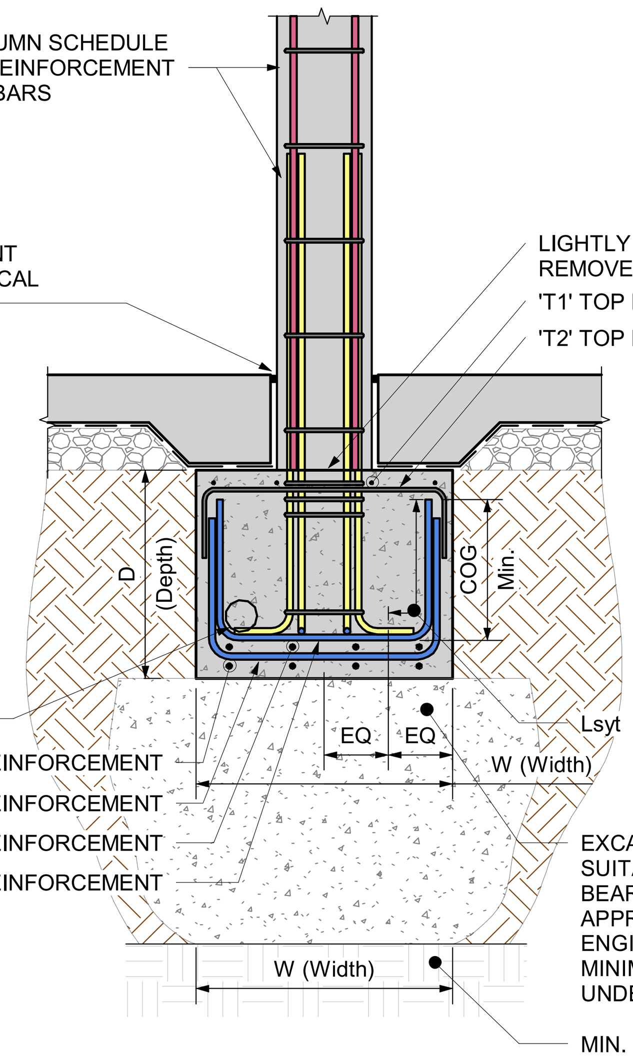
PILE TO SLAB CONNECTION
NO COLUMN ABOVE



PILE TO STRIP FOOTING CONNECTION

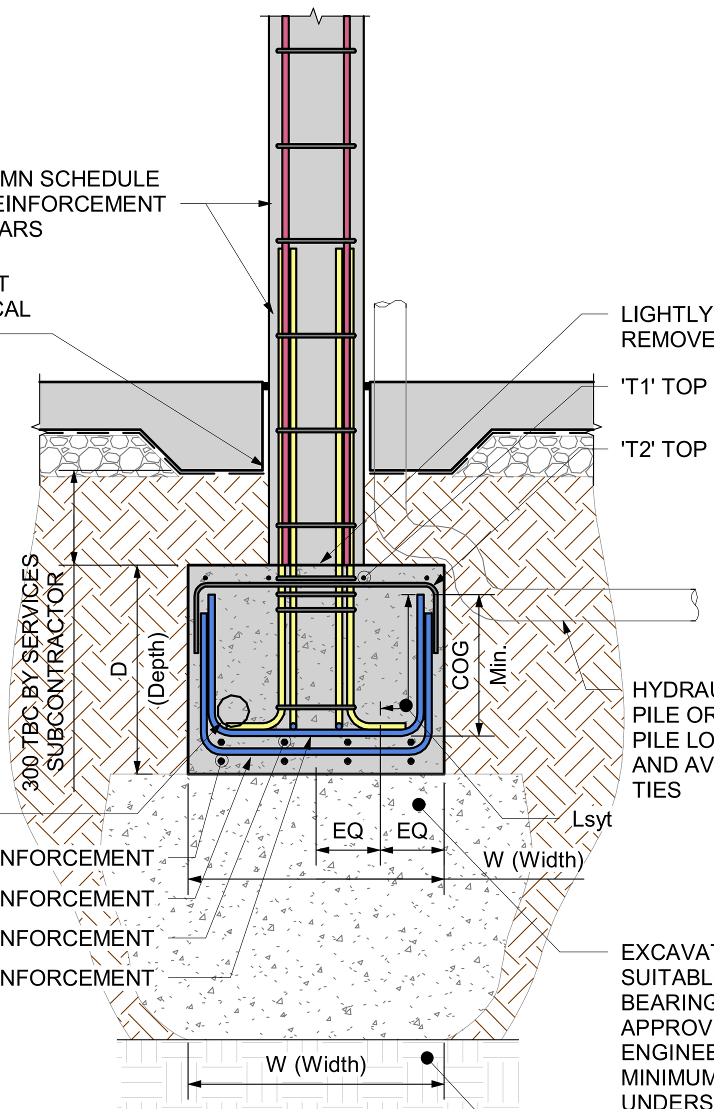
PILE TO BEAM CONNECTION L < 300mm

SCALE 1:20



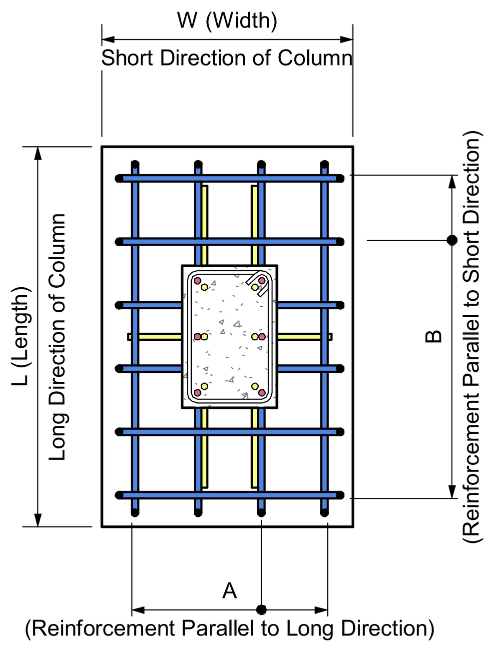
TYPICAL PAD SECTION

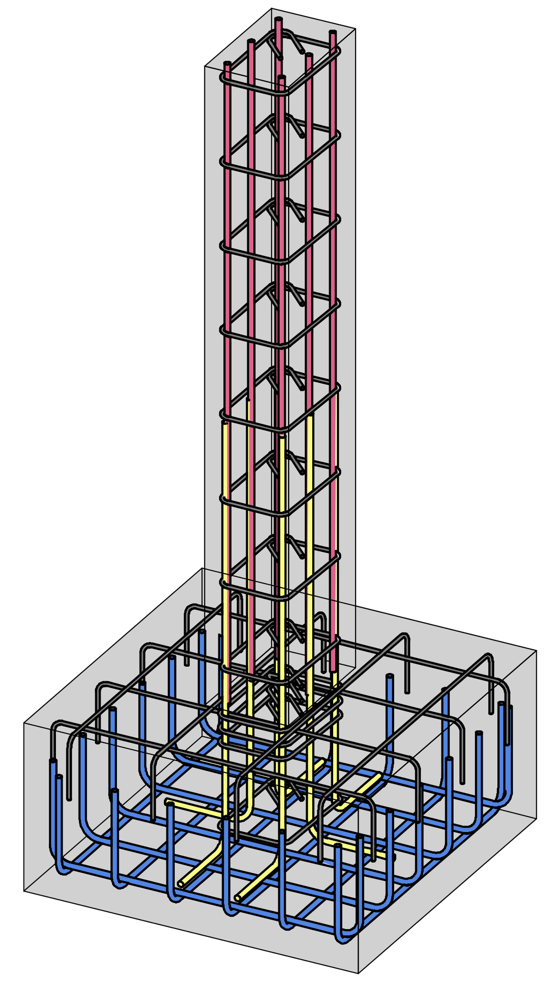
NOTE:
REFER TO FOUNDATION TABLE OPTIONS ON DRAWING ST-00331 FOR PAD FOOTING REINFORCEMENT.



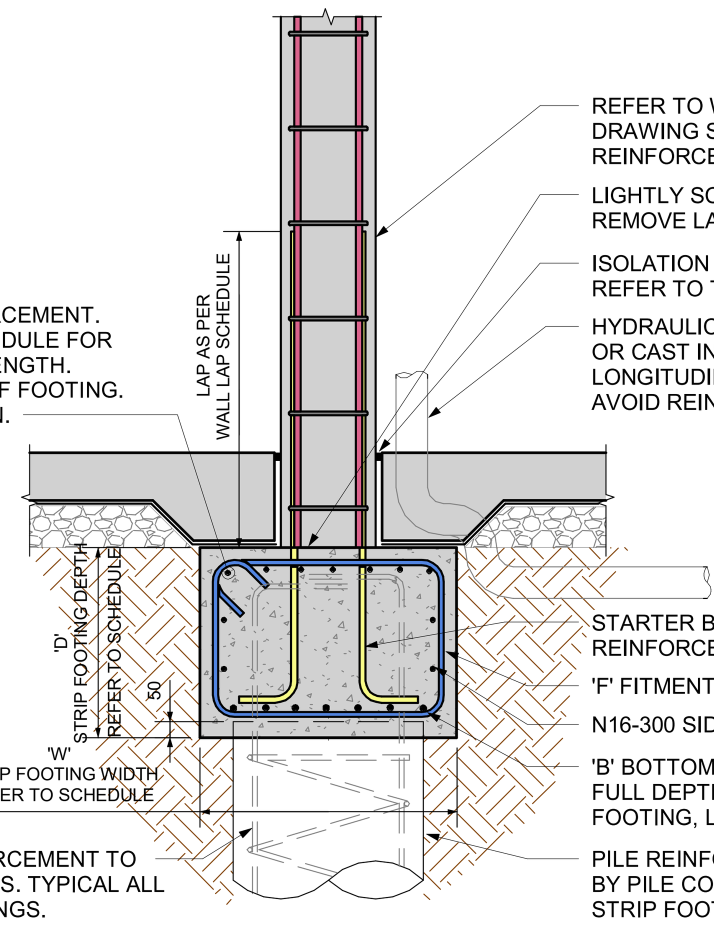
TYPICAL PAD SECTION AT DOWNPIPE LOCATION

NOTE:
REFER TO FOUNDATION TABLE OPTIONS ON DRAWING ST-00331 FOR PAD FOOTING REINFORCEMENT.



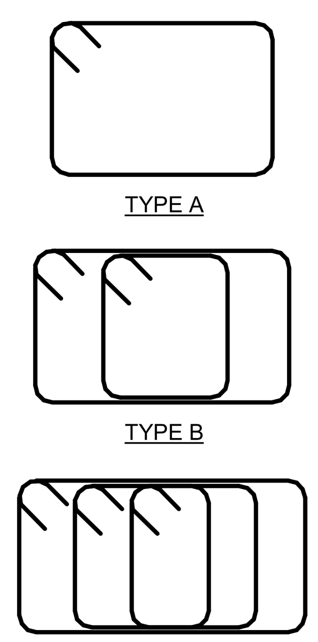


TYPICAL PAD PLAN

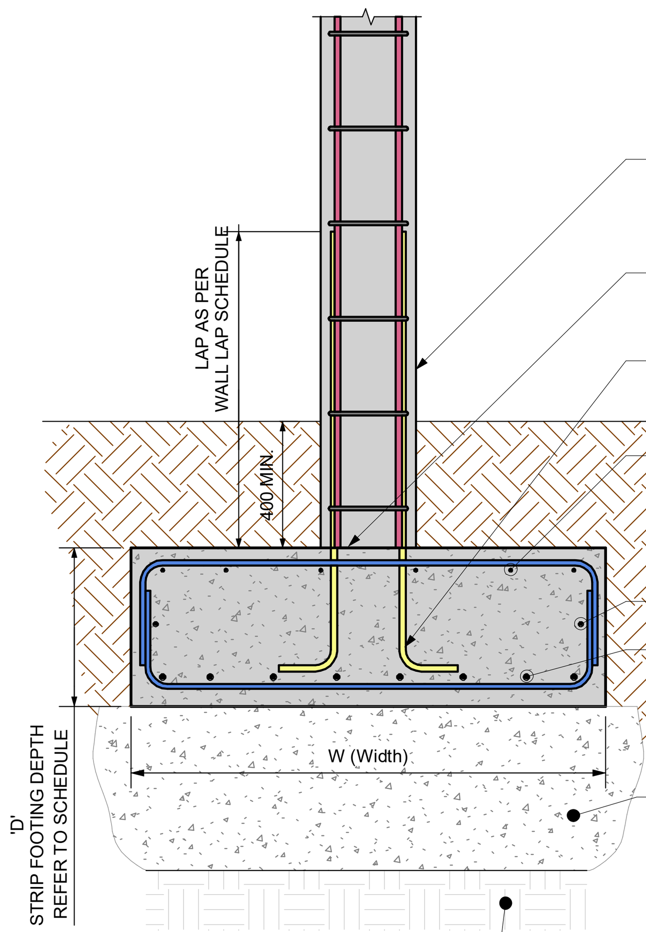


TYPICAL STRIP FOOTING SECTION - TYPE A

NOTE:
- 75mm COVER TYPICAL.



FITMENT TYPES



TYPICAL STRIP FOOTING SECTION - TYPE B

NOTE: 75mm COVER TYPICAL.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL PAD AND STRIP FOOTING DETAILS - SHEET 1

SCALE AT A1: 1 : 20
DRAWN BY: JWR
CHECKED BY: M.O.S

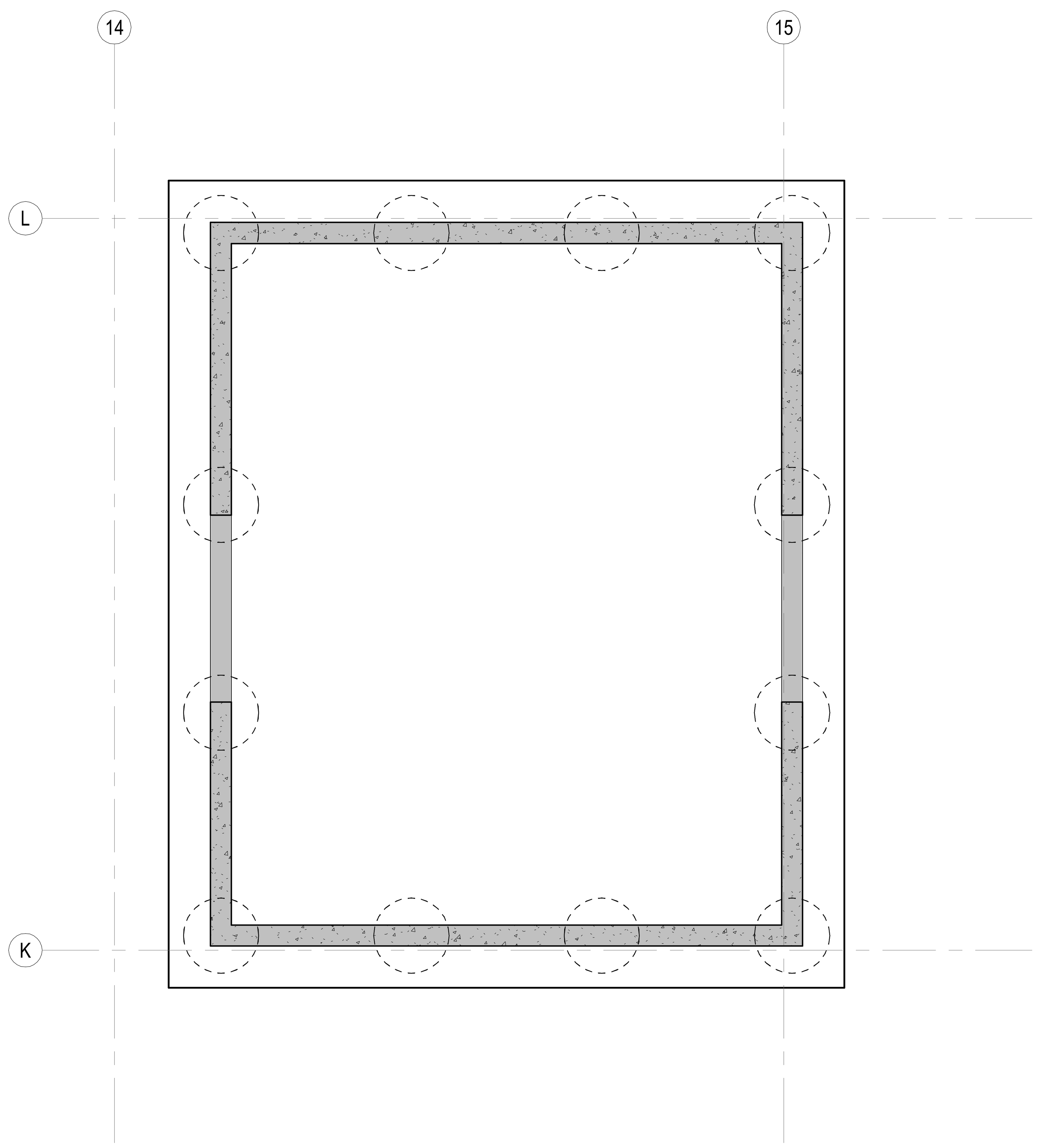
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER ST-003-51
REV. B

27/10/2021 5:03:00 PM

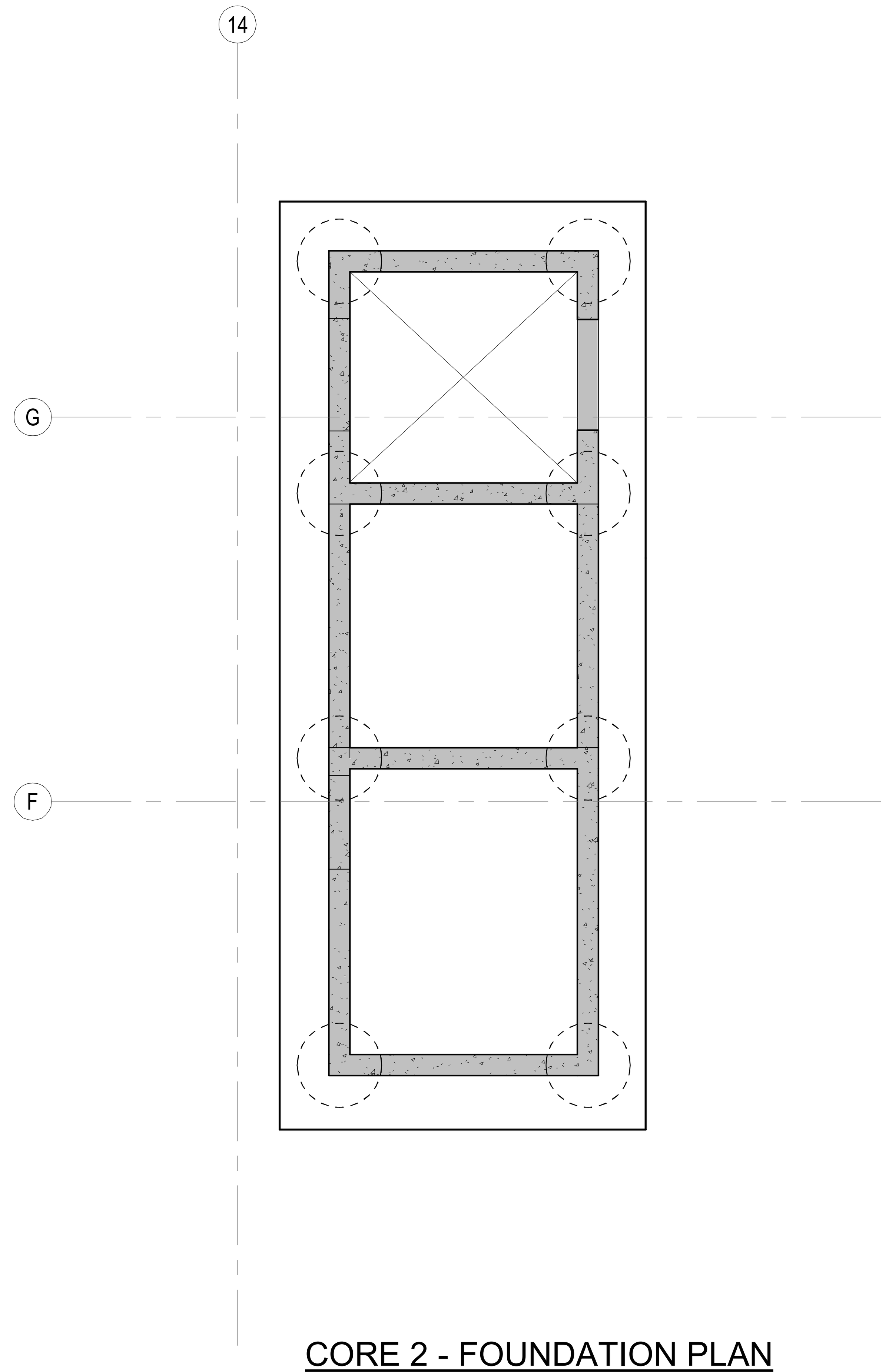
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



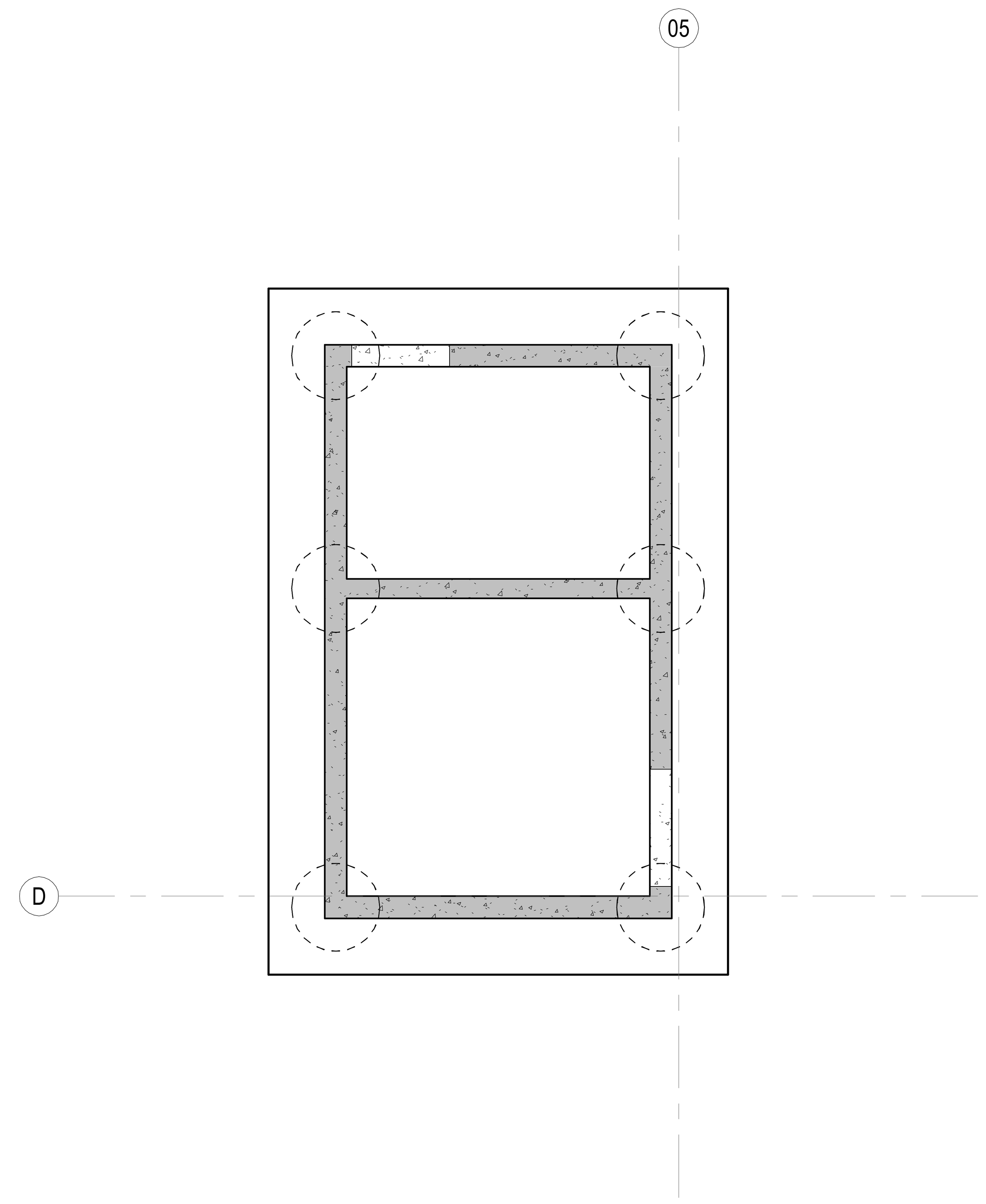
CORE 1 - FOUNDATION PLAN

SCALE: 1 : 50



CORE 2 - FOUNDATION PLAN

SCALE: 1 : 50

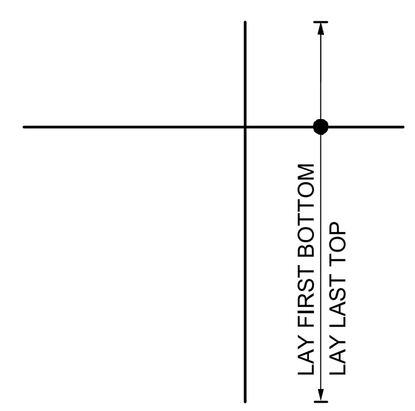


CORE 3 - FOUNDATION PLAN

SCALE: 1 : 50

NOTES:

- REFER TO LIFT SHOP DRAWINGS FOR LIFT CONTRACTOR CAST INS
- REFER TO DRAWING 003-00 FOR FOUNDATION GENERAL ARRANGEMENT
- REFER TO DRAWING ST-003-51 FOR FOUNDATION REINFORCEMENT LAP SCHEDULE
- REFER TO DRAWING ST-003-60 FOR CORE FOUNDATION REINFORCEMENT PLANS
- REFER TO DRAWING ST-003-71 FOR FOUNDATION SECTIONS
- NO WATERPROOF SHEETING TO BE PLACED BETWEEN PILE AND RAFT, REFER TO ARCHITECTURAL DOCUMENTATION FOR WATERPROOFING DETAILS.



BAR LAYING SEQUENCE

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

CORE FOUNDATION REINFORCEMENT PLAN

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

DRAWING NUMBER: ST-003-60

REV.: B

27/10/2021 5:03:05 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

STRUCTURAL COLUMN SCHEDULE

Mark	Base Level	Top Level	Type	Vertical Reinforcement	Concrete Strength	Ties	Reinforcement Arrangement	Top of Column Transition	Column Location Mark
C1	LEVEL 00 BL 01	ROOF LEVEL	600mm						Q-09(-3420)
C2	LEVEL 00 BL 01	ROOF LEVEL	600mm						Q-09(600)
C4	LEVEL 00 BL 01	ROOF LEVEL	450mm						Q(2435)-10
C8	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						Q-11
C9	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						Q-13
C10	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						Q-15
C11	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						P-10
C12	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						P-11
C13	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						P-13
C14	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						P-15
C15	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						O-10
C16	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						O-11
C17	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						O-13
C18	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						O-15
C19	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						N-10
C20	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						N-11
C21	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						N-13
C22	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						N-15
C23	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						M-10
C24	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						M-11
C25	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						M-13
C26	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						M-15
C27	LEVEL 00 BL 01	ROOF LEVEL	350 x 1000mm						L(-225)-10(1100)
C28	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						L-11
C29	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						L(-3625)-15(4205)
C30	LEVEL 00 BL 01	ROOF LEVEL	200 x 800mm						L-12
C31	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						K(4067)-11(485)
C32	LEVEL 00 BL 01	LEVEL 02 BL 02	500mm						K(271)-11(876)
C33	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						K(1692)-12(-3083)
C35	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						K-17
C37	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						J-14
C38	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						J-15(1000)
C39	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						J-17
C40	LEVEL 00 BL 01	LEVEL 02 BL 02	450mm						I-12(-900)
C41	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						I-14
C42	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						I-15(1000)
C43	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						I-17
C44	LEVEL 00 BL 01	ROOF LEVEL	450mm						H-12(-906)
C45	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						H-14
C46	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						H-15(1000)
C47	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						H-17
C48	LEVEL 00 BL 01	ROOF LEVEL	450mm						G(1902)-12(-2765)
C49	LEVEL 00 BL 01	ROOF LEVEL	350 x 1000mm						G(-1100)-04
C50	LEVEL 00 BL 01	ROOF LEVEL	450mm						G-06
C51	LEVEL 00 BL 01	ROOF LEVEL	450mm						G-07
C52	LEVEL 00 BL 01	ROOF LEVEL	450mm						G(-900)-09
C53	LEVEL 00 BL 01	ROOF LEVEL	450mm						G(-795)-11
C54	LEVEL 00 BL 01	ROOF LEVEL	350 x 600mm						F-03(-2125)
C55	LEVEL 00 BL 01	ROOF LEVEL	350 x 600mm						F-04
C56	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						F-05
C57	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						F-06
C58	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						F-07
C59	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						F-08
C60	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						F-09

STRUCTURAL COLUMN SCHEDULE

Mark	Base Level	Top Level	Type	Vertical Reinforcement	Concrete Strength	Ties	Reinforcement Arrangement	Top of Column Transition	Column Location Mark
C61	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						F-11
C62	LEVEL 01 BL 02	LEVEL 02 BL 02	450 x 450mm						F-12
C62	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						F-12
C63	LEVEL 00 BL 01	ROOF LEVEL	600mm						F-15(2023)
C64	LEVEL 00 BL 01	ROOF LEVEL	600mm						F(-4020)-03(500)
C65	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						E-05
C66	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						E-06
C67	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						E-07
C68	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						E-08
C69	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						E-09
C70	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						E-11
C71	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						E-12
C73	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						D-06
C74	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						D-07
C75	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						D-08
C76	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						D-09
C77	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						D-11
C78	LEVEL 00 BL 01	ROOF LEVEL	450 x 450mm						D-12
C79	LEVEL 00 BL 01	LEVEL 02 BL 02	500mm						K(-3169)-11(-1205)
C80	LEVEL 00 BL 01	ROOF LEVEL	450mm						G(-795)-08
C90	LEVEL 00 BL 01	ROOF LEVEL	500mm STUB						E-04(2800)
C91	LEVEL 00 BL 01	ROOF LEVEL	500mm STUB						F-04(2800)
C92	LEVEL 00 BL 01	ROOF LEVEL	500mm STUB						Q(-2467)-10

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

COLUMN SCHEDULE

SCALE AT A1:
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

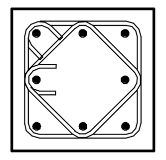
PRELIMINARY

DRAWING NUMBER: ST-005-01

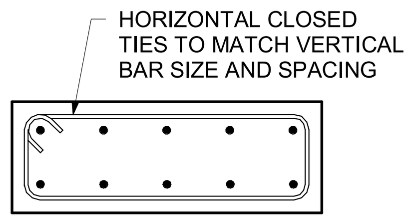
REV. B

27/10/2021 5:03:09 PM

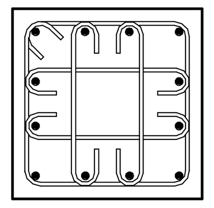
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



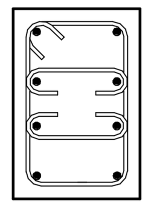
TYPE A



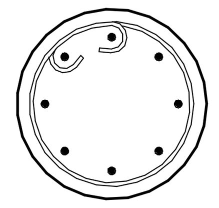
TYPE B



TYPE C

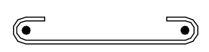
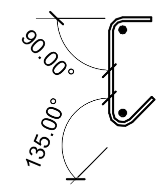


TYPE D



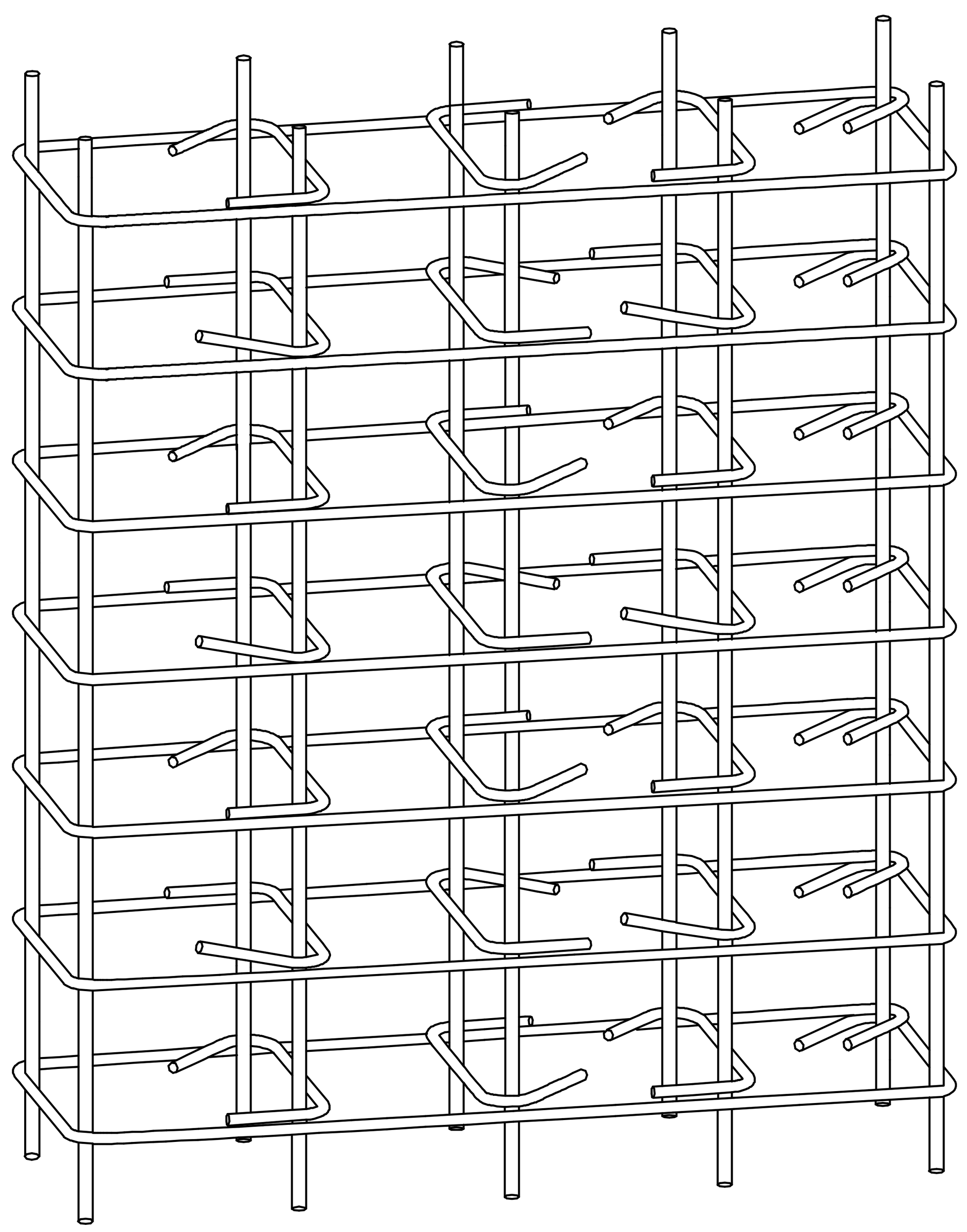
TYPE E

REFER TO COLUMN SCHEDULE FOR COLUMN SIZE AND REINFORCEMENT

TYPICAL SECONDARY TIES	
OPTION 1	OPTION 2
	 (COLUMN TIE ARRANGEMENT MUST ALTERNATE HORIZONTALLY AND VERTICALLY SEE 3D IMAGE)

COL TYPE	BAR SIZE	STARTER BAR LAP LENGTH
1	N16	650
2	N20	850
3	N24	1000
4	N28	1250
5	N32	1500

- COG LENGTH DEFINED BY AS3600



SECONDARY COLUMN TIES TO ALTERNATE HORIZONTALLY AND VERTICALLY

OPTION 2 COLUMN TIE ARRANGEMENT

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
COLUMN DETAILS

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

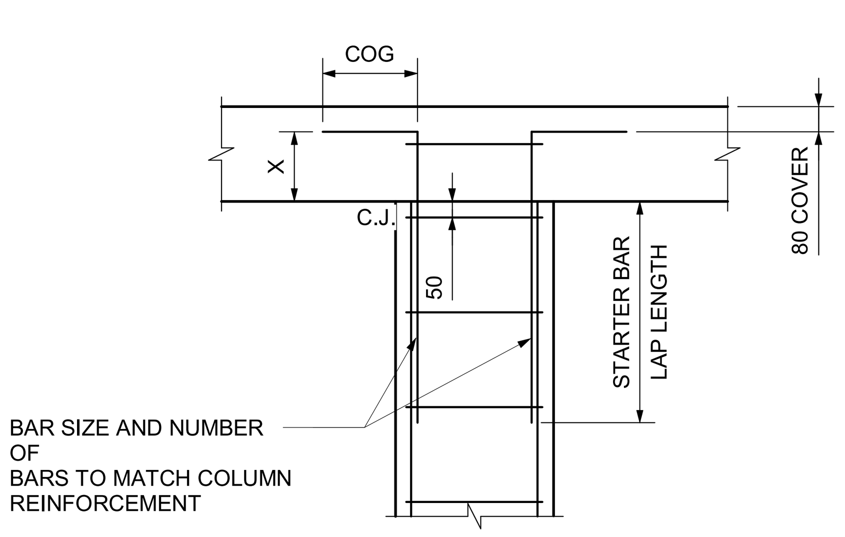
DRAWING NUMBER
ST-005-31

REV.
B

27/10/2021 5:03:14 PM

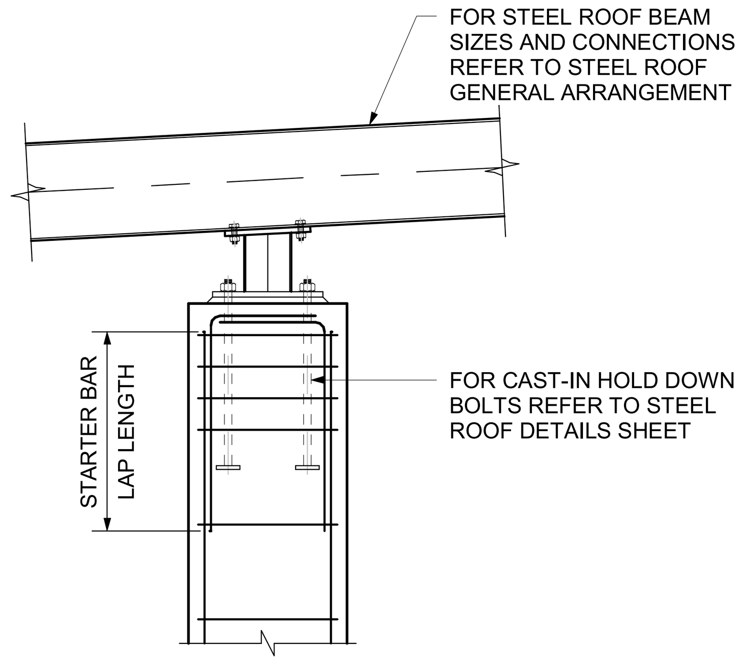
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

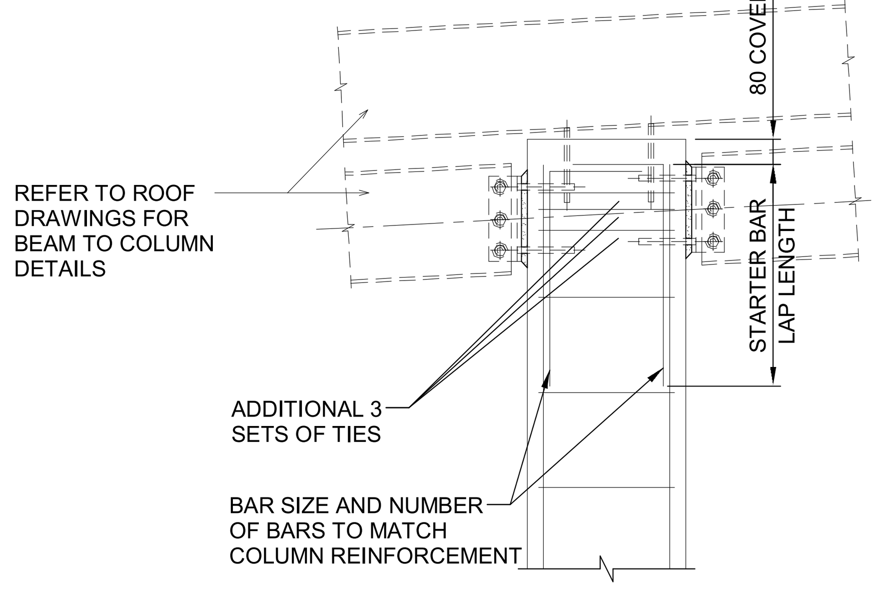


NOTE:
COGS FOR TERMINATING COLUMN REINFORCEMENT
CAN BE OMITTED WHERE X >=Lsyt

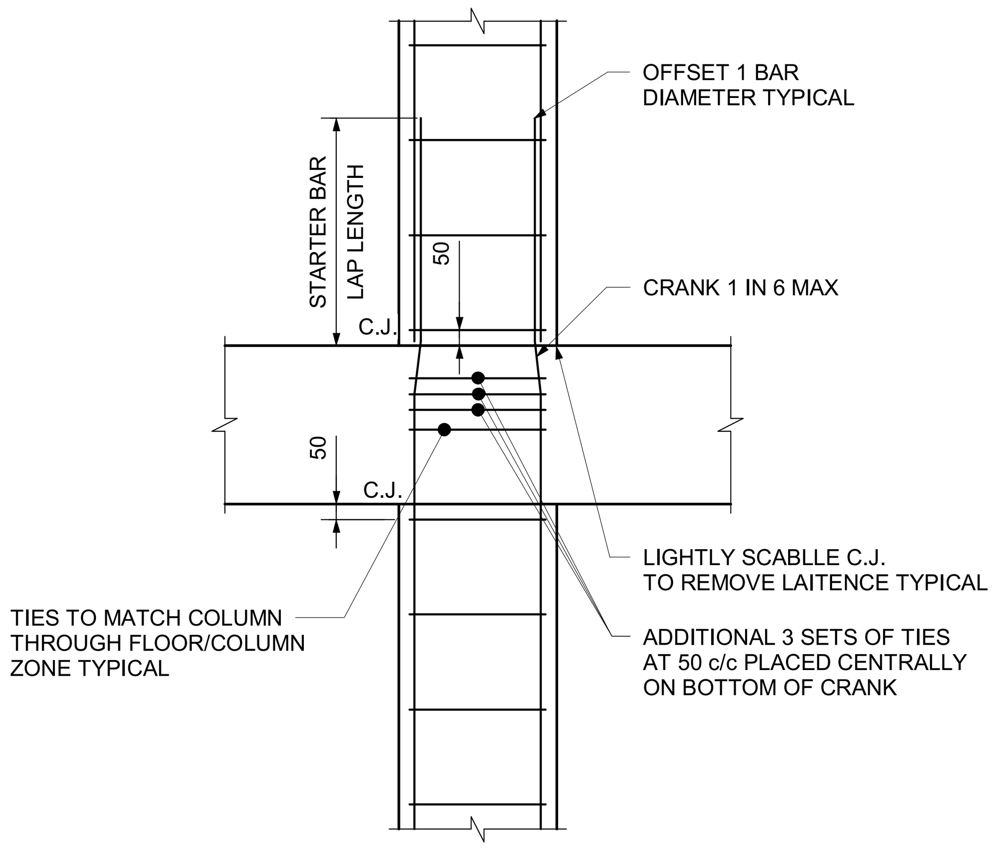
SPLICE DETAIL TYPE 5
TYPICAL TERMINATING COLUMN DETAIL



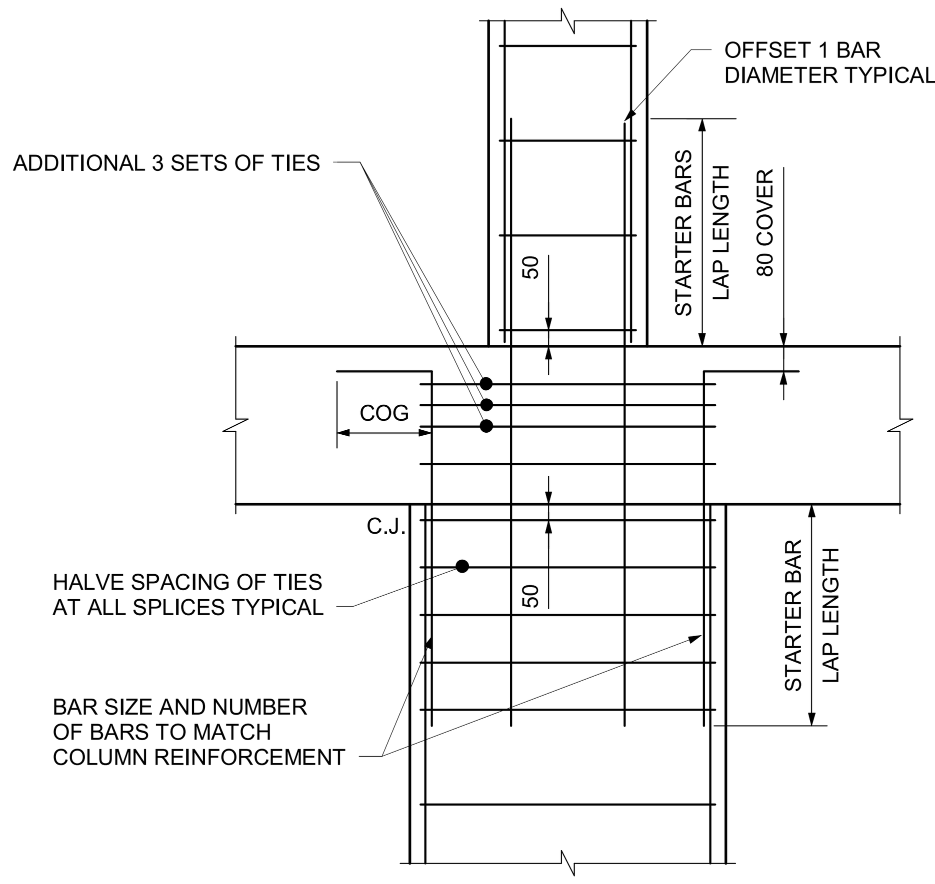
SPLICE DETAIL TYPE 6
TYPICAL COLUMN TO STEEL ROOF DETAIL



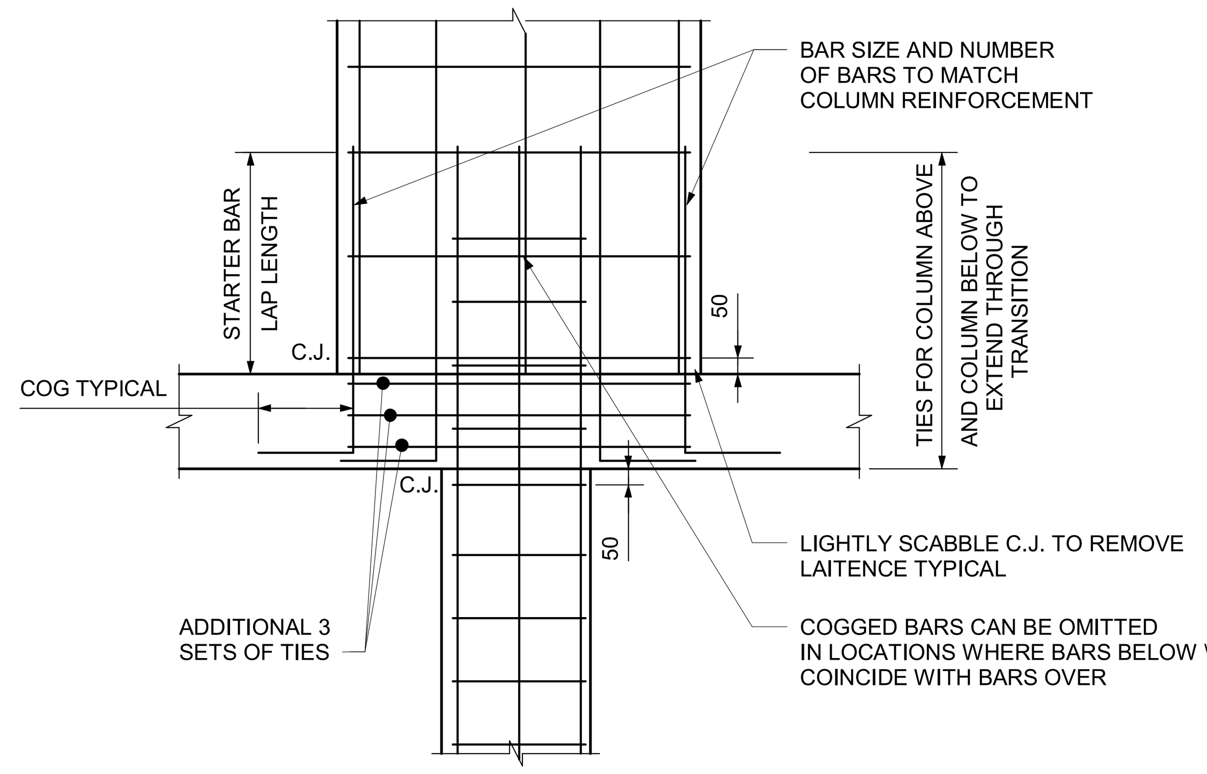
SPLICE DETAIL TYPE 7
TYPICAL TERMINATING COLUMN DETAIL



SPLICE DETAIL TYPE 2
TYPICAL CONTINUOUS COLUMN DETAIL

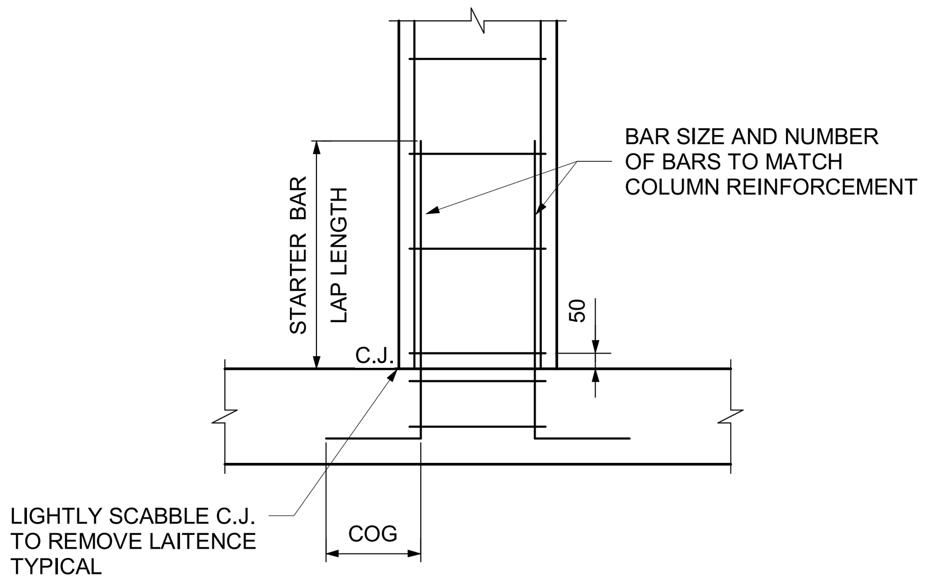


SPLICE DETAIL TYPE 3

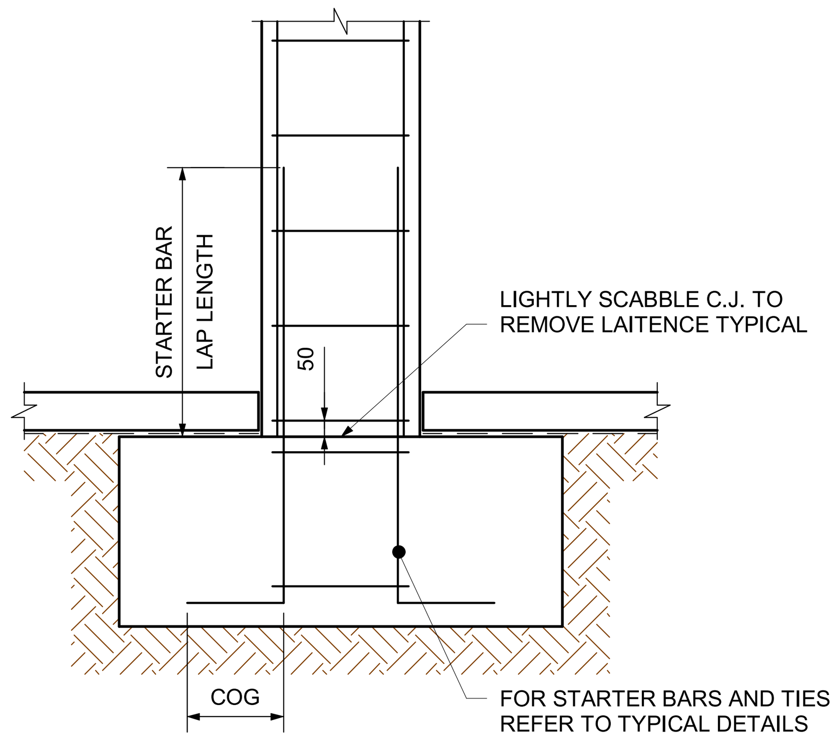


TYPICAL COG LENGTH = 400mm

SPLICE DETAIL TYPE 4
LONG FACE OF COLUMN ELEVATED



SPLICE DETAIL TYPE 1
TYPICAL COLUMNS STARTER DETAIL
SLAB/BEAM



TYPICAL STARTER DETAIL - PADS
REFER TO TYPICAL DETAIL
ON DRAWING ST-003-31

27/10/2021 5:03:18 PM

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
COLUMN TRANSITION DETAILS

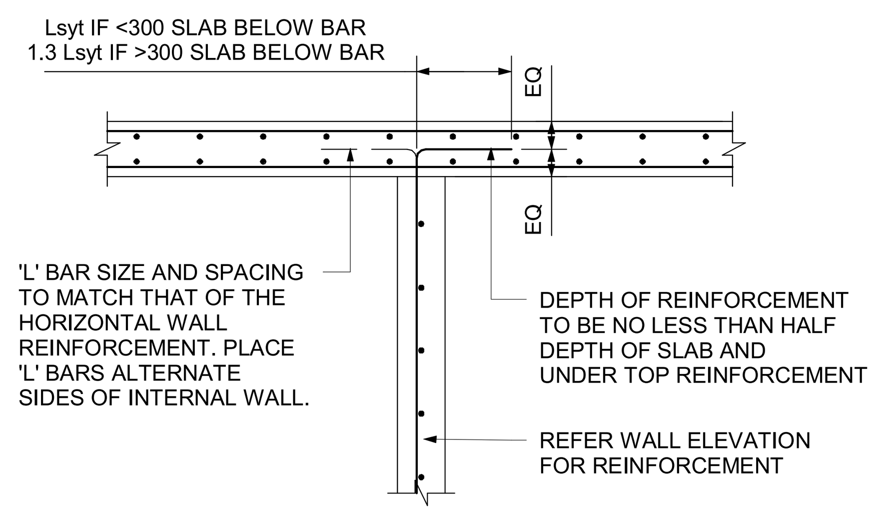
SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

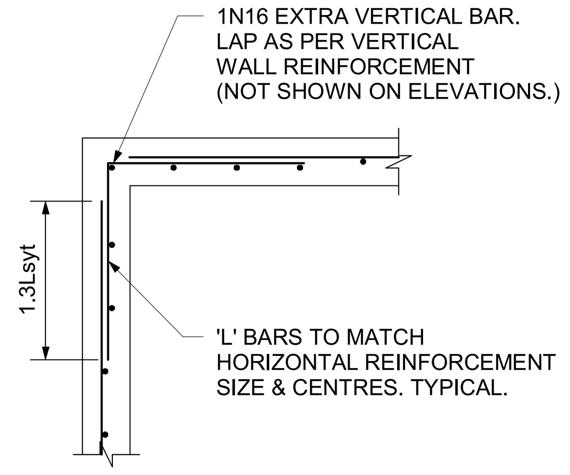
DRAWING NUMBER
ST-005-41

REV.
B

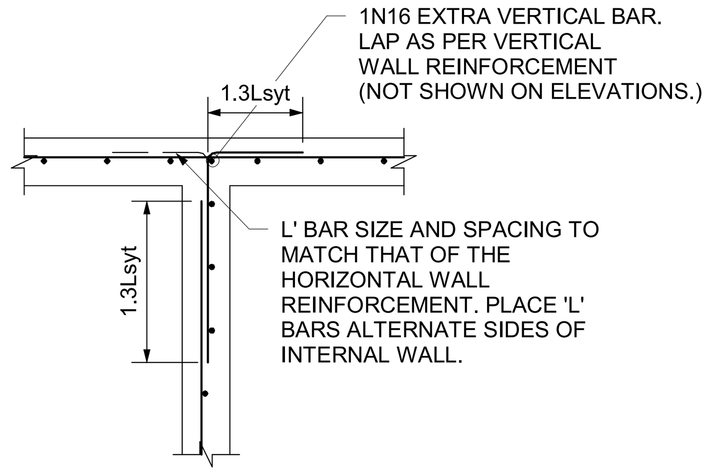
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



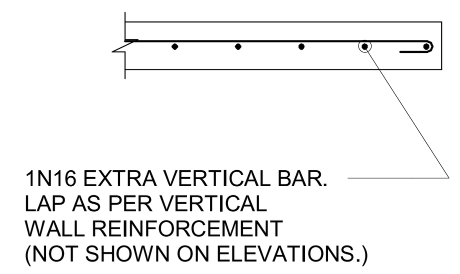
TYPICAL WALL REINFORCEMENT AT TOP OF WALL (SINGLE LAYER REINFORCEMENT)



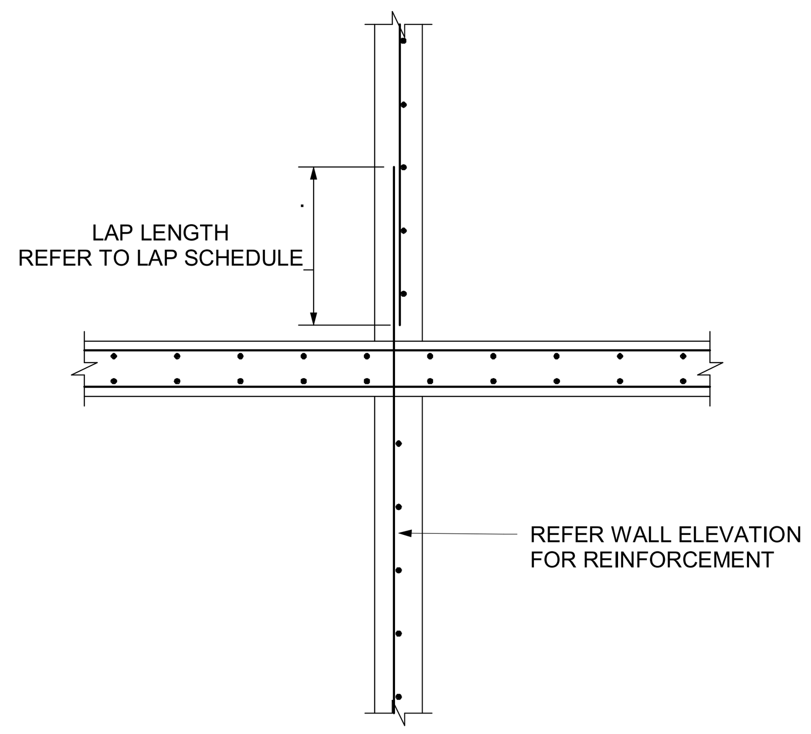
TYPICAL CORNER DETAIL (SINGLE LAYER REINFORCEMENT)



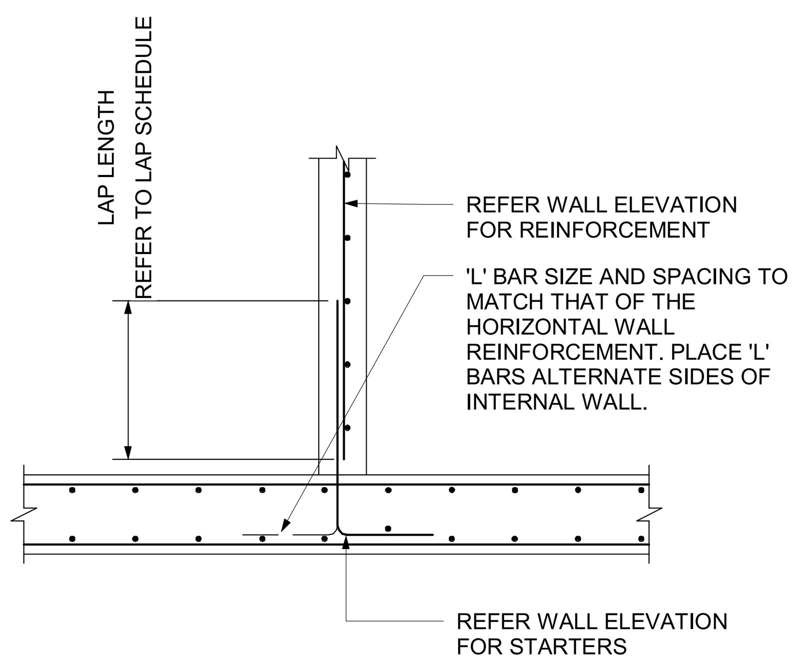
TYPICAL 'T' INTERSECTION DETAIL (SINGLE LAYER REINFORCEMENT)



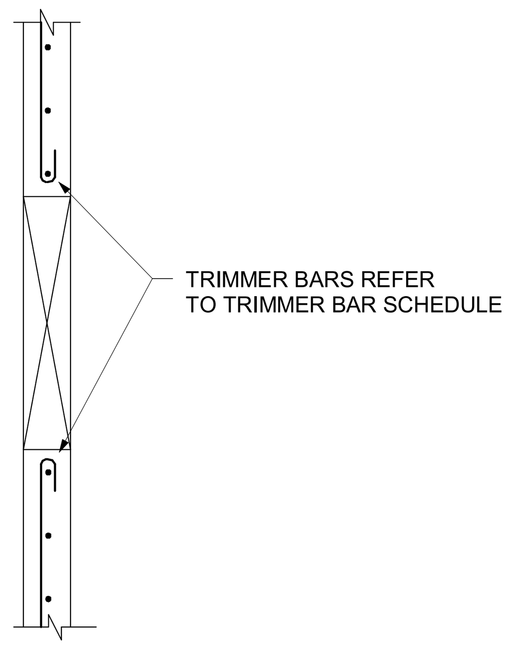
END OF WALL, EDGE OF PENETRATION OR TOP OF WALL DETAIL (SINGLE LAYER REINFORCEMENT)



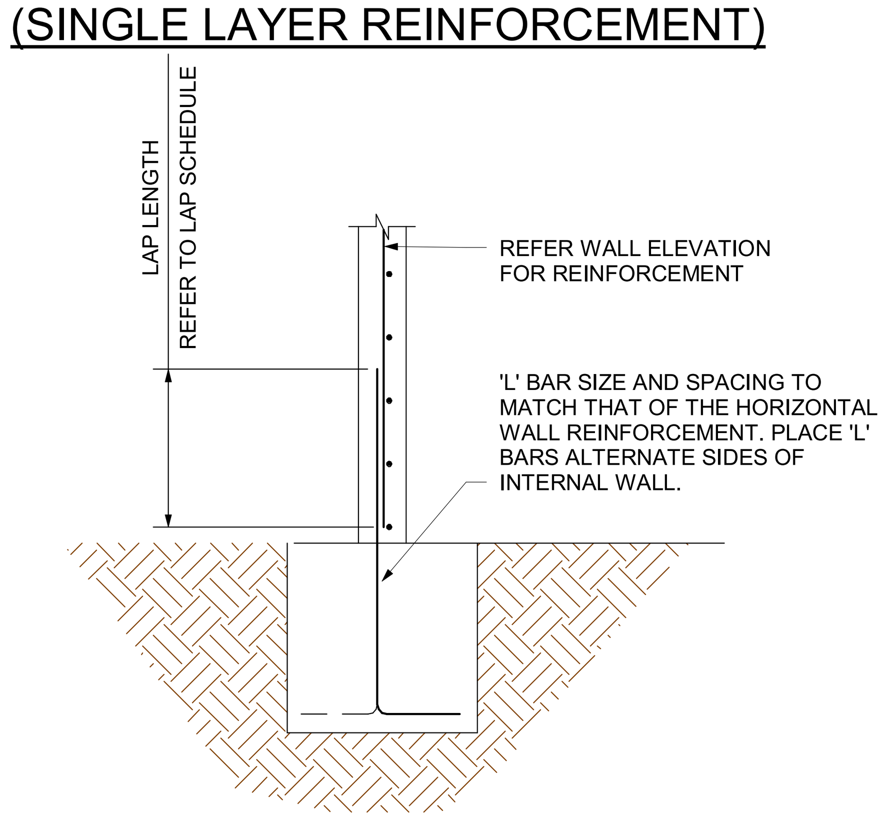
TYPICAL WALL REINFORCEMENT SPLICE DETAIL (SINGLE LAYER REINFORCEMENT)



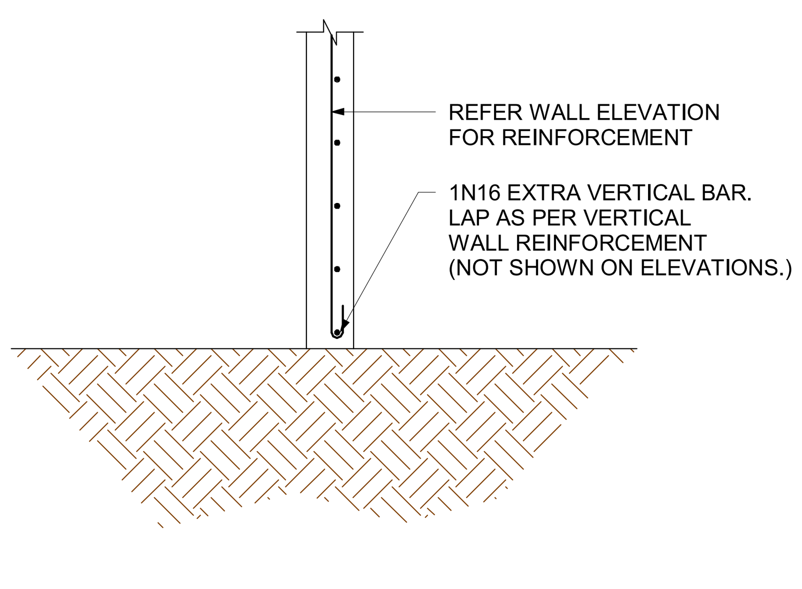
TYPICAL WALL REINFORCEMENT STARTER DETAIL (SINGLE LAYER REINFORCEMENT)



PENETRATION SECTION DETAIL (150 THICK WALL)



TYPICAL WALL REINFORCEMENT STARTER DETAIL AT GROUND (SINGLE LAYER REINFORCEMENT)



TYPICAL WALL REINFORCEMENT STARTER DETAIL AT GROUND (SINGLE LAYER REINFORCEMENT)

30mm COVER TO WALL REINFORCEMENT LAP SCHEDULE

	f'c=32MPa		f'c=40MPa		f'c=50MPa		f'c=65MPa		f'c=80MPa		f'c=100MPa	
SIZE	Lsyt	1.3Lsyt	Lsyt	1.3Lsyt	Lsyt	1.3Lsyt	Lsyt	1.3Lsyt	Lsyt	1.3Lsyt	Lsyt	1.3Lsyt
N10	350	450	300	400	300	400	300	400	300	400	300	400
N12	450	600	400	500	350	500	350	500	350	500	350	500
N16	700	900	600	800	550	700	500	650	500	650	500	650
N20	950	1200	850	1100	750	950	650	850	650	850	650	850
N24	1200	1550	1100	1400	950	1250	850	1100	850	1100	850	1100
N28	1500	1950	1350	1750	1200	1550	1050	1350	1050	1350	1050	1350
N32	1800	2300	1600	2100	1450	1850	1250	1650	1250	1650	1250	1650
N36	2100	2700	1900	2450	1700	2200	1500	1900	1500	1900	1500	1900
N40	2450	3150	2150	2800	1950	2500	1700	2200	1700	2200	1700	2200

* USE 1.3Lsyt FOR ALL HORIZONTAL REINFORCEMENT WHEN MORE THAN 300mm OF CONCRETE IS CAST BELOW THE BAR

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL R.C. WALL DETAILS

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

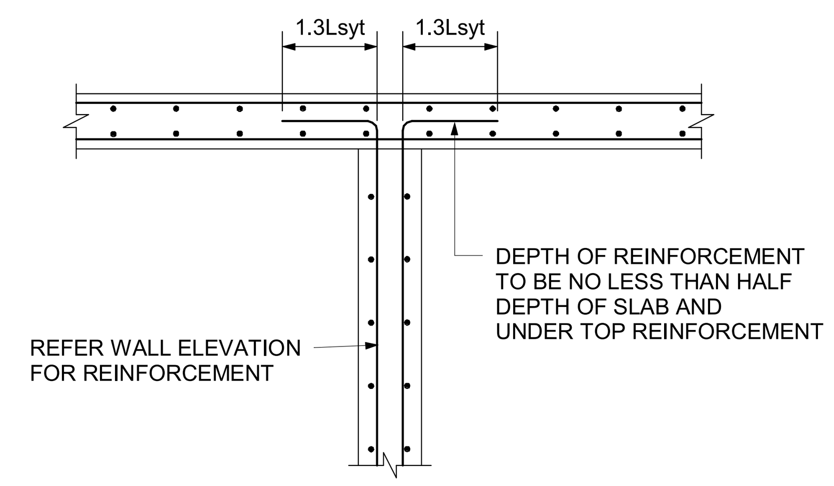
DRAWING NUMBER
ST-005-51

REV.
B

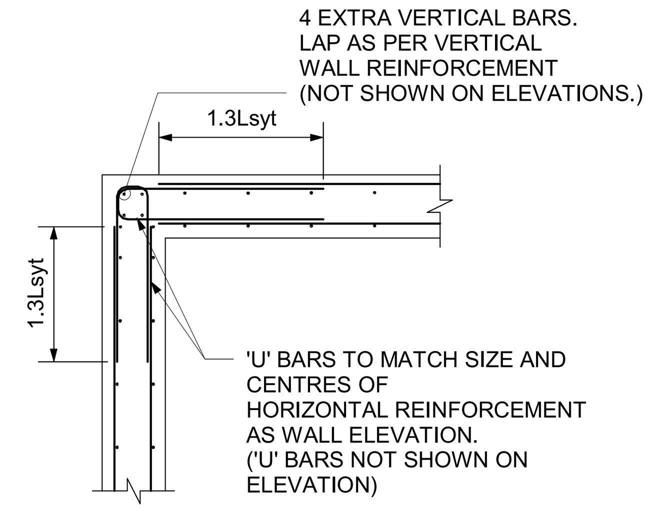
27/10/2021 5:03:22 PM

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

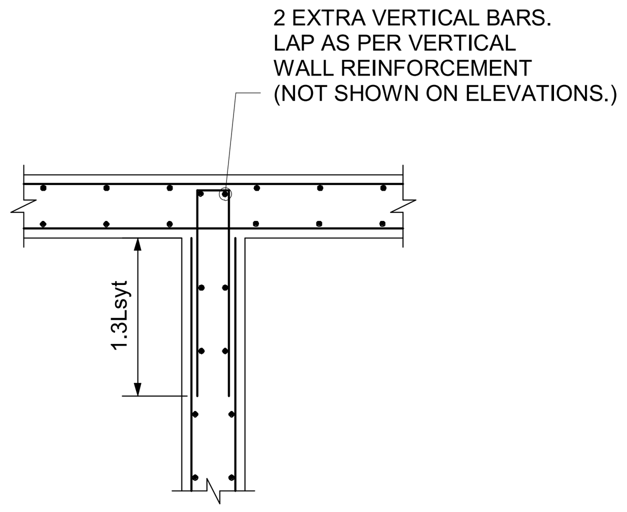
A1



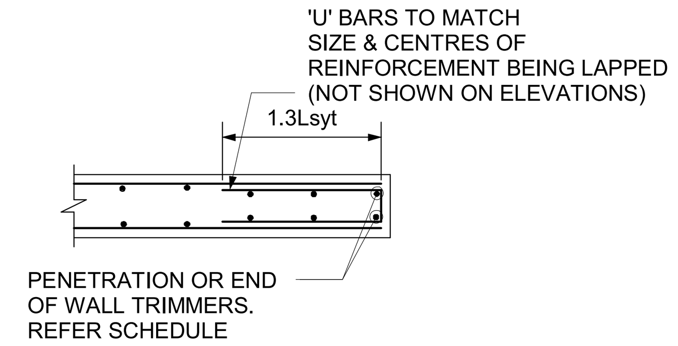
TYPICAL TOP OF WALL REINFORCEMENT (DOUBLE LAYER REINFORCEMENT)



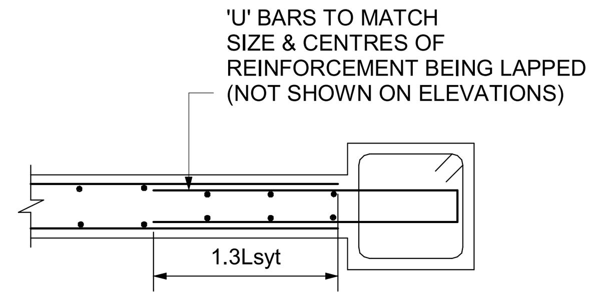
TYPICAL CORNER DETAIL (DOUBLE LAYER REINFORCEMENT)



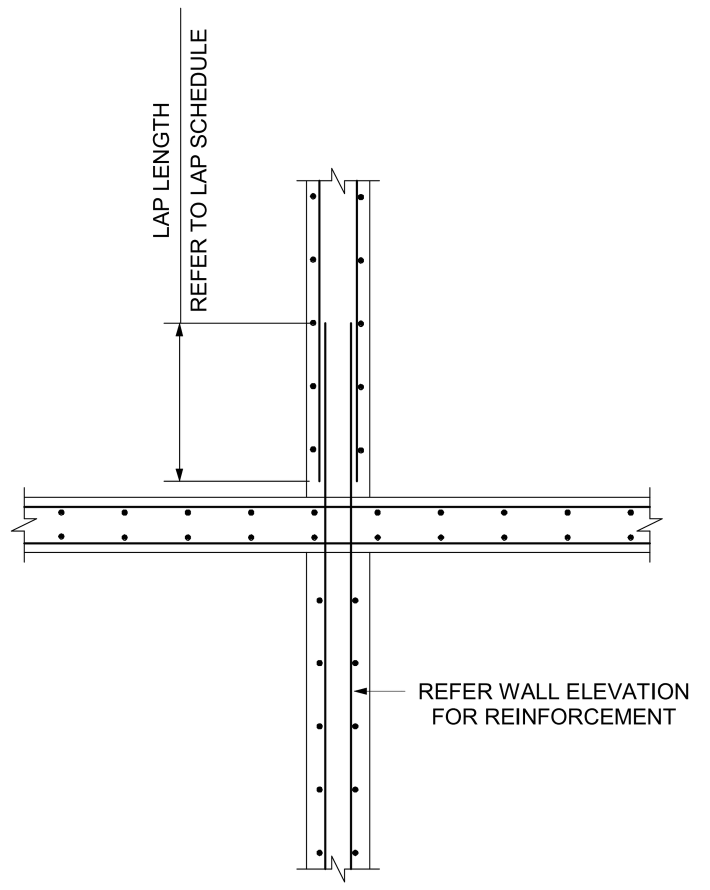
TYPICAL 'T' INTERSECTION DETAIL (DOUBLE LAYER REINFORCEMENT)



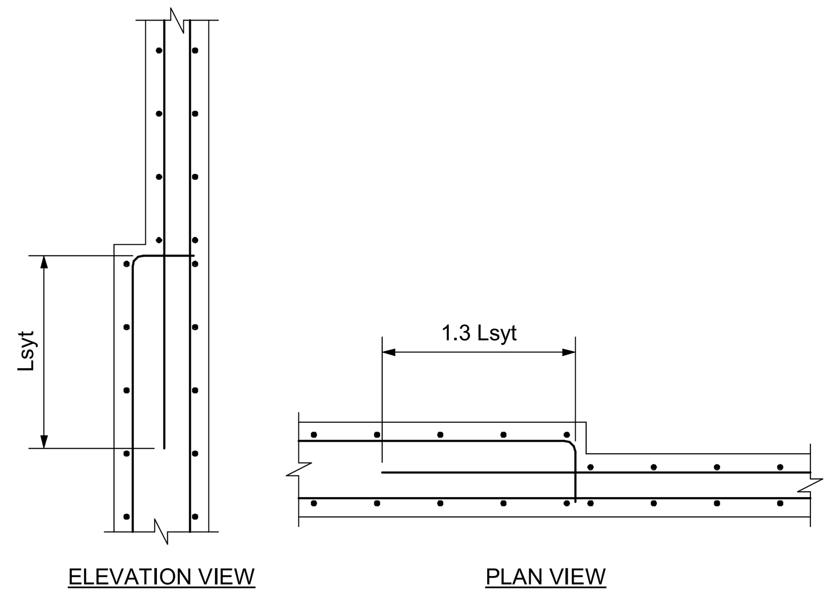
END OF WALL, EDGE OF PENETRATION OR TOP OF WALL DETAIL (DOUBLE LAYER REINFORCEMENT)



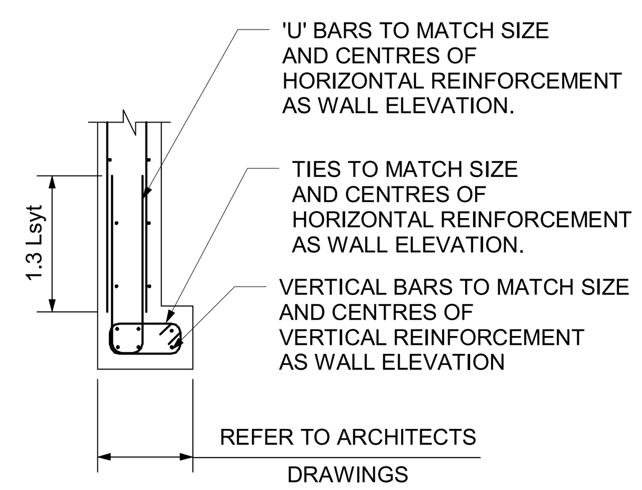
TYPICAL WALL TO COLUMN (DOUBLE LAYER REINFORCEMENT)



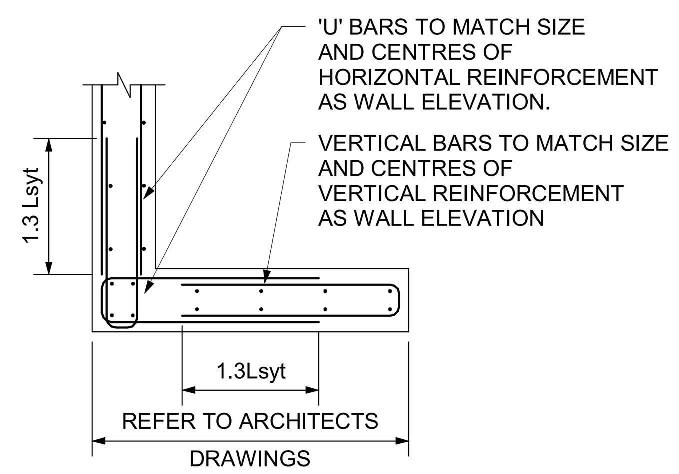
TYPICAL WALL REINFORCEMENT SPLICE DETAIL (DOUBLE LAYER REINFORCEMENT)



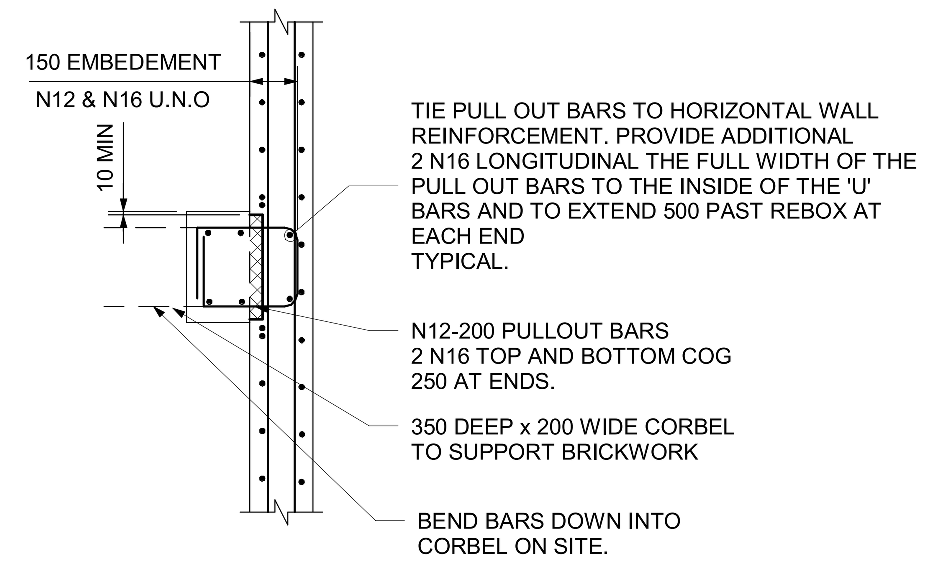
TYPICAL REDUCTION IN WALL THICKNESS DETAILS



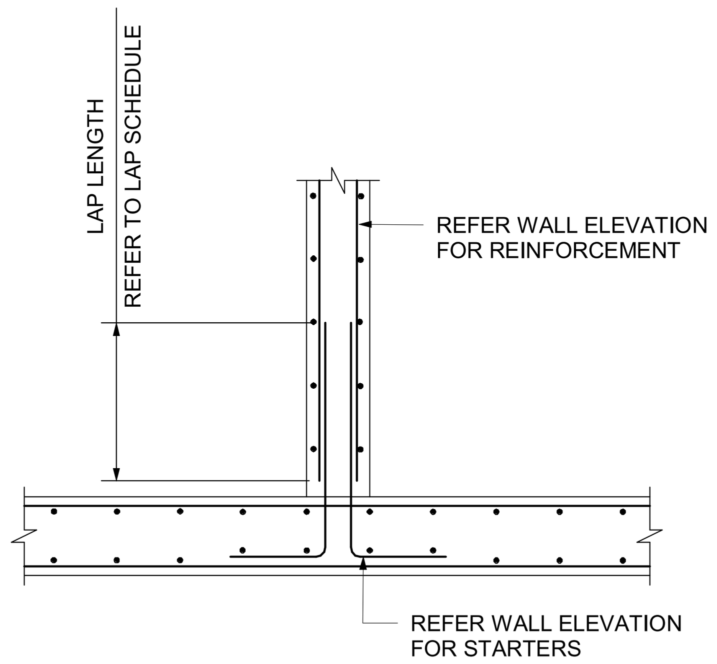
RETURN WHERE 1.3Lsyt LAP CANNOT BE ACHIEVED



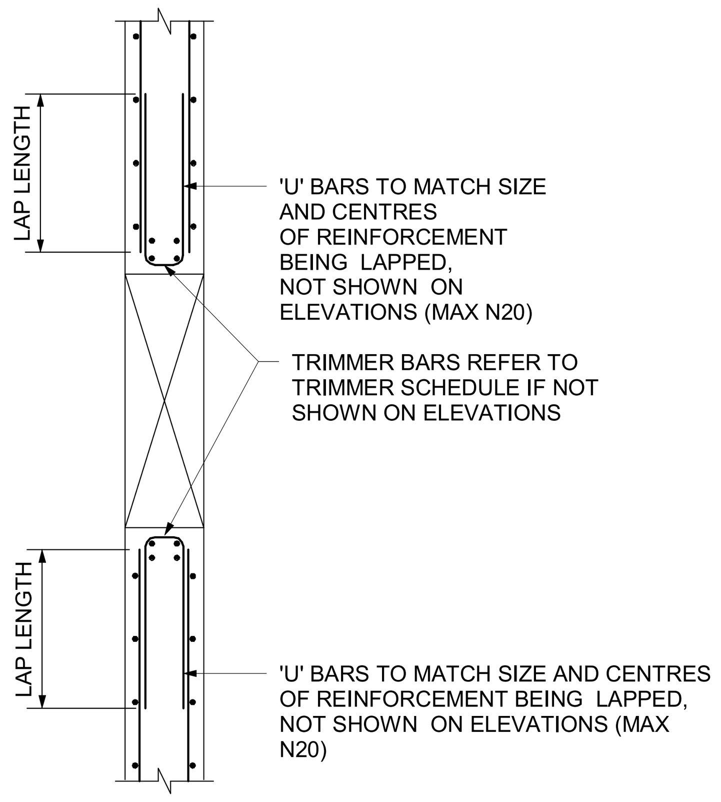
RETURN WHERE 1.3Lsyt LAP CAN BE ACHIEVED



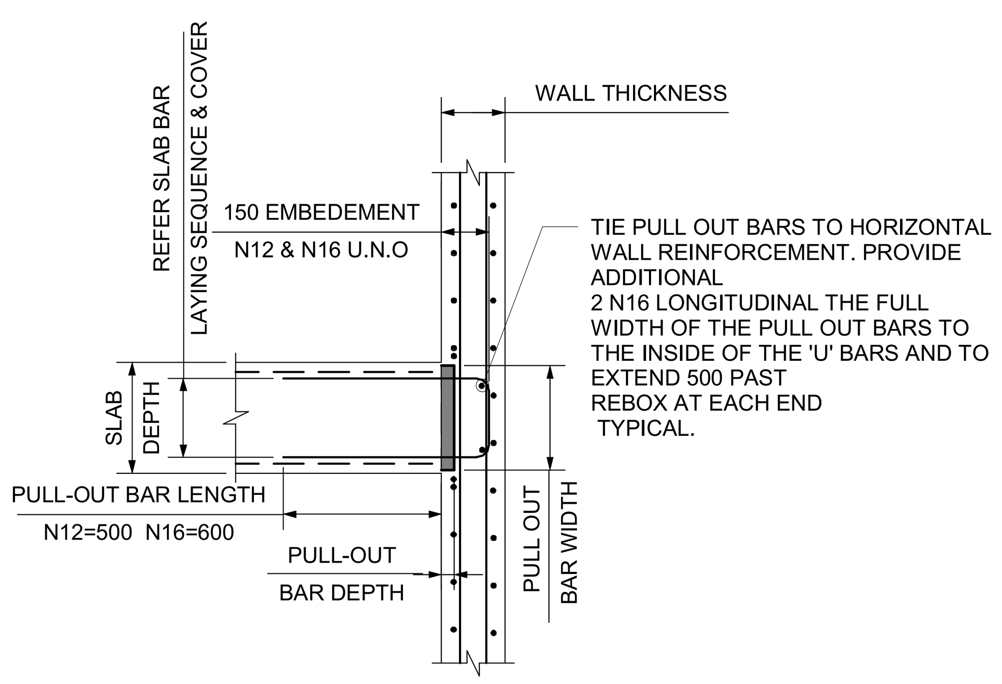
TYPICAL CORBEL DETAIL TO SUPPORT BRICKWORK



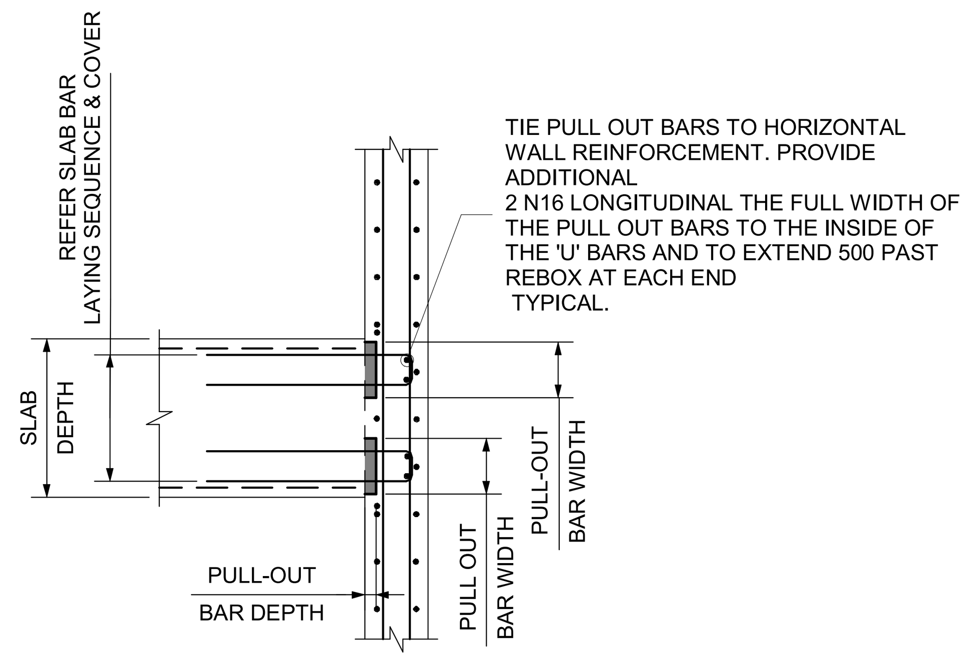
TYPICAL WALL REINFORCEMENT STARTER DETAIL (DOUBLE LAYER REINFORCEMENT)



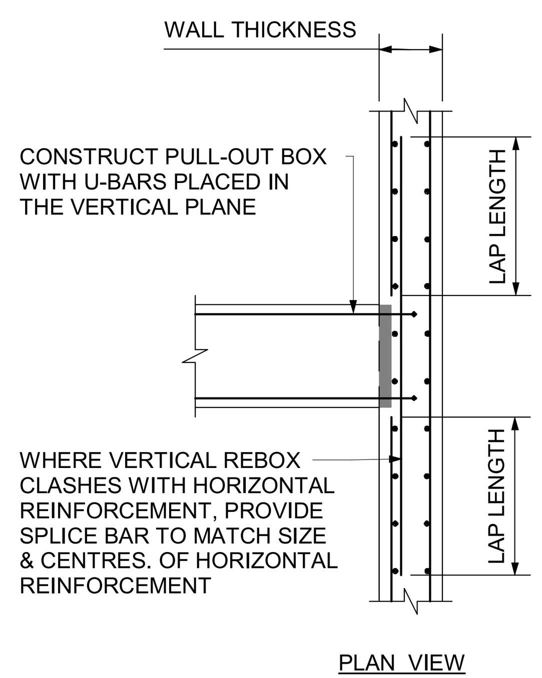
PENETRATION SECTION DETAIL (DOUBLE LAYER REINFORCEMENT)



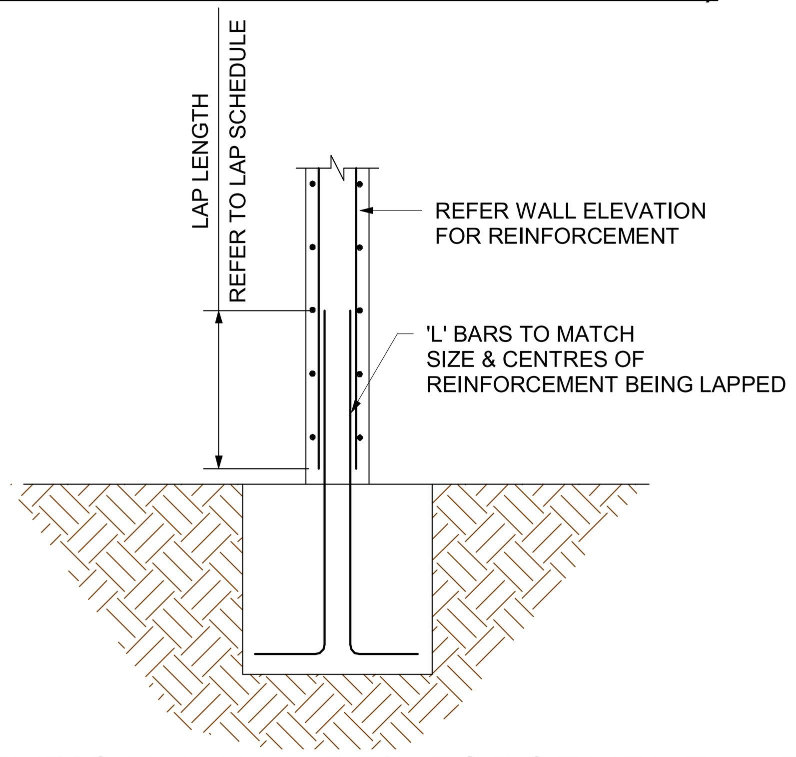
PULL-OUT BAR TYPE 1 DETAIL



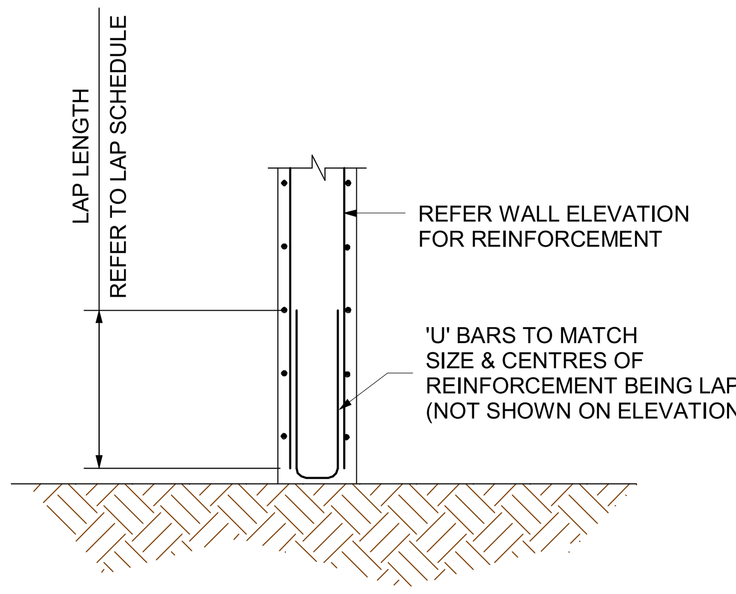
PULL-OUT BAR TYPE 2 DETAIL



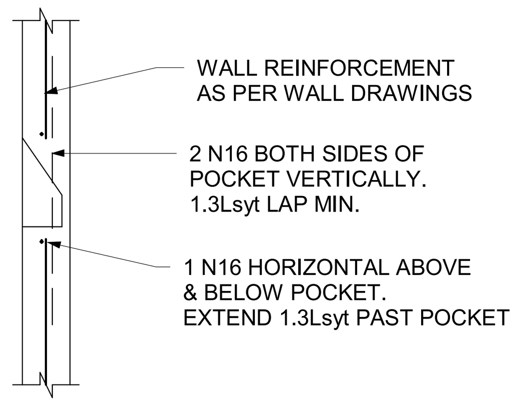
VERTICAL PULL-OUT BAR DETAIL



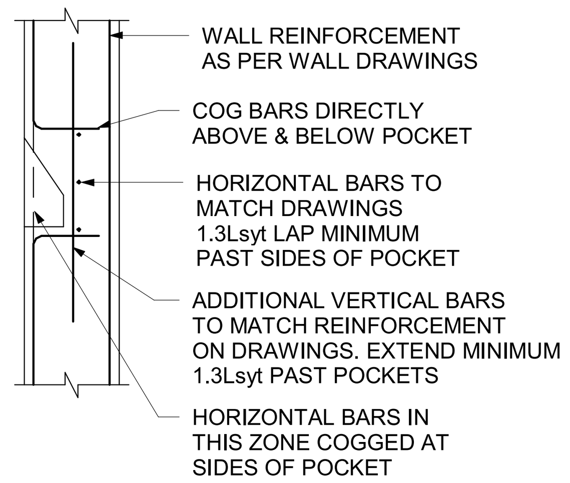
TYPICAL WALL REINFORCEMENT STARTER DETAIL AT GROUND (DOUBLE LAYER REINFORCEMENT)



TYPICAL WALL REINFORCEMENT STARTER DETAIL AT GROUND (DOUBLE LAYER REINFORCEMENT)



INDICATIVE SECTION AT JUMPFORM POCKET 150 THICK WALL



INDICATIVE SECTION AT JUMPFORM POCKET 300 THICK WALL

PULL OUT BAR SCHEDULE			
SLAB DEPTH (mm)	PULL OUT TYPE	PULL OUT DIMENSIONS	
130		WIDTH	DEPTH
130	1	110	35
150	1	125	35
200	1	175	40
250	1	235	40
300	2	2x110	35
325	2	2x110	35
350	1	330	40
400	2	2x110	35
500	2	2x175	40
540	2	2x175	40
700	2	2x175	40

NOTES :
1. REFER GENERAL ARRANGEMENT DRAWINGS FOR SLAB THICKNESSES.
2. REFER REINFORCEMENT PLANS FOR BAR LAYING SEQUENCE AND COVER.
3. REFER PULL-OUT BAR PLANS FOR PULL-OUT BAR LOCATION AND EXTENT AS WELL AS PULL-OUT BAR SIZE AND SPACING.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL R.C. WALL DETAILS

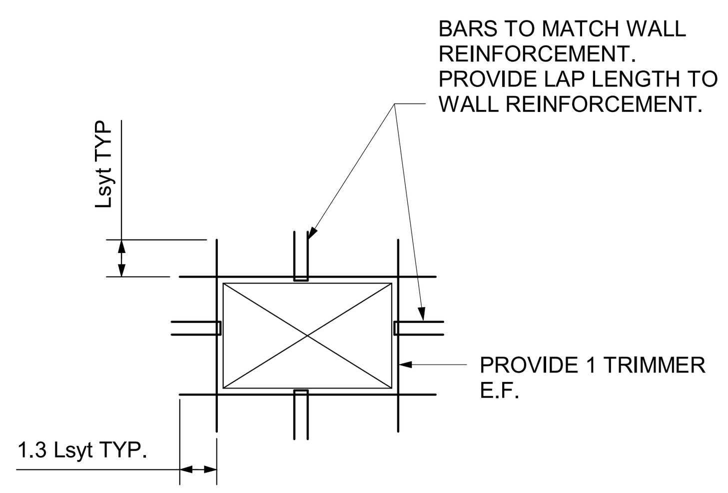
SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

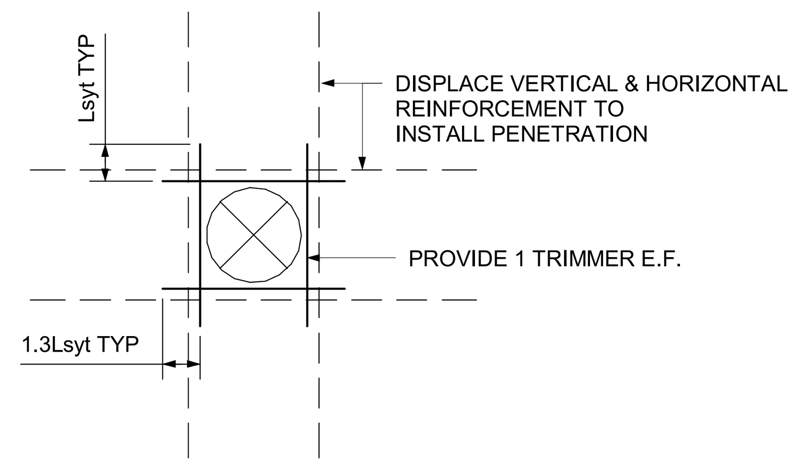
DRAWING NUMBER ST-005-52
REV. B

27/10/2021 5:03:27 PM

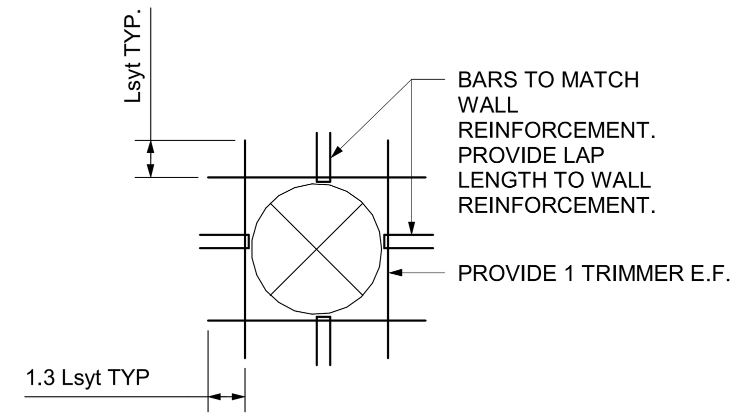
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



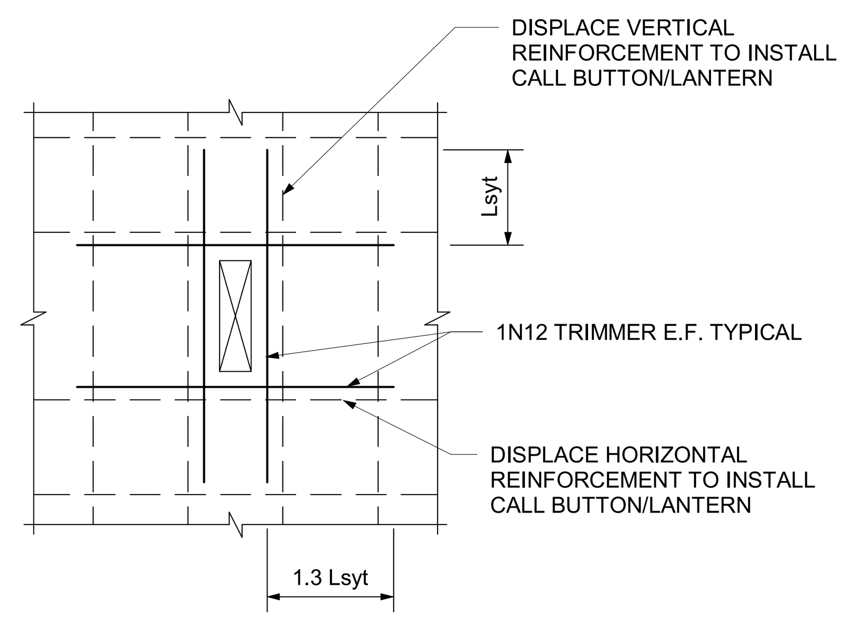
TYPICAL REINFORCEMENT FOR WALL OPENINGS AND FREE EDGES



TYPICAL REINFORCEMENT FOR PENETRATION ≤300mm

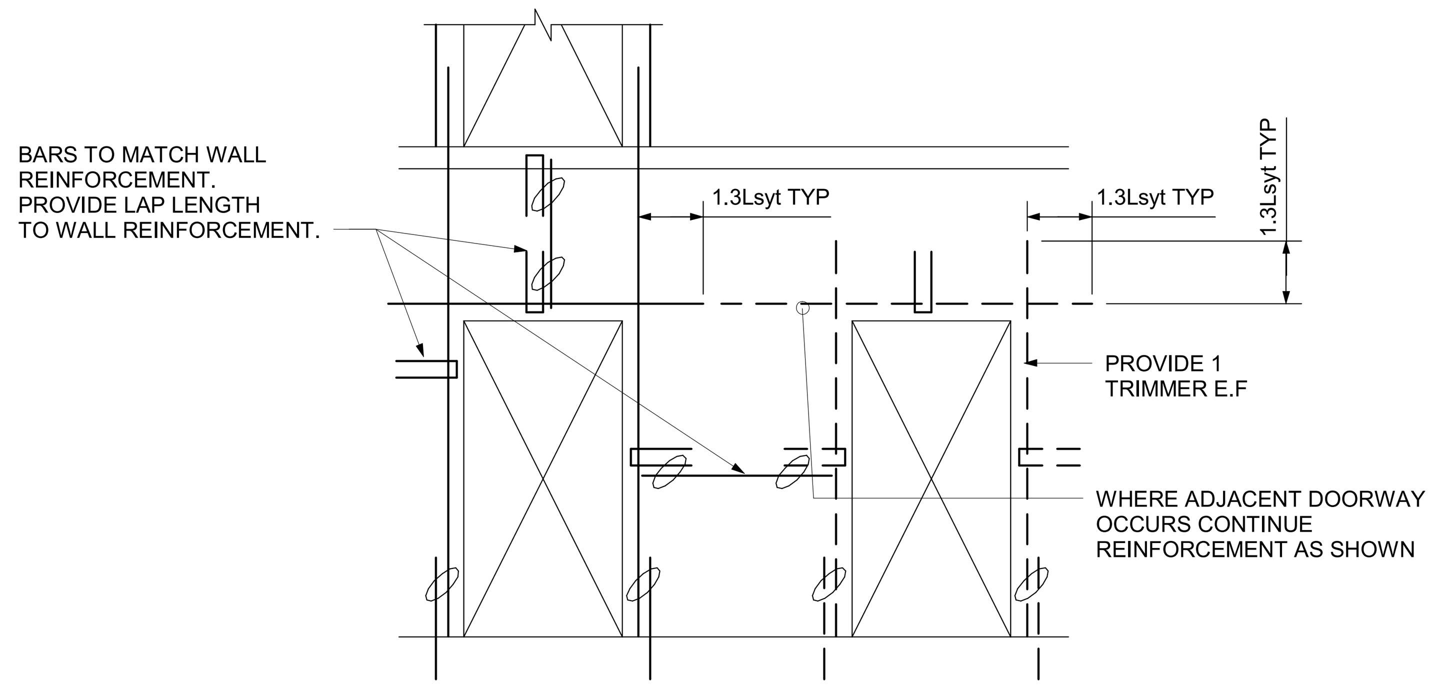


TYPICAL REINFORCEMENT FOR PENETRATION >300mm

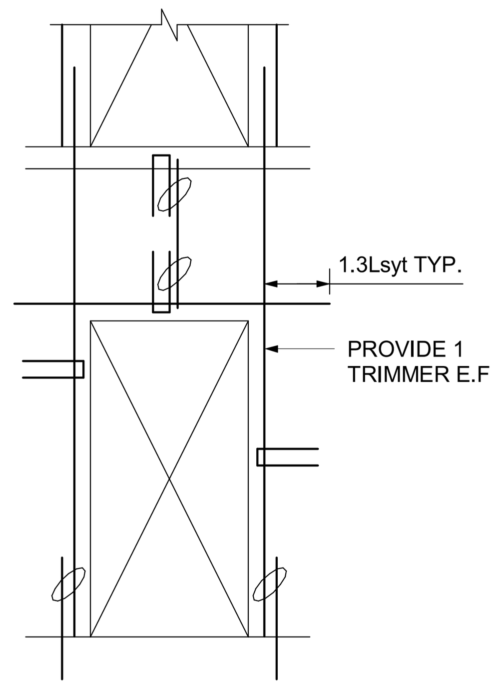


TYPICAL CALL BUTTON AND LANTERN TRIMMER DETAIL

- REFER TO LIFT ENGINEERS DRAWINGS FOR LOCATIONS (NOT SHOWN ON STRUCTURAL ELEVATIONS)



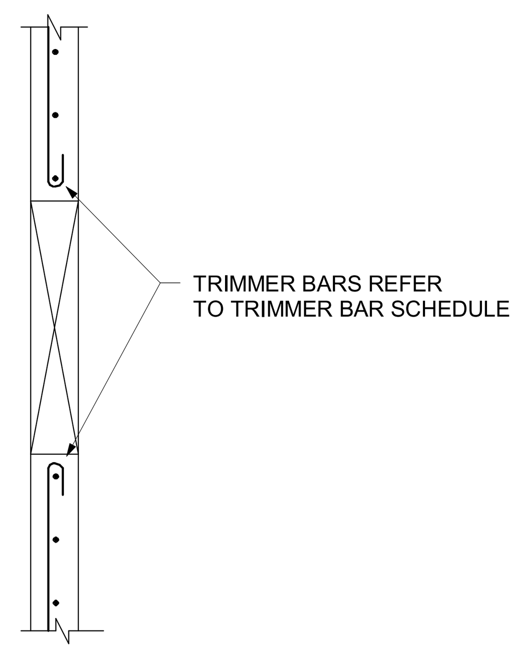
TYPICAL DOOR OPENING



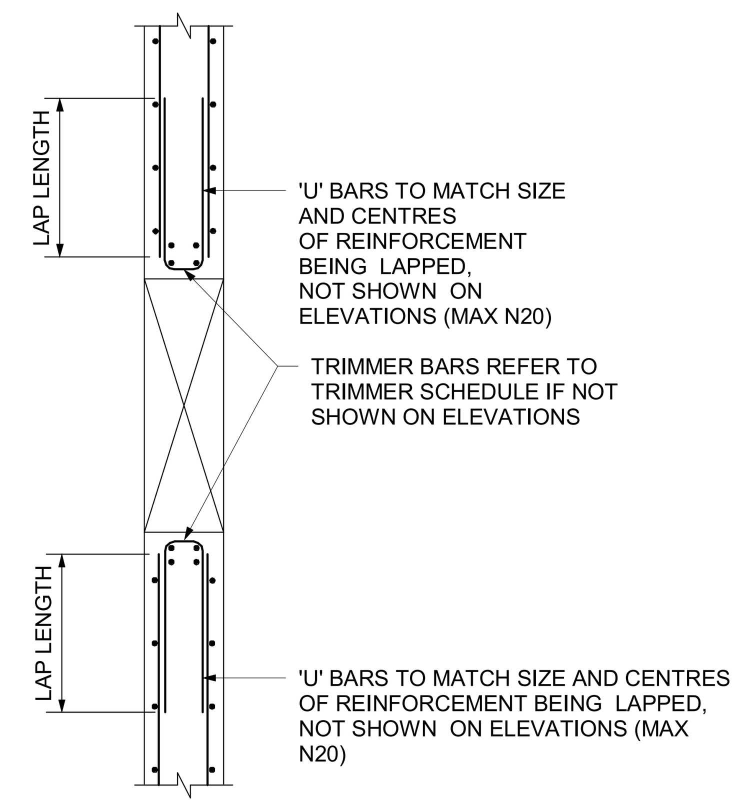
TYPICAL DOOR OPENING

TYPICAL PENETRATION DETAILS

- ALL STARTERS AND TRIMMERS DETAILED ABOVE ARE ADDITIONAL TO THOSE DETAILED ON WALL SCHEDULE U.N.O.
- ALL TRIMMER BARS INDICATED TO MATCH ADJACENT REINFORCEMENT. N16 MINIMUM.



PENETRATION SECTION DETAIL (150 THICK WALL)



PENETRATION SECTION DETAIL (>200 THICK WALL)

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL R.C. WALL DETAILS - PENETRATIONS

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER ST-005-53
REV. B

27/10/2021 5:03:31 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

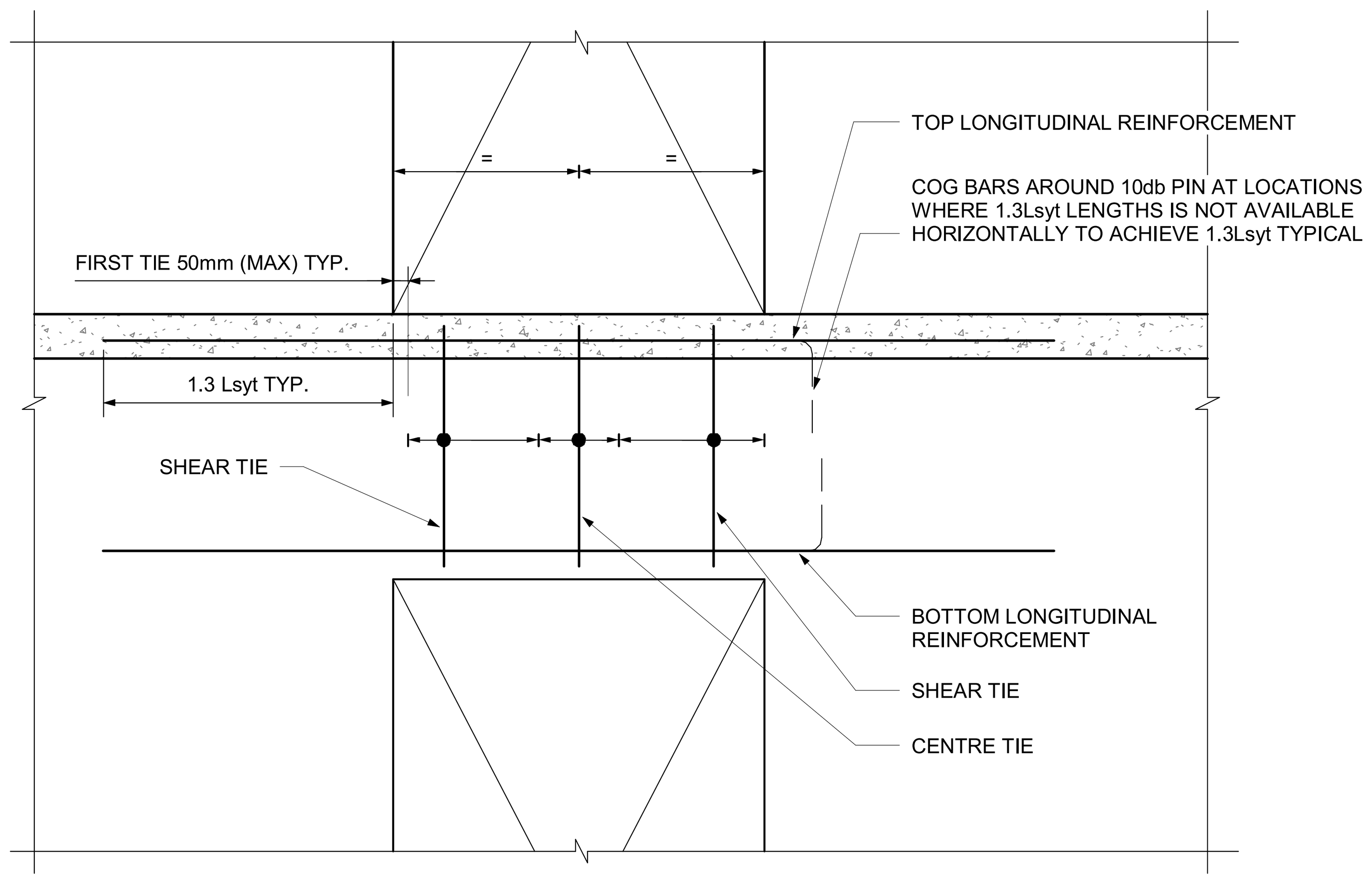
TAG	TOP LONGITUDINAL REINFORCEMENT		BOTTOM LONGITUDINAL REINFORCEMENT		CENTRE TIES	SHEAR TIES
	NO.LAYERS	TOTAL REINFORCEMENT	NO.LAYERS	TOTAL REINFORCEMENT		
LB01	2	4-N20	2	4-N20	3-N12-250	N12-250

NOTE:
- REFER TO TYPICAL LINK BEAM ARRANGEMENT FOR DETAILS.
- DRAWING TO BE READ IN CONJUNCTION WITH (****DRAWING NUMBERS****) TYPICAL R.C. WALL DETAILS.

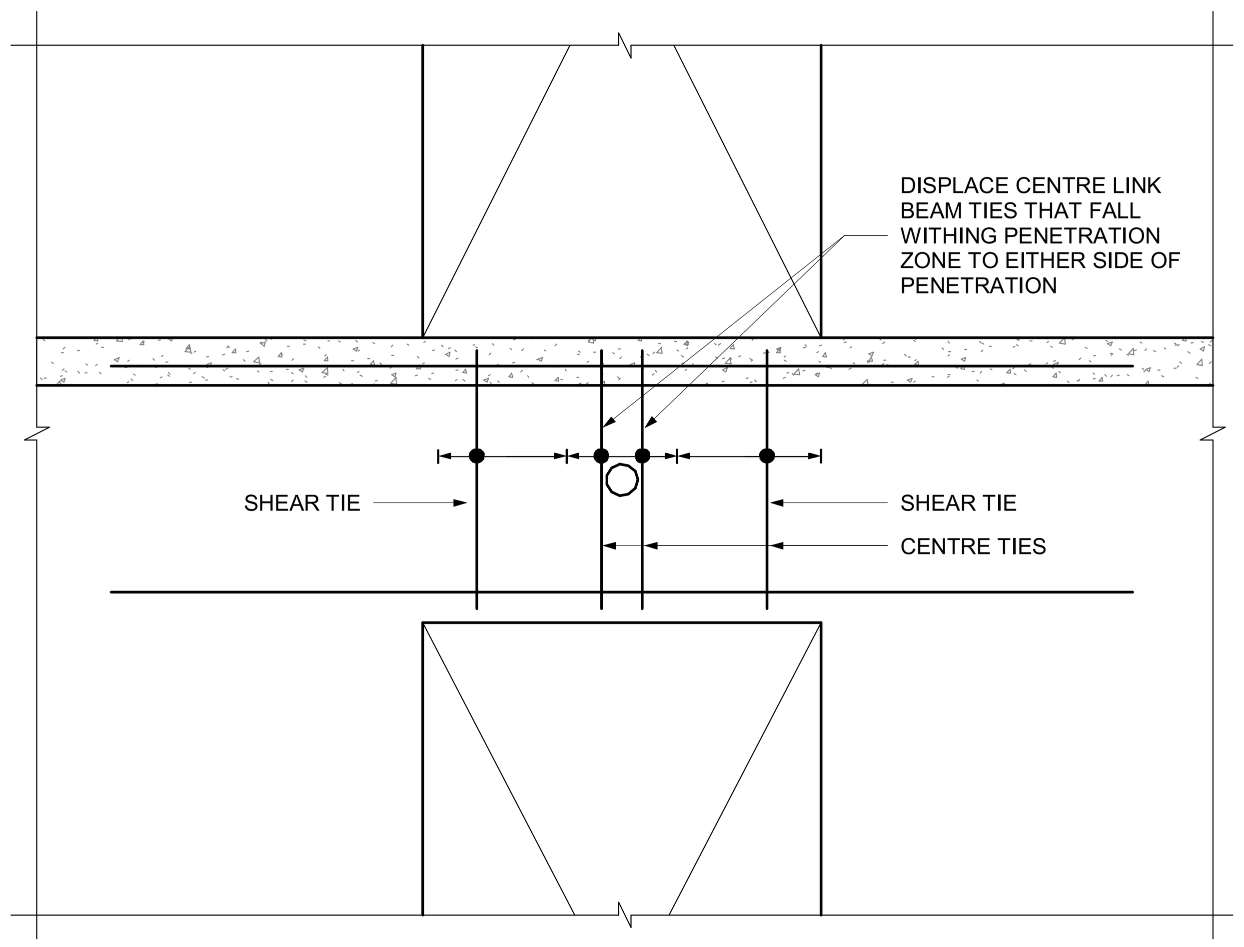
LINK BEAM REINFORCEMENT LAP SCHEDULE U.N.O.

	f'c=40MPa		f'c=50MPa	
SIZE	Lsyt	1.3 Lsyt	Lsyt	1.3 Lsyt

NOTE:
- USE 1.3Lsyt FOR ALL HORIZONTAL REINFORCEMENT AND WHEN MORE THAN 300mm OF CONRETE IS CAST BELOW THE BAR.
- LINK BEAM LONGITUDINAL REINFORCEMENT NOT TO BE LAPPED ABOVE VALUES TO BE USED FOR BAR EXTENSIONS PAST SUPPORT AS SHOWN IN TYPICAL DETAIL.
- DRAWING TO BE READ IN CONJUNCTION WITH DRAWING ST-005-81 (TYPICAL R.C. WALL DETAILS)

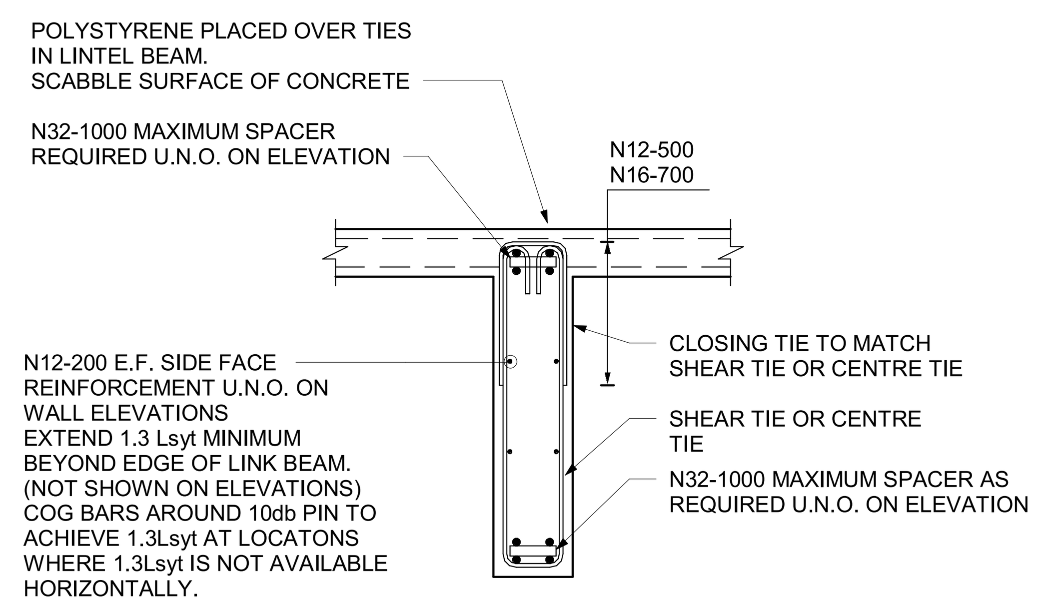


TYPICAL LINK BEAM ARRANGEMENT U.N.O.



PENETRATIONS MUST BE LOCATED AT VERTICAL AND HORIZONTAL CENTRES OF LINK BEAM

TYPICAL LINK BEAM PENETRATION TRIMMER DETAIL



TYPICAL LINK BEAM SECTION

27/10/2021 5:03:35 PM

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL R.C. WALL LINK BEAM DETAILS

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-005-54

REV.
B

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

LEGEND

- DENOTES POUR JOINTS
- DENOTES PENETRATIONS
- RECESS FOR LIFT BUTTONS, LANTERNS etc.
- DENOTES SHEAR KEY POCKETS.
- DENOTES SHEAR KEY POCKET (BEYOND)
- DENOTES LINK BEAMS, REFER TO DRG. ST-005-54 AND ST-005-55 FOR DETAILS

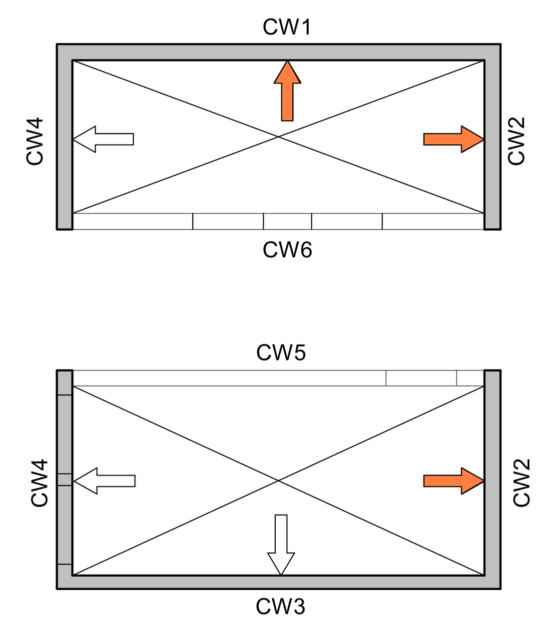
REFER TO DRG. ST-00553 FOR TYPICAL SHEAR KEY POCKET REINFORCEMENT

CORE WALL NOTES:

- 100mm AND BELOW PENETRATIONS NOT SHOWN BY THE STRUCTURAL ENGINEER BUT MUST AVOID REINFORCEMENT AND MAINTAIN CONCRETE COVER
- 100mm AND ABOVE OR ANY GROUPED PENETRATIONS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL
- NO PENETRATIONS THROUGH LINK BEAMS WITHOUT SPECIFIC APPROVAL OF STRUCTURAL ENGINEER
- LIFT DOOR OPENING SIZE AND SETOUT TO BE CONFIRMED BY LIFT CONTRACTOR
- CONTRACTOR TO SUBMIT PROPOSED JUMP AND POUR SEQUENCE FOR APPROVAL PRIOR TO COMMENCEMENT OF WORKS
- LINK BEAM DIMENSIONS ARE SHOWN FOR COORDINATION PURPOSES ONLY
- REFER TO GENERAL NOTES FOR REINFORCEMENT CONCRETE COVER
- ALL BARS TO BE LAPPED IN ACCORDANCE TO LAP SCHEDULE ON DRG. ST-00-552
- HEAVILY SCABBLE AT WALL TO FOUNDATION INTERFACE TO REMOVE LAITANCE TYP.

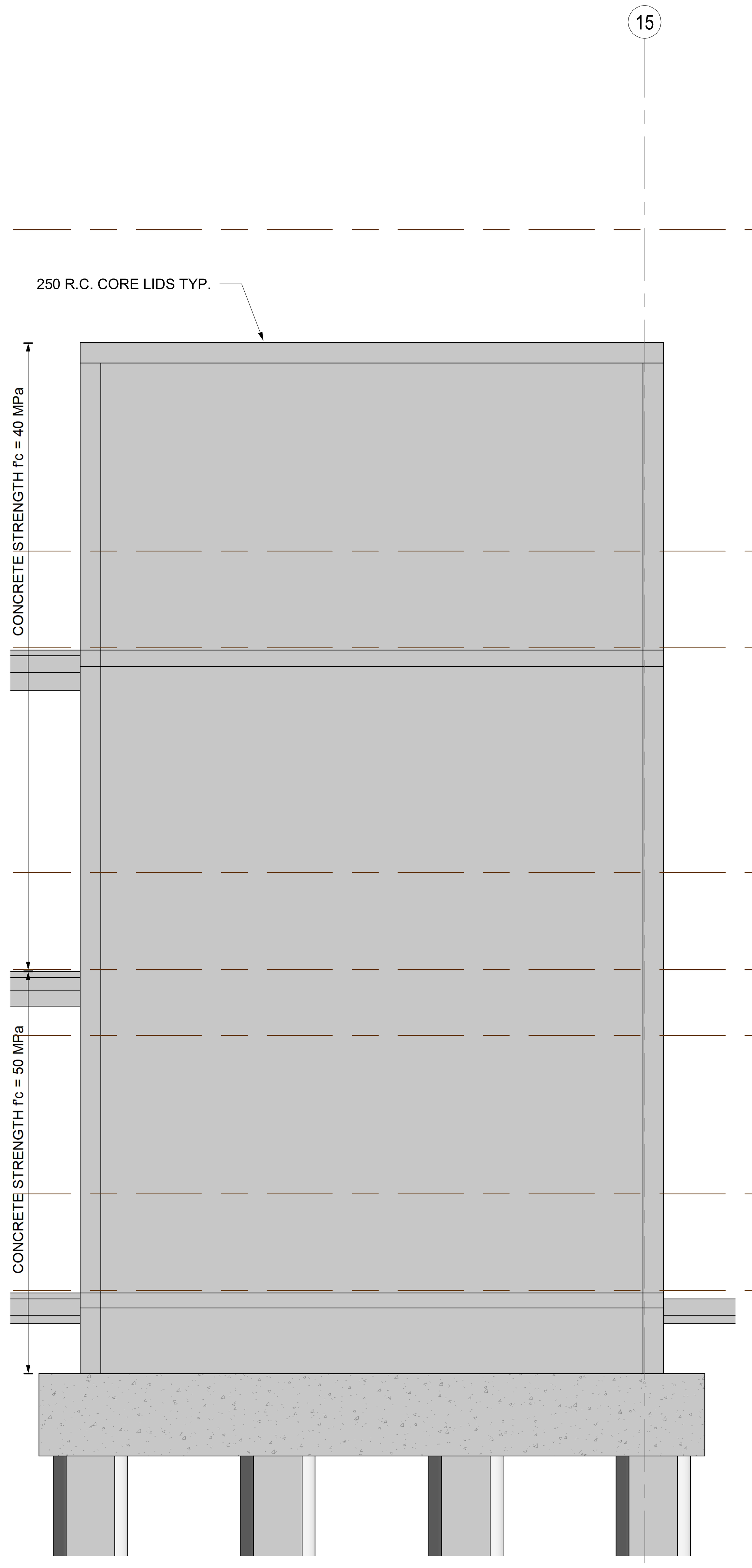
DRAWINGS TO BE READ IN CONJUNCTION WITH THIS DRAWING:

- ARCHITECTURAL AND SEVICES DRAWINGS
- ST-001-01 TO ST-001-02 - GENERAL NOTES
- ST-005-51 TO ST-005-54 - TYPICAL R.C. WALLS AND LINK BEAM DETAILS
- ST-100-00 TO ST-103-00 - GENERAL ARRANGEMENTS



CORE 1 WALL KEY PLAN

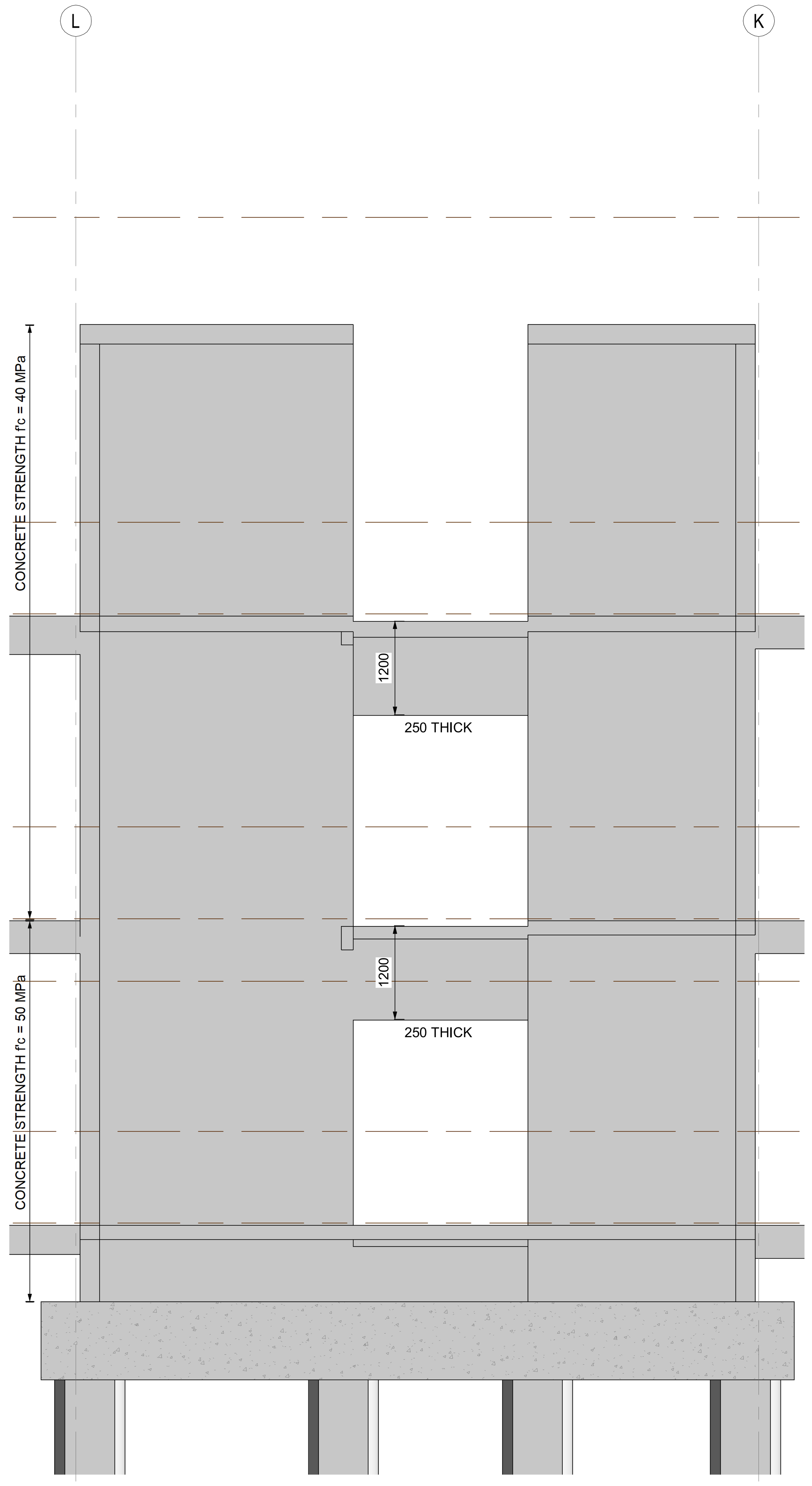
SCALE: 1 : 100



C1-W1 ELEVATION

SCALE: 1 : 50

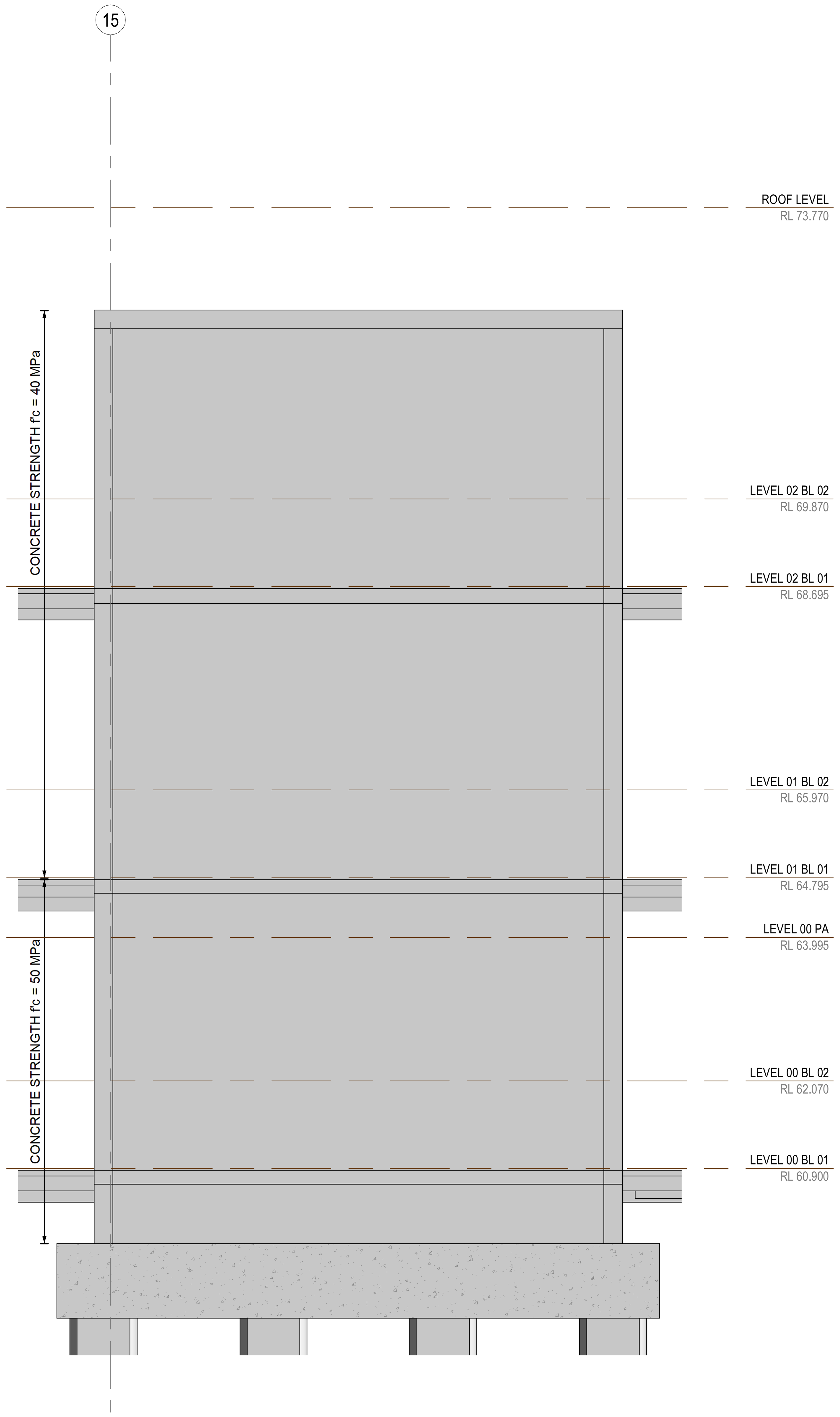
WALLS 250 THK U.N.O.
CONCRETE STRENGTH f'c = 50MPa U.N.O.



C1-W2 ELEVATION

SCALE: 1 : 50

WALLS 250 THK U.N.O.
CONCRETE STRENGTH f'c = 50MPa U.N.O.



C1-W3 ELEVATION

SCALE: 1 : 50

WALLS 250 THK U.N.O.
CONCRETE STRENGTH f'c = 50MPa U.N.O.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

STRUCTURAL / CIVIL CONSULTANT
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Level 4, 2 Glen Street, Milsons Point NSW 2061
Telephone (02) 8904 1444
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CLIENT
NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
CORE WALL ELEVATIONS - SHEET 1

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-005-60

REV.
B

27/10/2021 5:03:40 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

LEGEND

- DENOTES POUR JOINTS
- DENOTES PENETRATIONS
- RECESS FOR LIFT BUTTONS, LANTERNS etc.
- DENOTES SHEAR KEY POCKETS.
- DENOTES SHEAR KEY POCKET (BEYOND)
- DENOTES LINK BEAMS, REFER TO DRG. ST-005-54 AND ST-005-55 FOR DETAILS

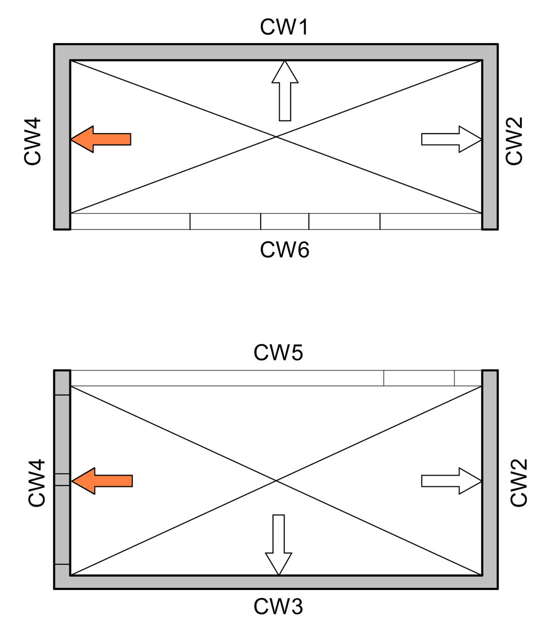
REFER TO DRG. ST-00553 FOR TYPICAL SHEAR KEY POCKET REINFORCEMENT

CORE WALL NOTES:

- 100mm AND BELOW PENETRATIONS NOT SHOWN BY THE STRUCTURAL ENGINEER BUT MUST AVOID REINFORCEMENT AND MAINTAIN CONCRETE COVER
- 100mm AND ABOVE OR ANY GROUPED PENETRATIONS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL
- NO PENETRATIONS THROUGH LINK BEAMS WITHOUT SPECIFIC APPROVAL OF STRUCTURAL ENGINEER
- LIFT DOOR OPENING SIZE AND SETOUT TO BE CONFIRMED BY LIFT CONTRACTOR
- CONTRACTOR TO SUBMIT PROPOSED JUMP AND POUR SEQUENCE FOR APPROVAL PRIOR TO COMMENCEMENT OF WORKS
- LINK BEAM DIMENSIONS ARE SHOWN FOR COORDINATION PURPOSES ONLY
- REFER TO GENERAL NOTES FOR REINFORCEMENT CONCRETE COVER
- ALL BARS TO BE LAPPED IN ACCORDANCE TO LAP SCHEDULE ON DRG. ST-00-552
- HEAVILY SCABBLE AT WALL TO FOUNDATION INTERFACE TO REMOVE LAITANCE TYP.

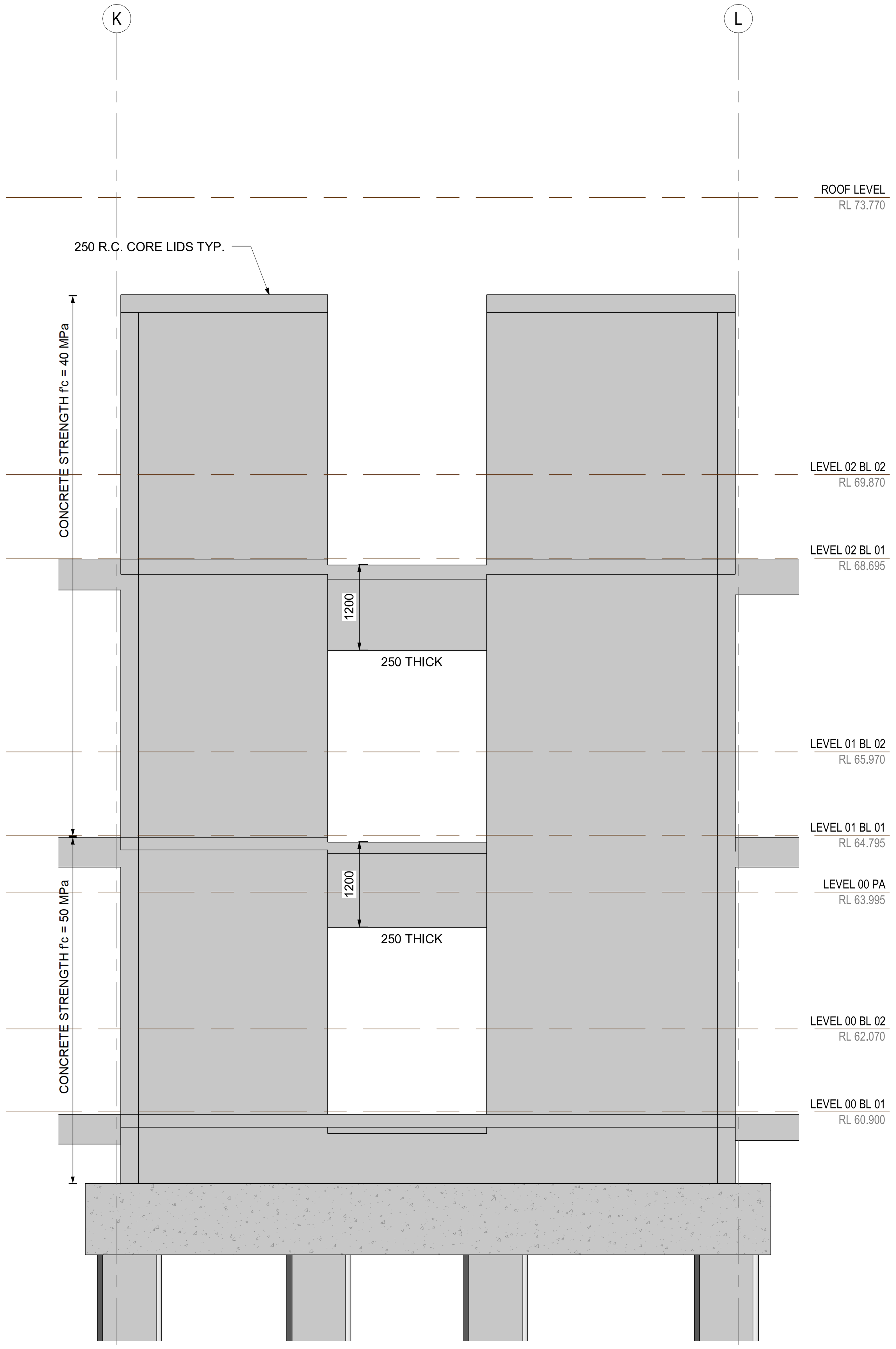
DRAWINGS TO BE READ IN CONJUNCTION WITH THIS DRAWING:

- ARCHITECTURAL AND SEVICES DRAWINGS
- ST-001-01 TO ST-001-02 - GENERAL NOTES
- ST-005-51 TO ST-005-54 - TYPICAL R.C. WALLS AND LINK BEAM DETAILS
- ST-100-00 TO ST-103-00 - GENERAL ARRANGEMENTS



CORE 1 WALL KEY PLAN

SCALE: 1 : 100



C1-W4 ELEVATION

SCALE: 1 : 50

WALLS 250 THK U.N.O.
CONCRETE STRENGTH f'c = 50MPa U.N.O.

27/10/2021 5:03:50 PM

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

CORE WALL ELEVATIONS - SHEET 2

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

DRAWING NUMBER: ST-005-61

REV.: B

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

LEGEND

- DENOTES POUR JOINTS
- DENOTES PENETRATIONS
- RECESS FOR LIFT BUTTONS, LANTERNS etc.
- DENOTES SHEAR KEY POCKETS.
- DENOTES SHEAR KEY POCKET (BEYOND)
- DENOTES LINK BEAMS, REFER TO DRG. ST-005-54 AND ST-005-55 FOR DETAILS

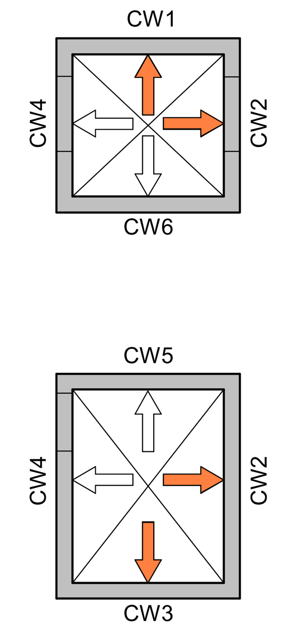
REFER TO DRG. ST-00553 FOR TYPICAL SHEAR KEY POCKET REINFORCEMENT

CORE WALL NOTES:

- 100mm AND BELOW PENETRATIONS NOT SHOWN BY THE STRUCTURAL ENGINEER BUT MUST AVOID REINFORCEMENT AND MAINTAIN CONCRETE COVER
- 100mm AND ABOVE OR ANY GROUPED PENETRATIONS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL
- NO PENETRATIONS THROUGH LINK BEAMS WITHOUT SPECIFIC APPROVAL OF STRUCTURAL ENGINEER
- LIFT DOOR OPENING SIZE AND SETOUT TO BE CONFIRMED BY LIFT CONTRACTOR
- CONTRACTOR TO SUBMIT PROPOSED JUMP AND POUR SEQUENCE FOR APPROVAL PRIOR TO COMMENCEMENT OF WORKS
- LINK BEAM DIMENSIONS ARE SHOWN FOR COORDINATION PURPOSES ONLY
- REFER TO GENERAL NOTES FOR REINFORCEMENT CONCRETE COVER
- ALL BARS TO BE LAPPED IN ACCORDANCE TO LAP SCHEDULE ON DRG. ST-00-552
- HEAVILY SCABBLE AT WALL TO FOUNDATION INTERFACE TO REMOVE LAITANCE TYP.

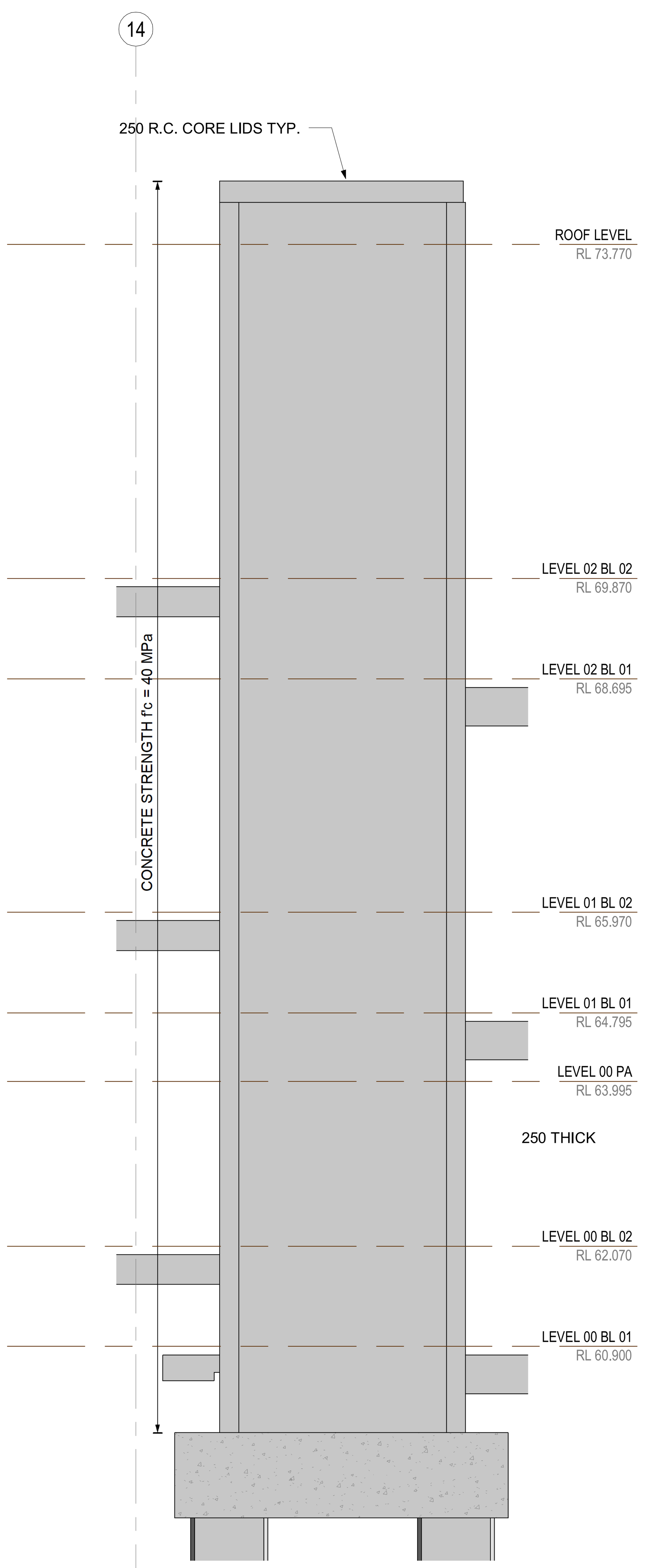
DRAWINGS TO BE READ IN CONJUNCTION WITH THIS DRAWING:

- ARCHITECTURAL AND SEVICES DRAWINGS
- ST-001-01 TO ST-001-02 - GENERAL NOTES
- ST-005-51 TO ST-005-54 - TYPICAL R.C. WALLS AND LINK BEAM DETAILS
- ST-100-00 TO ST-103-00 - GENERAL ARRANGEMENTS



CORE 2 WALL KEY PLAN

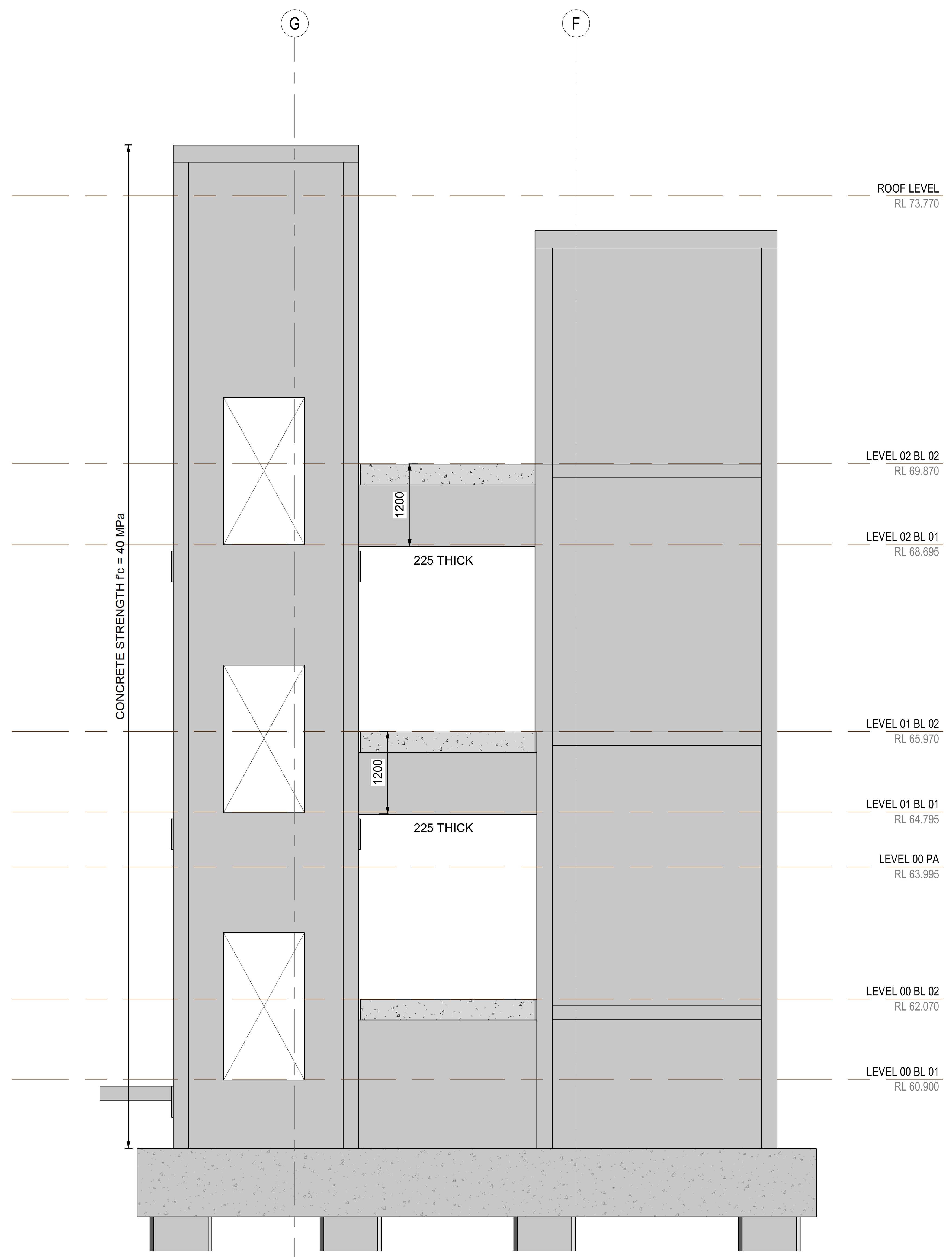
SCALE: 1 : 100



C2-W1 ELEVATION

SCALE: 1 : 50

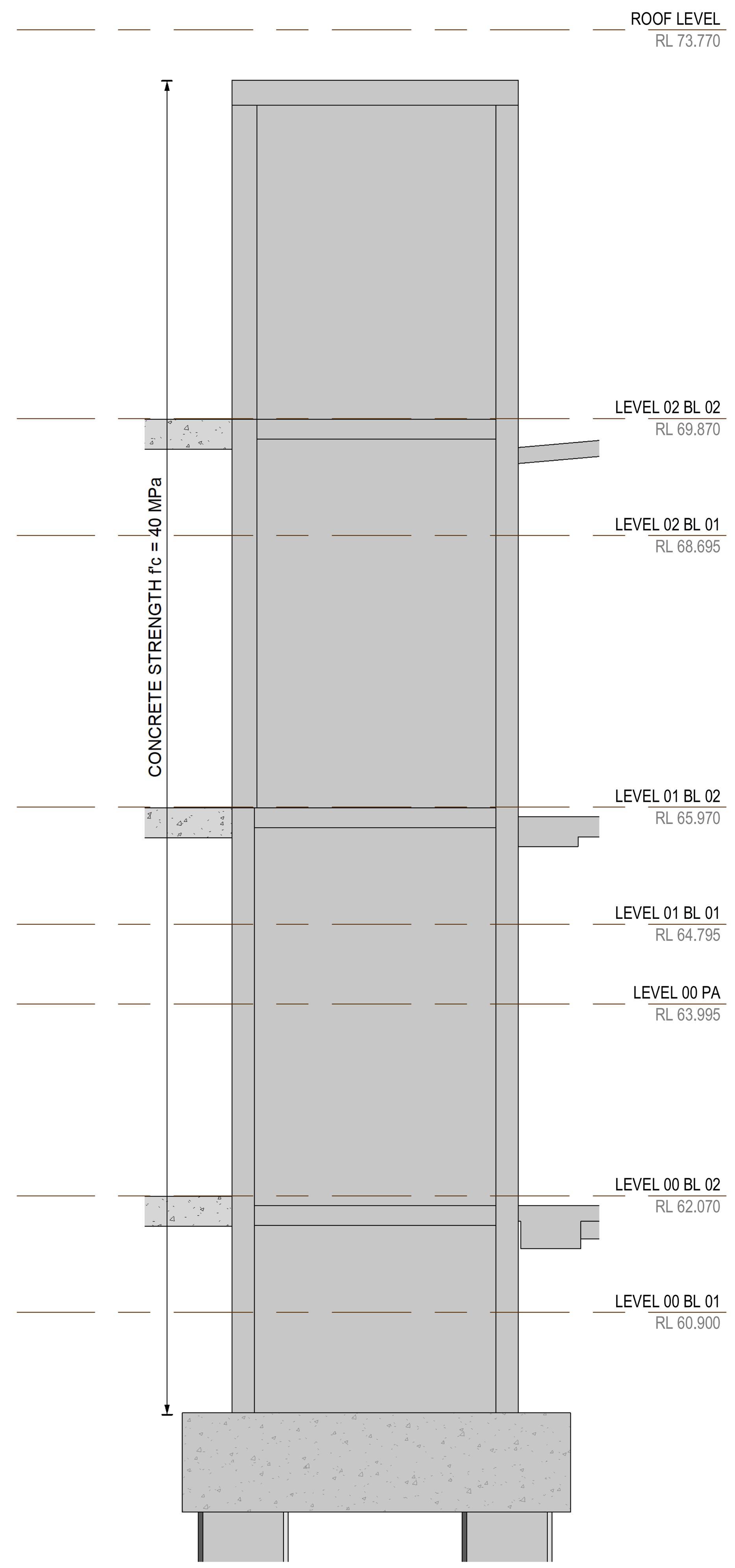
WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.



C2-W2 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.



C2-W3 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

CORE WALL ELEVATIONS - SHEET 3

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

DRAWING NUMBER ST-005-62

REV. B

27/10/2021 5:04:00 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

LEGEND

- DENOTES POUR JOINTS
- DENOTES PENETRATIONS
- RECESS FOR LIFT BUTTONS, LANTERNS etc.
- DENOTES SHEAR KEY POCKETS.
- DENOTES SHEAR KEY POCKET (BEYOND)
- DENOTES LINK BEAMS, REFER TO DRG. ST-005-54 AND ST-005-55 FOR DETAILS

REFER TO DRG. ST-00553 FOR TYPICAL SHEAR KEY POCKET REINFORCEMENT

CORE WALL NOTES:

- 100mm AND BELOW PENETRATIONS NOT SHOWN BY THE STRUCTURAL ENGINEER BUT MUST AVOID REINFORCEMENT AND MAINTAIN CONCRETE COVER
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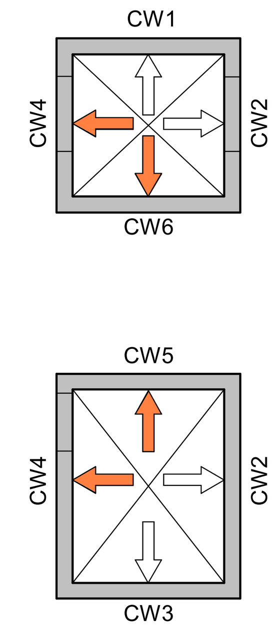
- LINK BEAM DIMENSIONS ARE SHOWN FOR COORDINATION PURPOSES ONLY
- REFER TO GENERAL NOTES FOR REINFORCEMENT CONCRETE COVER
- ALL BARS TO BE LAPPED IN ACCORDANCE TO LAP SCHEDULE ON DRG. ST-00-552
- HEAVILY SCABBLE AT WALL TO FOUNDATION INTERFACE TO REMOVE LAITANCE TYP.

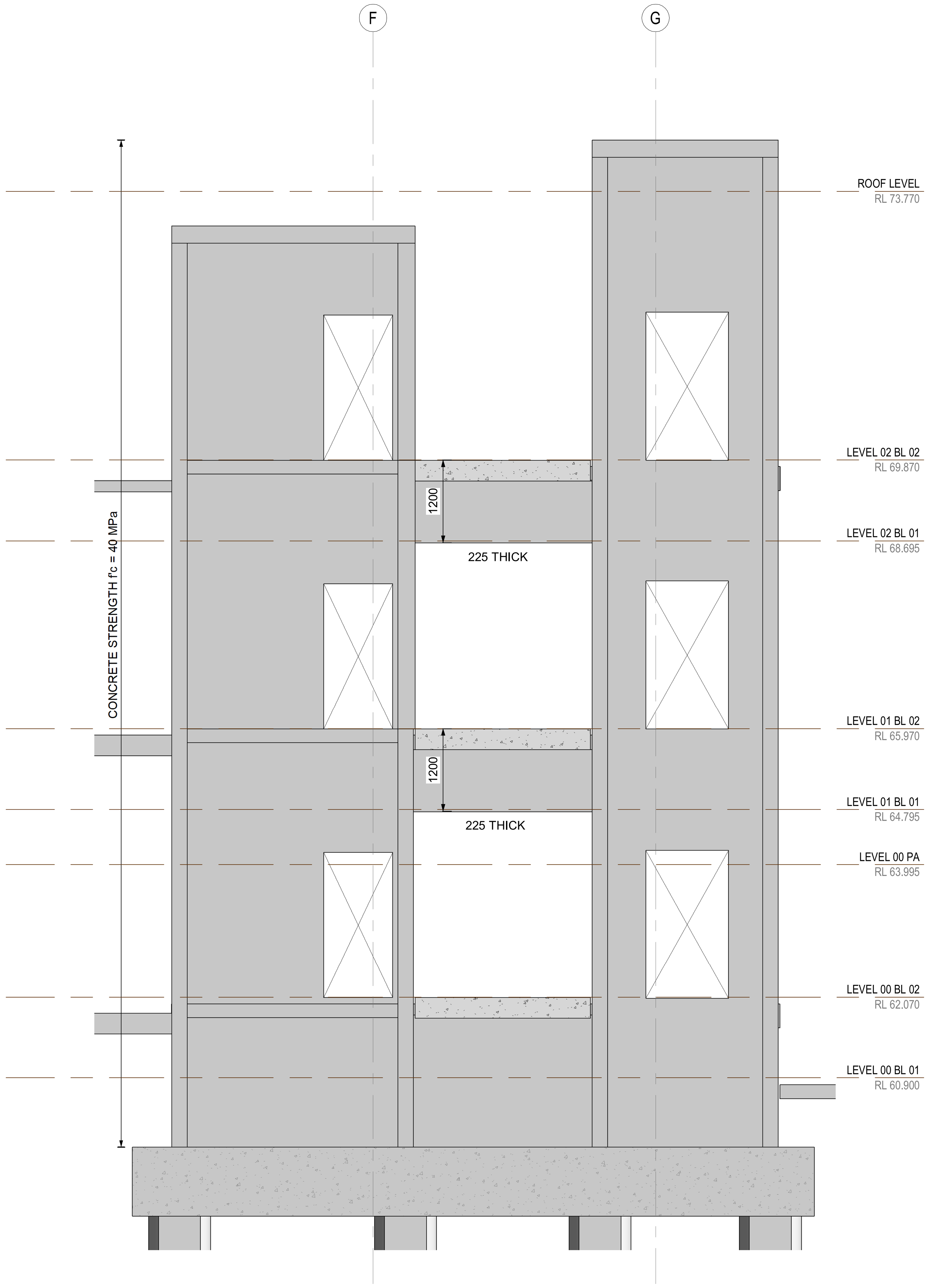
DRAWINGS TO BE READ IN CONJUNCTION WITH THIS DRAWING:

- ARCHITECTURAL AND SEVICES DRAWINGS
- ST-001-01 TO ST-001-02 - GENERAL NOTES
- ST-005-51 TO ST-005-54 - TYPICAL R.C. WALLS AND LINK BEAM DETAILS
- ST-100-00 TO ST-103-00 - GENERAL ARRANGEMENTS



CORE 2 WALL KEY PLAN

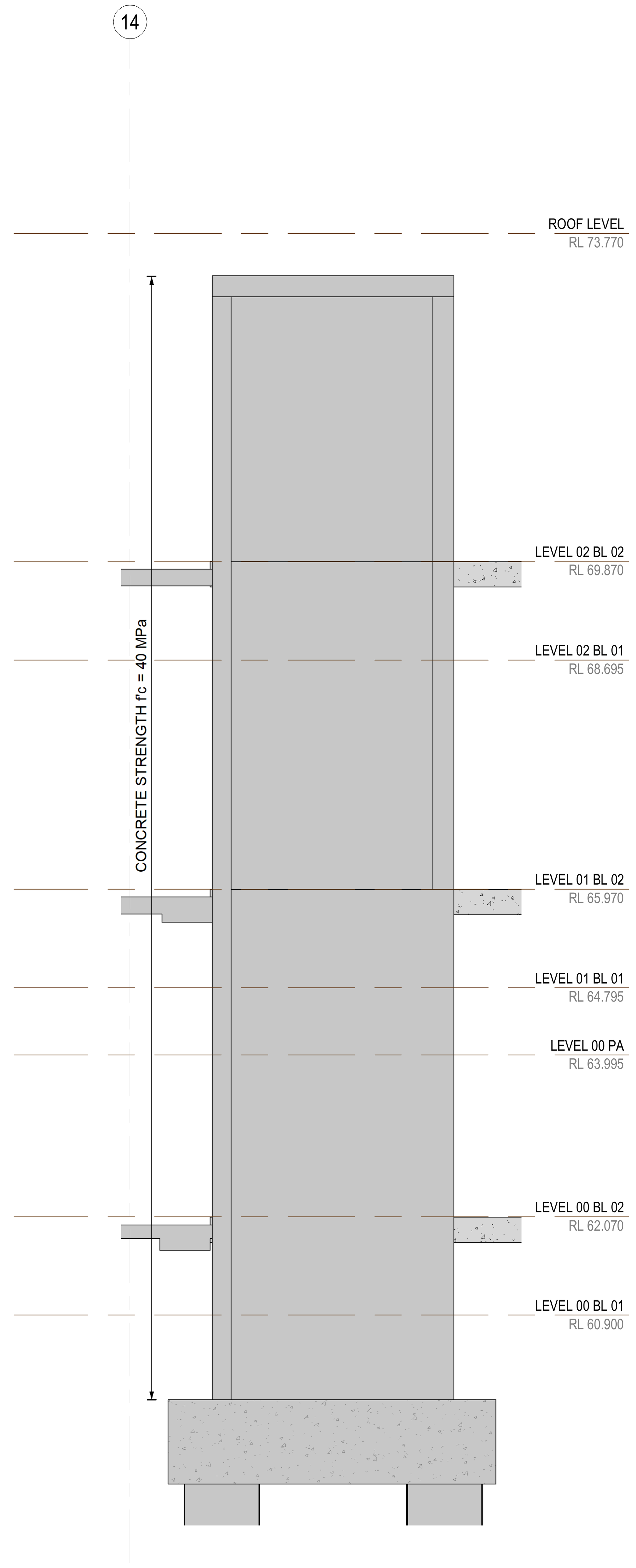
SCALE: 1 : 100



C2-W4 ELEVATION

SCALE: 1 : 50

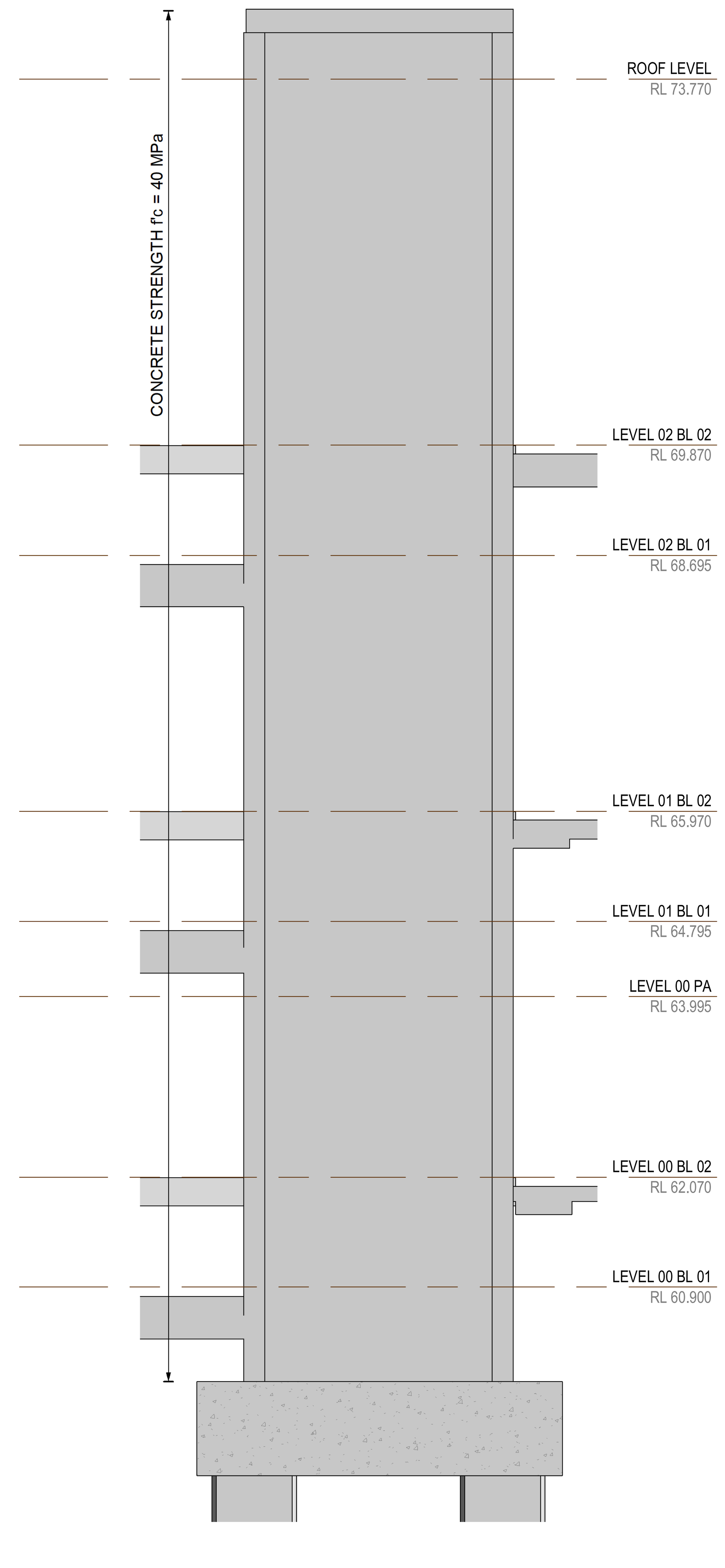
WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.



C2-W5 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.



C2-W6 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

CORE WALL ELEVATIONS - SHEET 4

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

DRAWING NUMBER: ST-005-64

REV.: B

27/10/2021 5:04:10 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

LEGEND

- DENOTES POUR JOINTS
- DENOTES PENETRATIONS
- RECESS FOR LIFT BUTTONS, LANTERNS etc.
- DENOTES SHEAR KEY POCKETS.
- DENOTES SHEAR KEY POCKET (BEYOND)
- DENOTES LINK BEAMS, REFER TO DRG. ST-005-54 AND ST-005-55 FOR DETAILS

REFER TO DRG. ST-00553 FOR TYPICAL SHEAR KEY POCKET REINFORCEMENT

CORE WALL NOTES:

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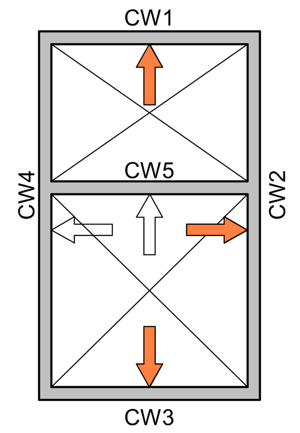
- ALL BARS TO BE LAPPED IN ACCORDANCE TO LAP SCHEDULE ON DRG. ST-00-552
- HEAVILY SCABBLE AT WALL TO FOUNDATION INTERFACE TO REMOVE LAITANCE TYP.

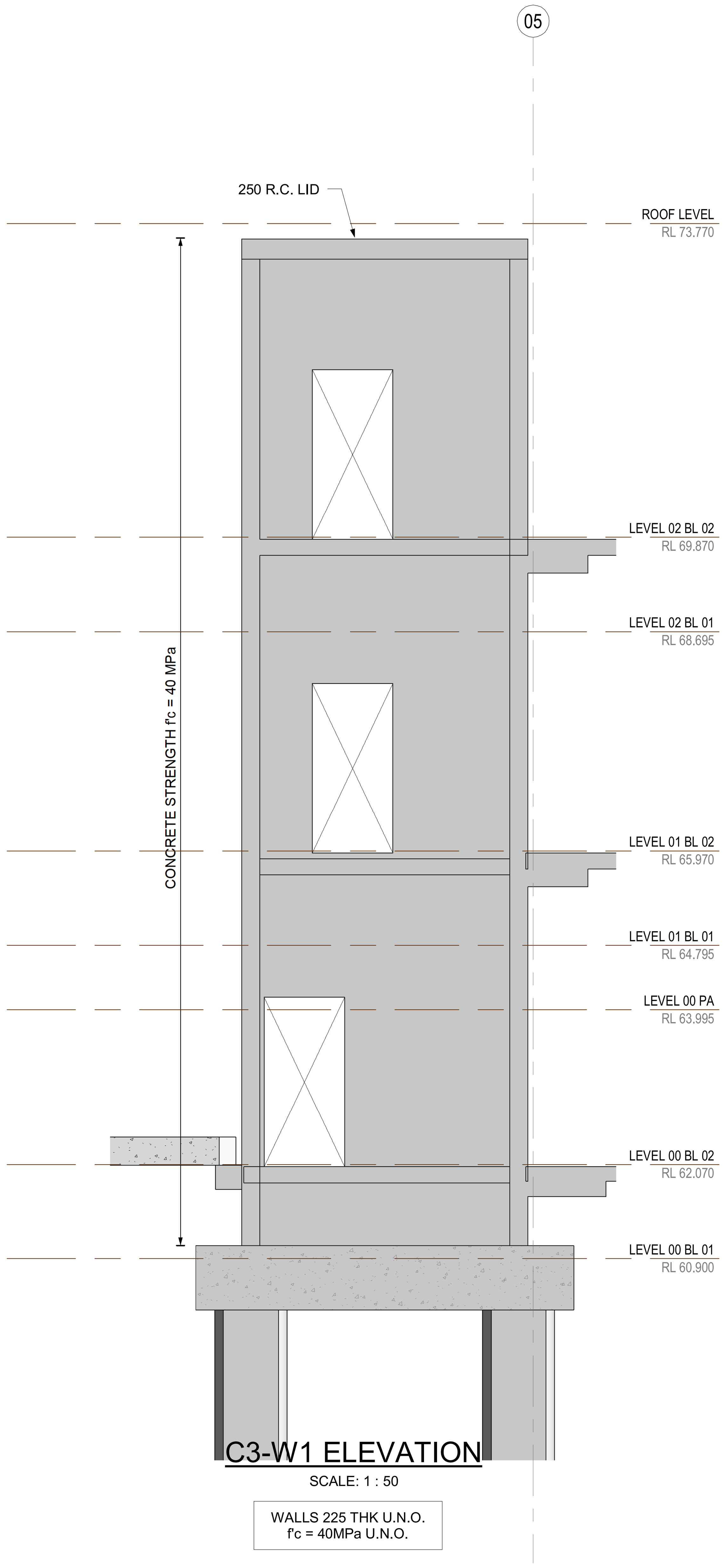
DRAWINGS TO BE READ IN CONJUNCTION WITH THIS DRAWING:

- ARCHITECTURAL AND SEVICES DRAWINGS
- ST-001-01 TO ST-001-02 - GENERAL NOTES
- ST-005-51 TO ST-005-54 - TYPICAL R.C. WALLS AND LINK BEAM DETAILS
- ST-100-00 TO ST-103-00 - GENERAL ARRANGEMENTS



CORE 3 WALL KEY PLAN

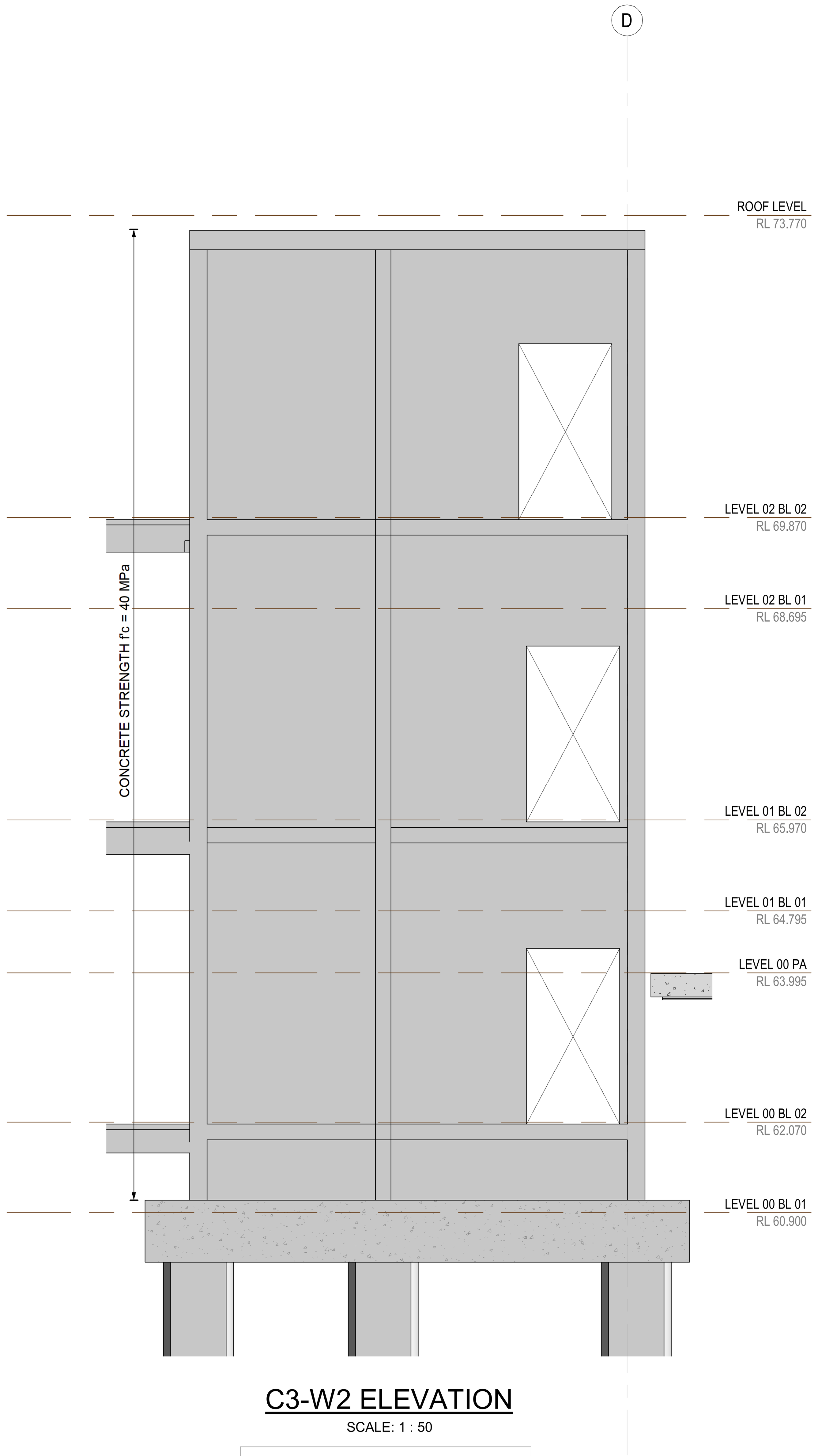
SCALE: 1 : 100



C3-W1 ELEVATION

SCALE: 1 : 50

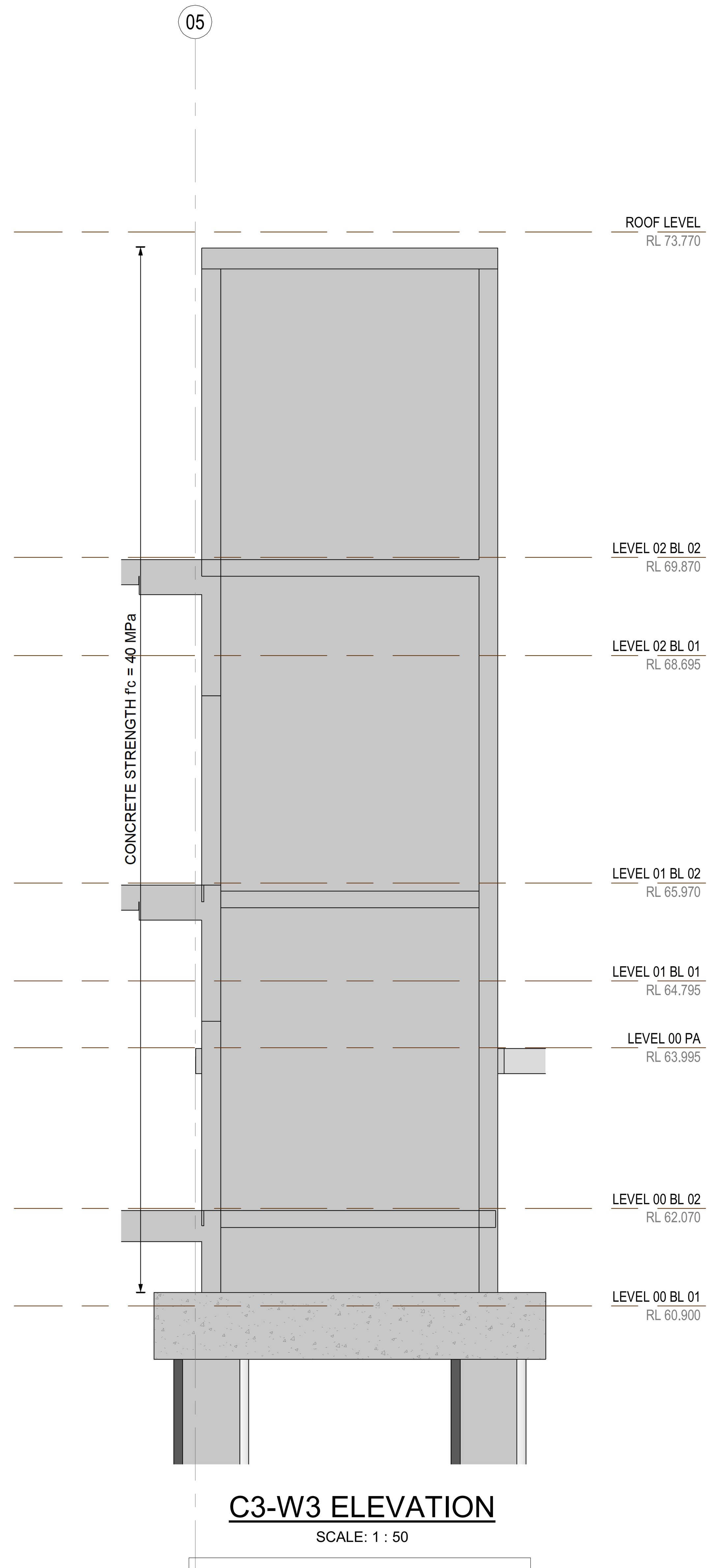
WALLS 225 THK U.N.O.
f'c = 40MPa U.N.O.



C3-W2 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.



C3-W3 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
CORE WALL ELEVATIONS - SHEET 5

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-005-65

REV.
B

27/10/2021 5:04:19 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

LEGEND

- DENOTES POUR JOINTS
- DENOTES PENETRATIONS
- RECESS FOR LIFT BUTTONS, LANTERNS etc.
- DENOTES SHEAR KEY POCKETS.
- DENOTES SHEAR KEY POCKET (BEYOND)
- DENOTES LINK BEAMS, REFER TO DRG. ST-005-54 AND ST-005-55 FOR DETAILS

REFER TO DRG. ST-00553 FOR TYPICAL SHEAR KEY POCKET REINFORCEMENT

CORE WALL NOTES:

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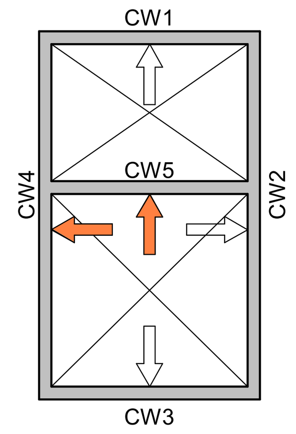
- HEAVILY SCABBLE AT WALL TO FOUNDATION INTERFACE TO REMOVE LAITANCE TYP.

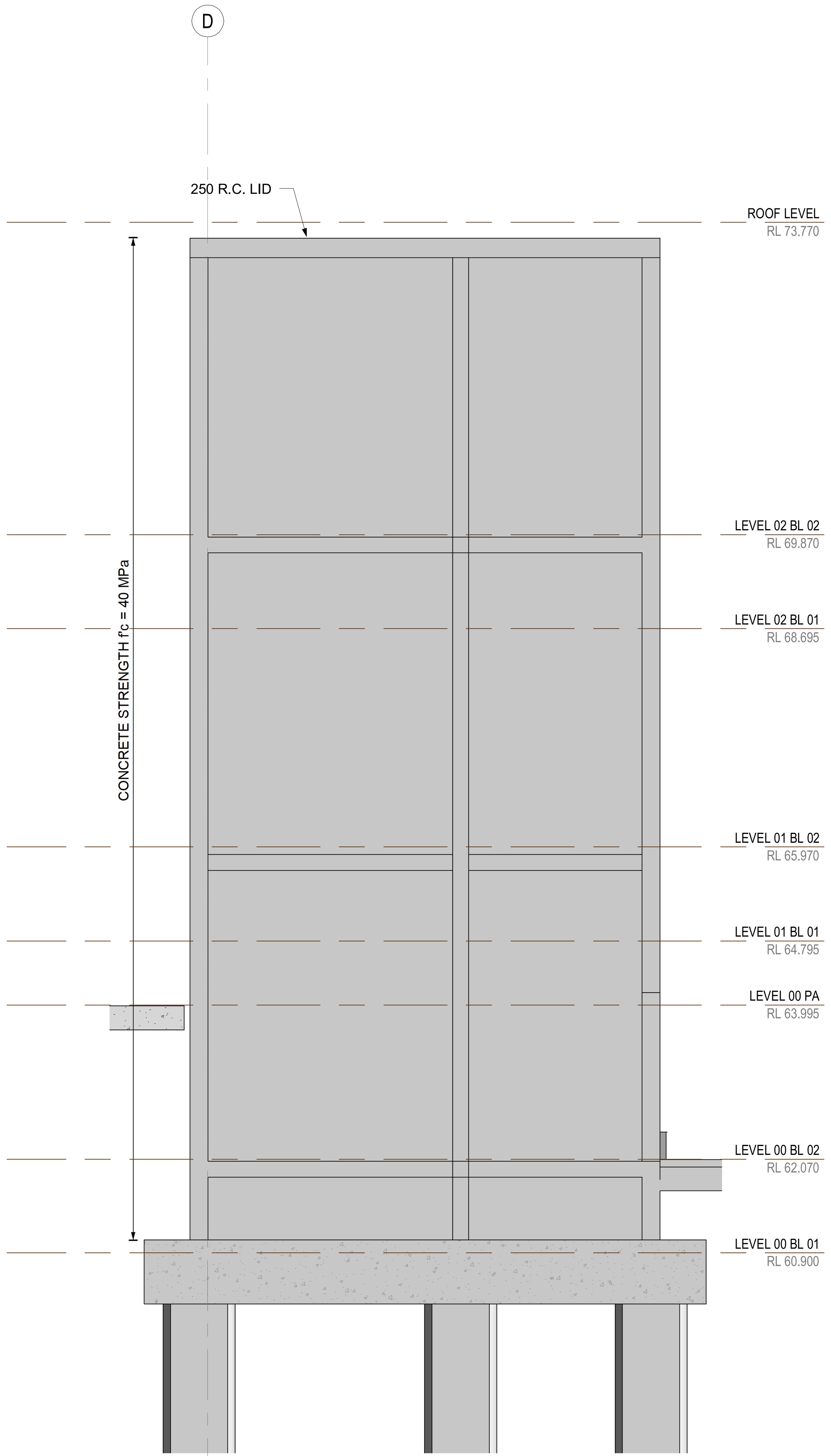
DRAWINGS TO BE READ IN CONJUNCTION WITH THIS DRAWING:

- ARCHITECTURAL AND SEVICES DRAWINGS
- ST-001-01 TO ST-001-02 - GENERAL NOTES
- ST-005-51 TO ST-005-54 - TYPICAL R.C. WALLS AND LINK BEAM DETAILS
- ST-100-00 TO ST-103-00 - GENERAL ARRANGEMENTS



CORE 3 WALL KEY PLAN

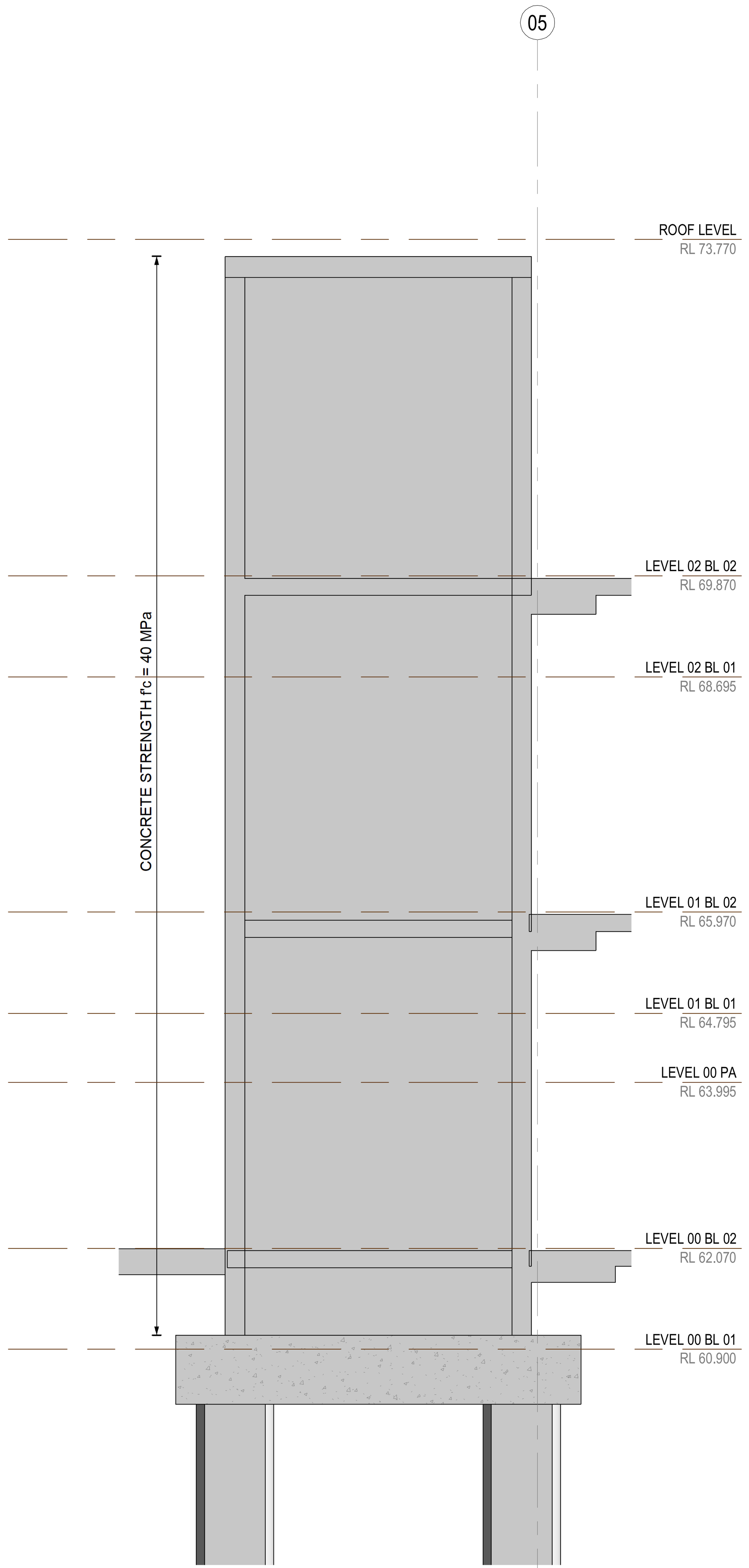
SCALE: 1 : 100



C3-W4 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.



C3-W5 ELEVATION

SCALE: 1 : 50

WALLS 225 THK U.N.O.
CONCRETE STRENGTH f'c = 40MPa U.N.O.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
CORE WALL ELEVATIONS - SHEET 6

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

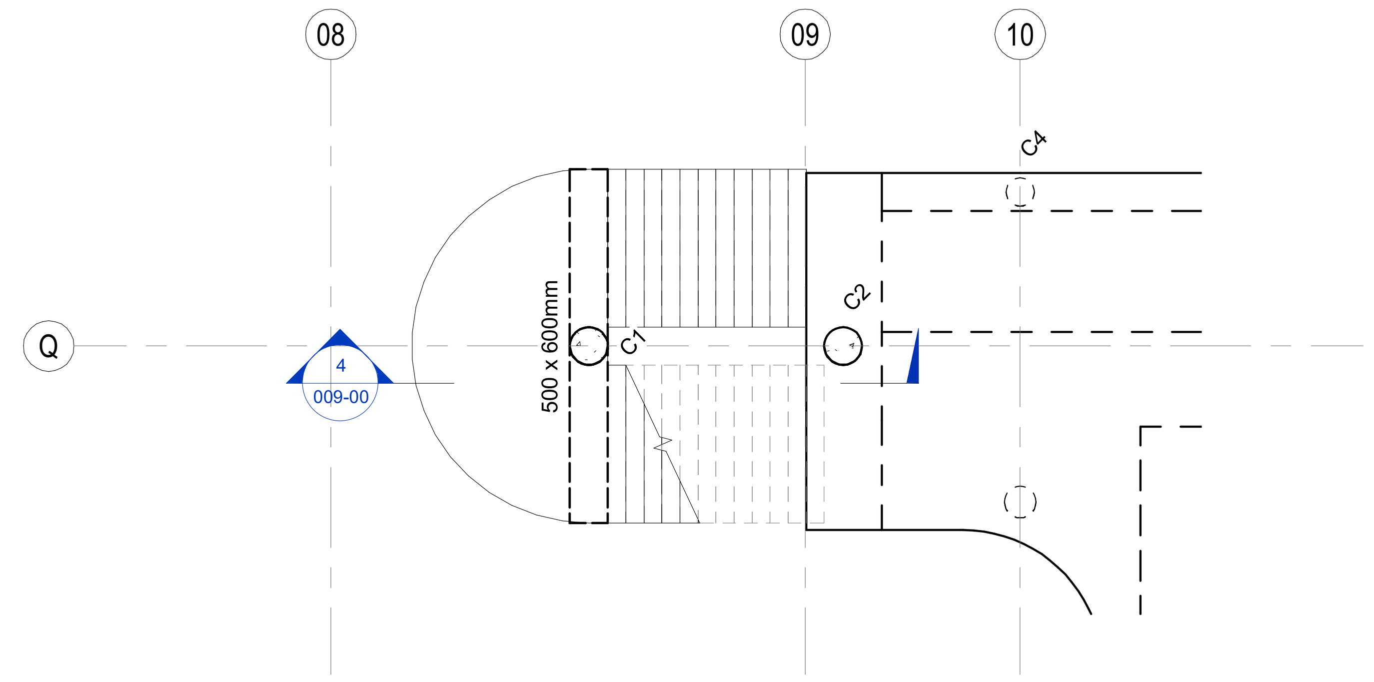
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-005-66

REV.
B

27/10/2021 5:04:30 PM

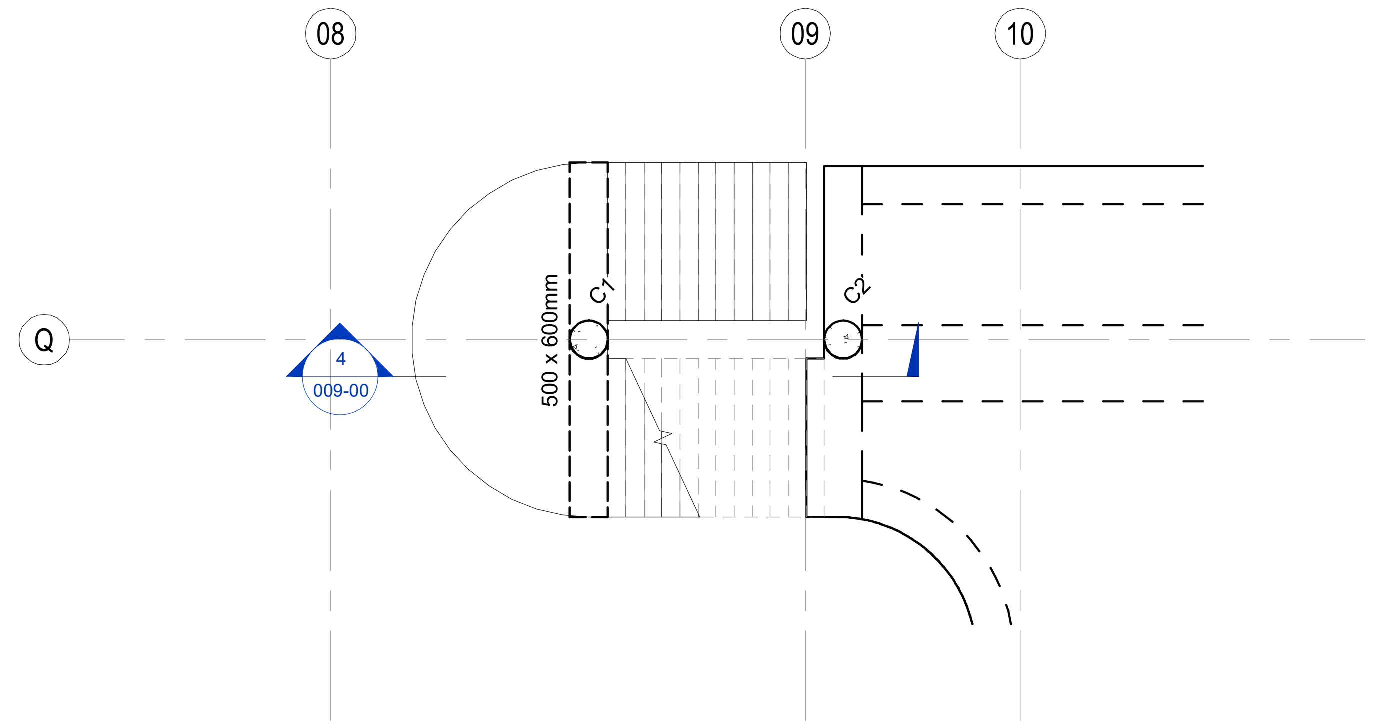
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



STAIR 1 - GROUND FLOOR - GENERAL ARRANGEMENT

SCALE: 1 : 100

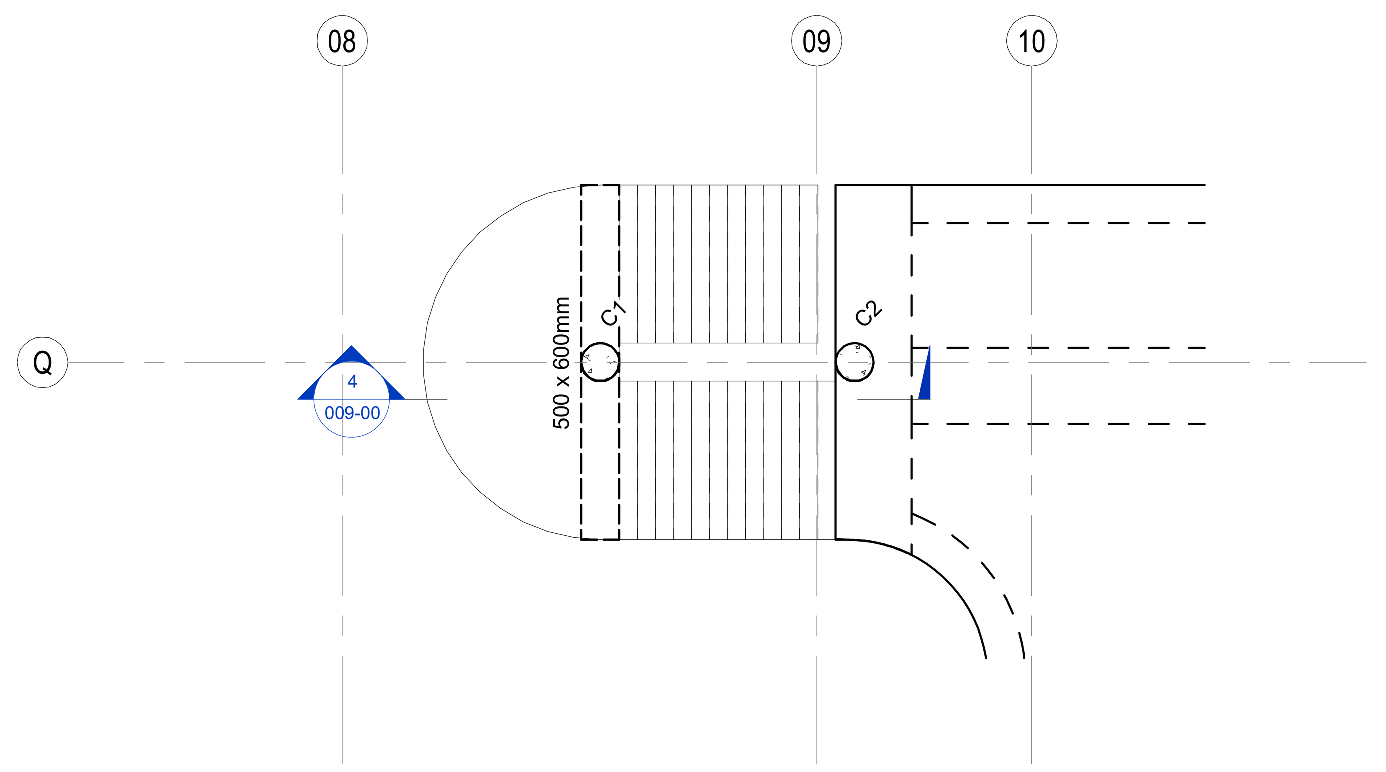
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 1 - LEVEL 01 - GENERAL ARRANGEMENT

SCALE: 1 : 100

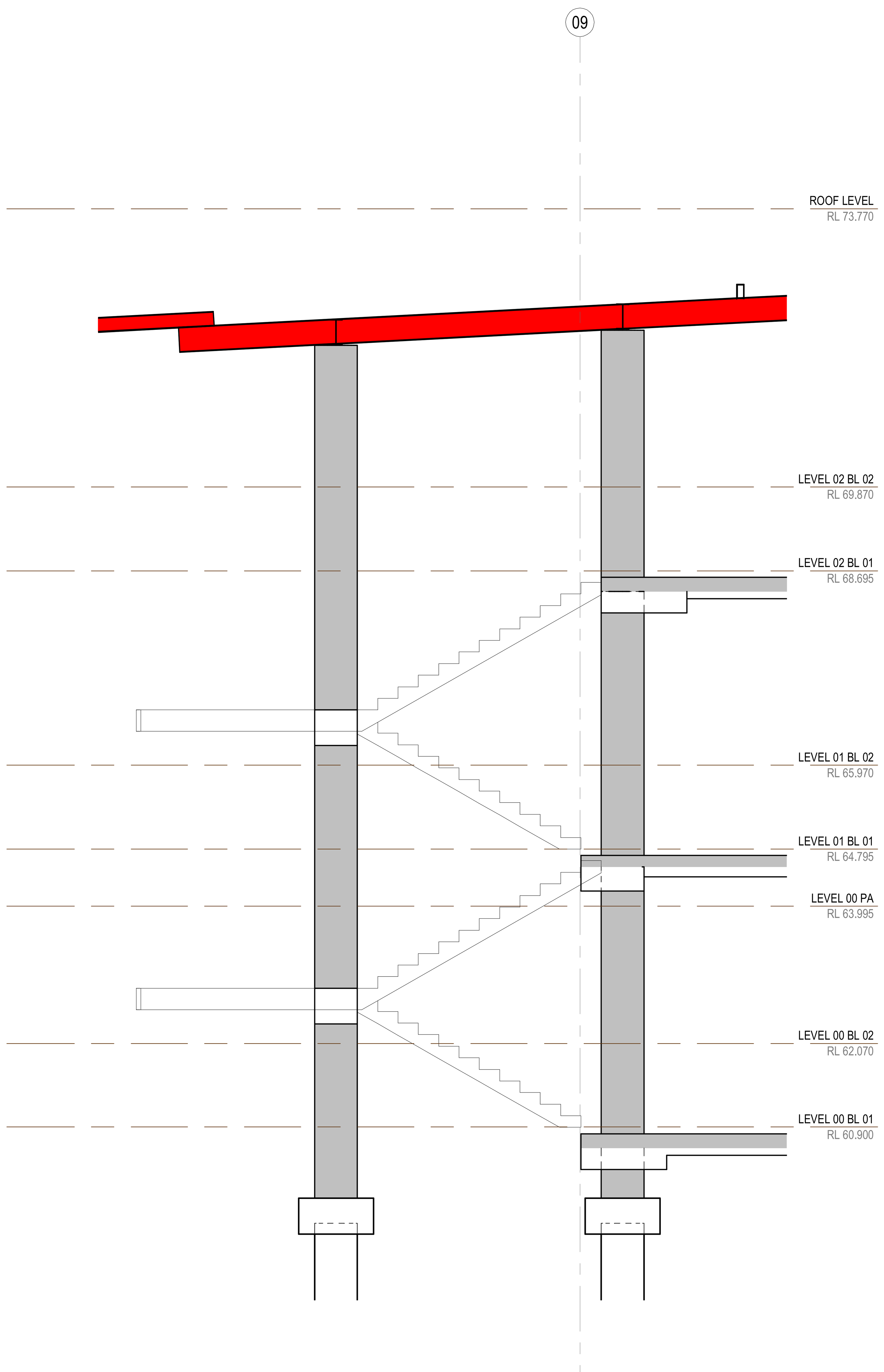
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 1 - LEVEL 02 - GENERAL ARRANGEMENT

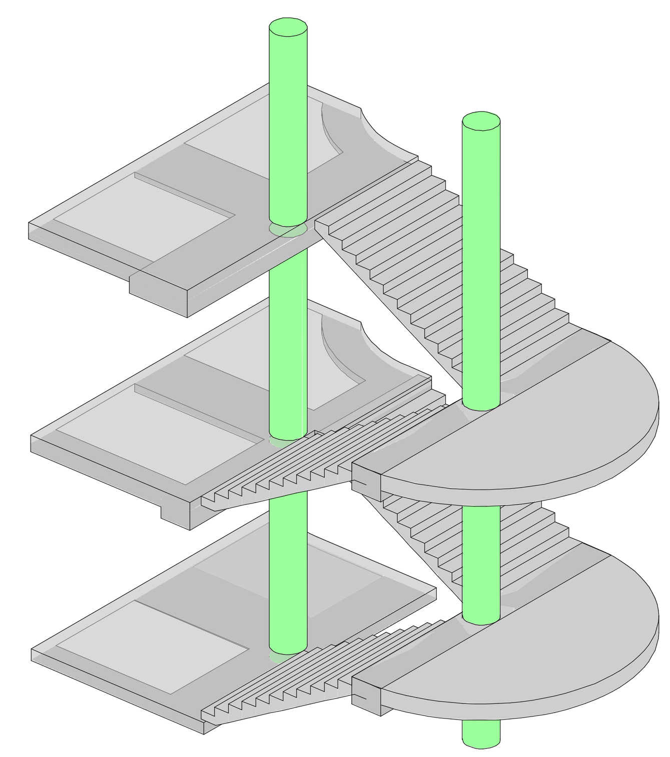
SCALE: 1 : 100

STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



ELEVATION 4 009-00

1 : 50



STAIR 1 - ISOMETRIC

SCALE:

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT | Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
STAIR 1 - PLAN AND ELEVATIONS

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

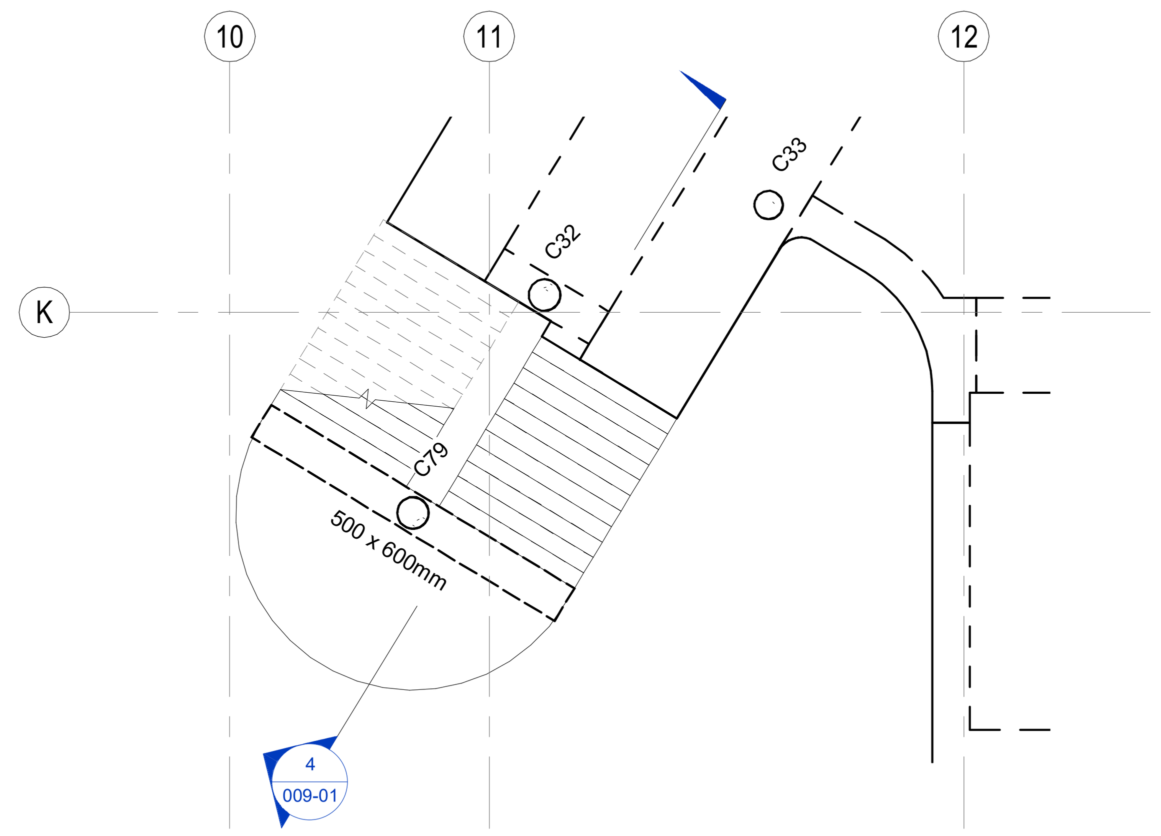
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-009-00

REV.
B

27/10/2021 5:04:39 PM

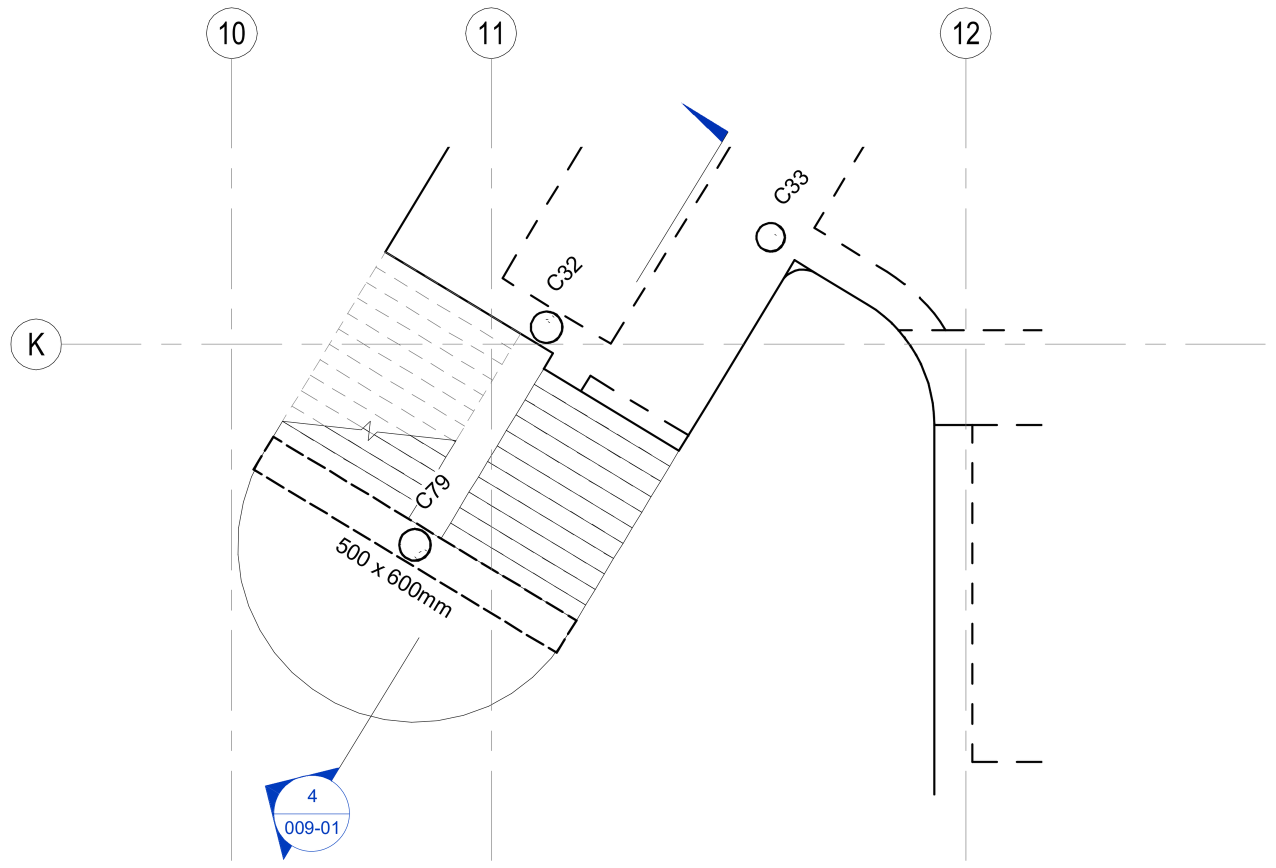
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



STAIR 2 - GROUND FLOOR - GENERAL ARRANGEMENT

SCALE: 1 : 100

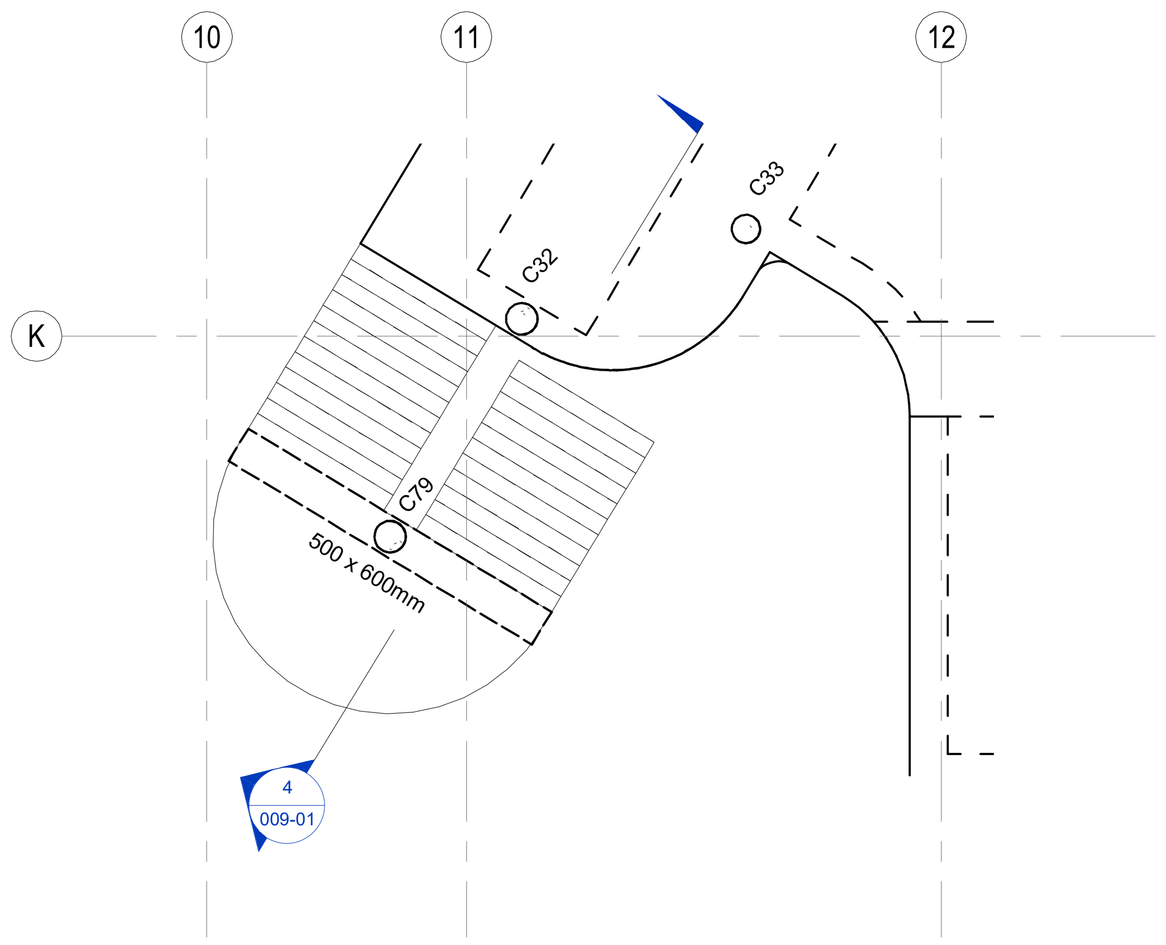
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 2 - LEVEL 01 - GENERAL ARRANGEMENT

SCALE: 1 : 100

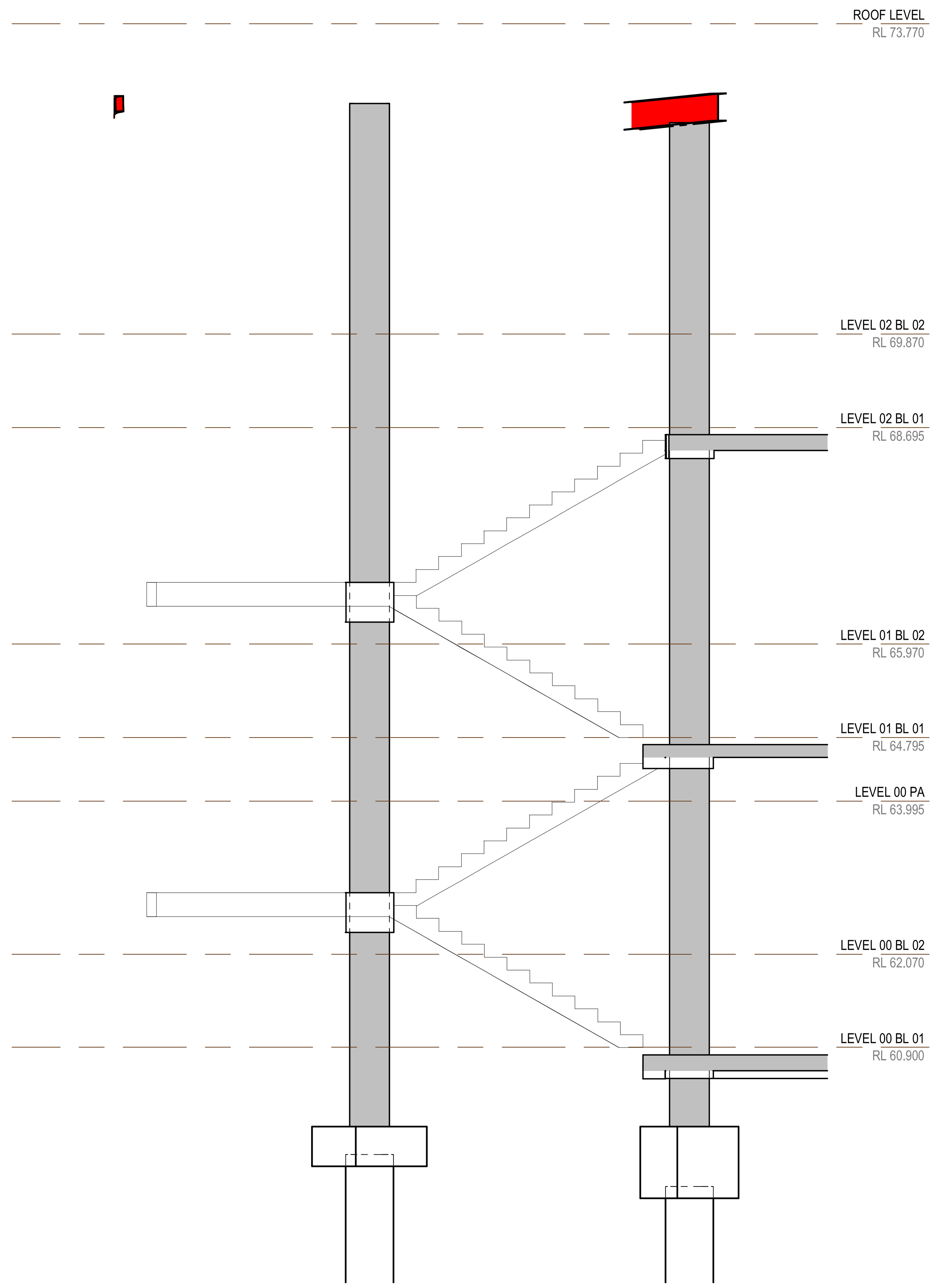
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 2 - LEVEL 02 - GENERAL ARRANGEMENT

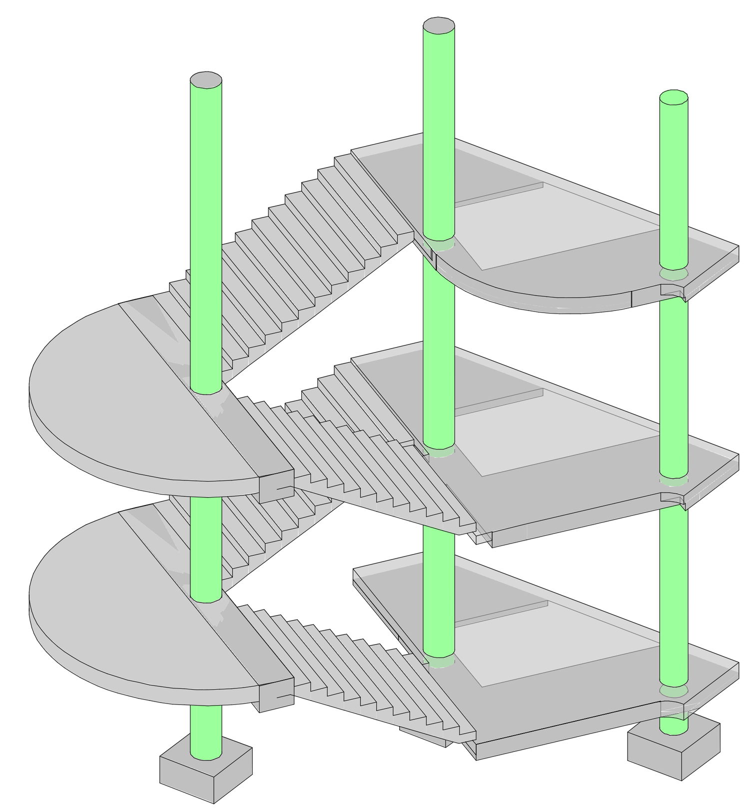
SCALE: 1 : 100

STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



ELEVATION 4 009-01

1 : 50



STAIR 2 - ISOMETRIC

SCALE:

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

STAIR 2 - PLAN AND ELEVATIONS

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

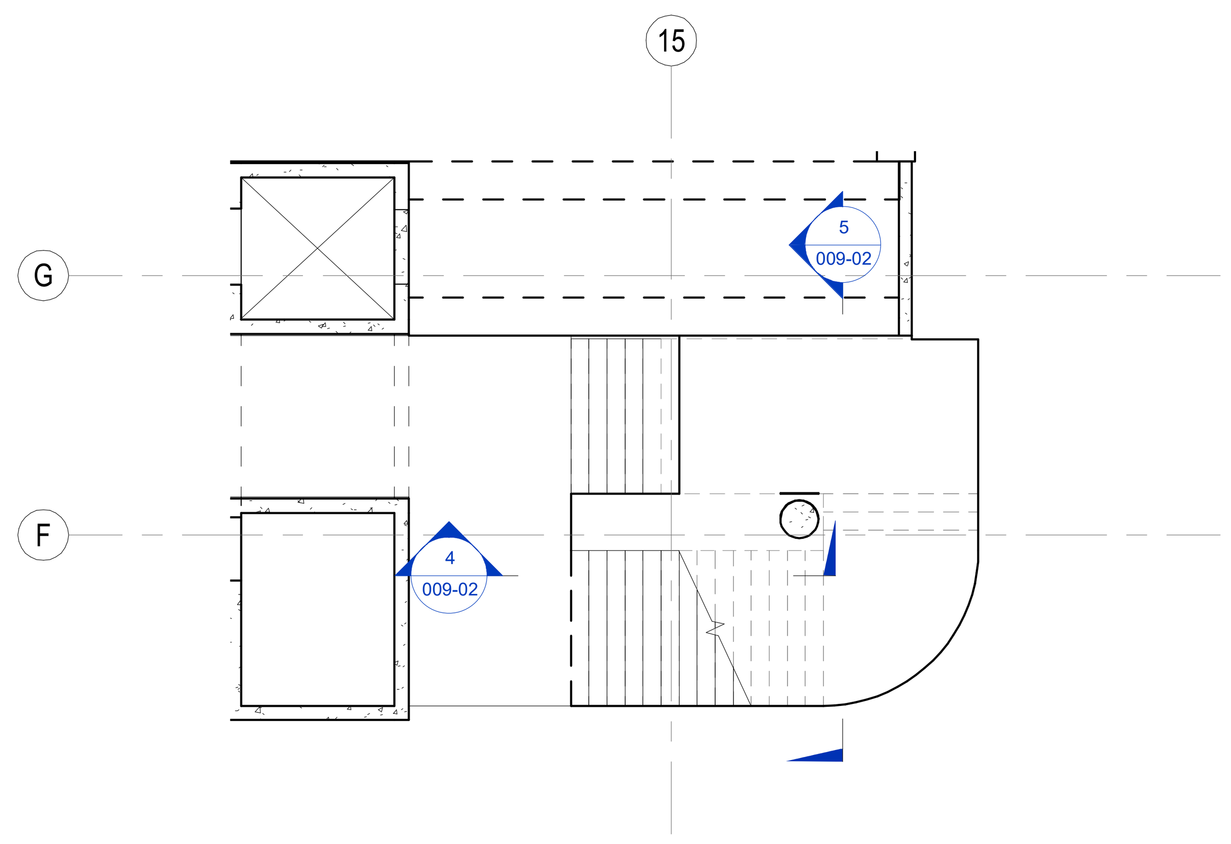
PRELIMINARY

DRAWING NUMBER: ST-009-01

REV.: B

27/10/2021 5:04:43 PM

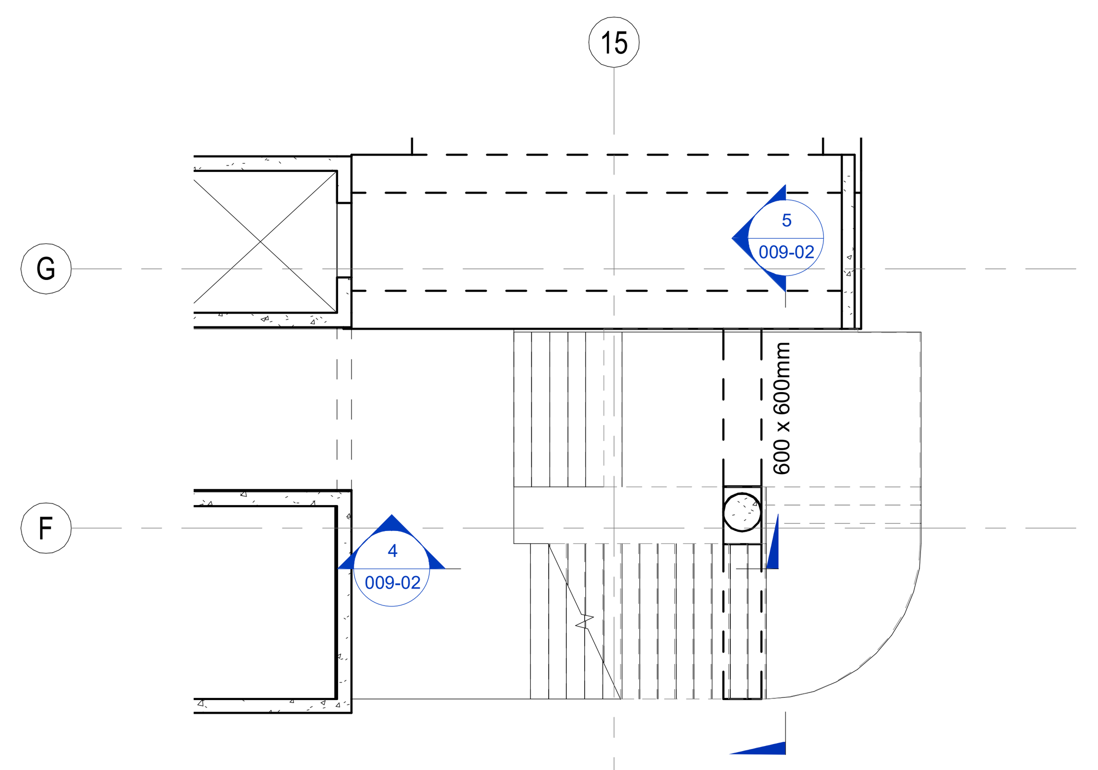
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



STAIR 3 - GROUND FLOOR - GENERAL ARRANGEMENT

SCALE: 1 : 100

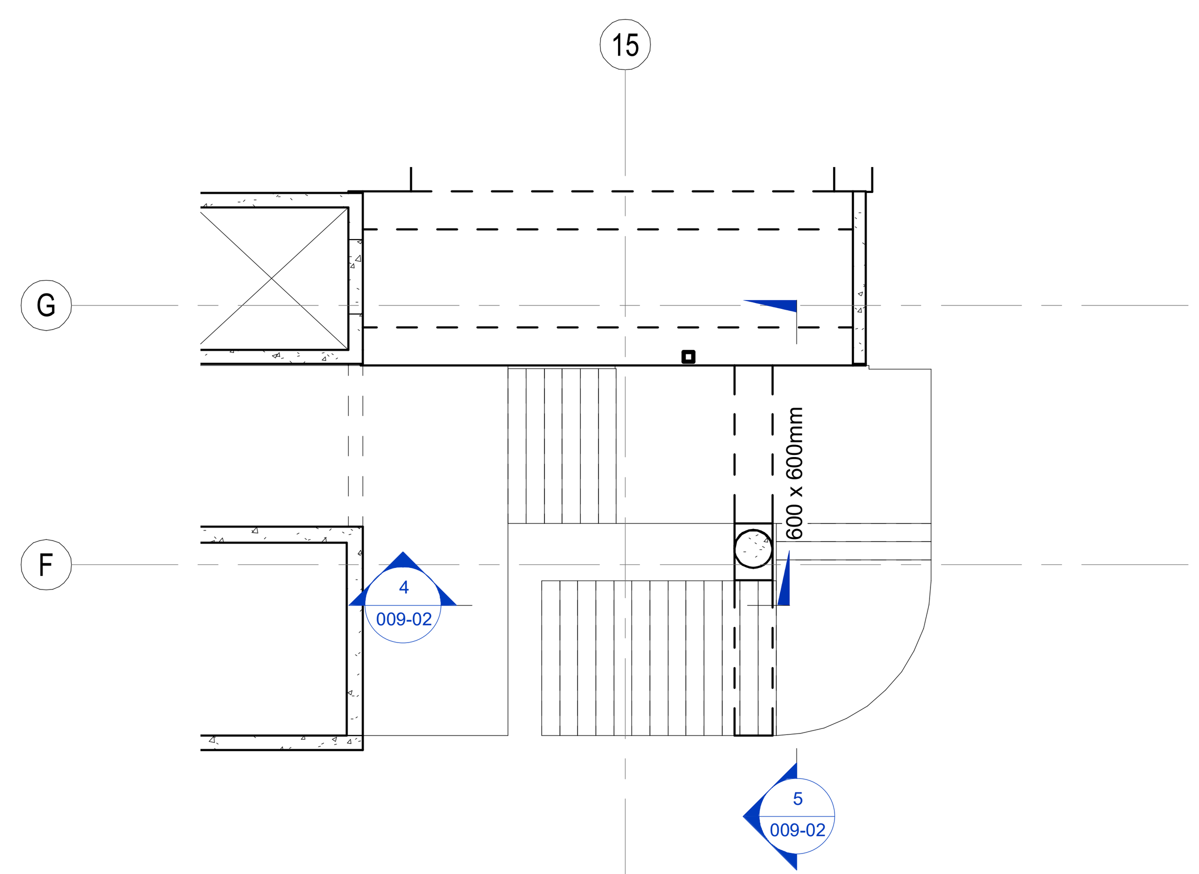
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 3 - LEVEL 01 - GENERAL ARRANGEMENT

SCALE: 1 : 100

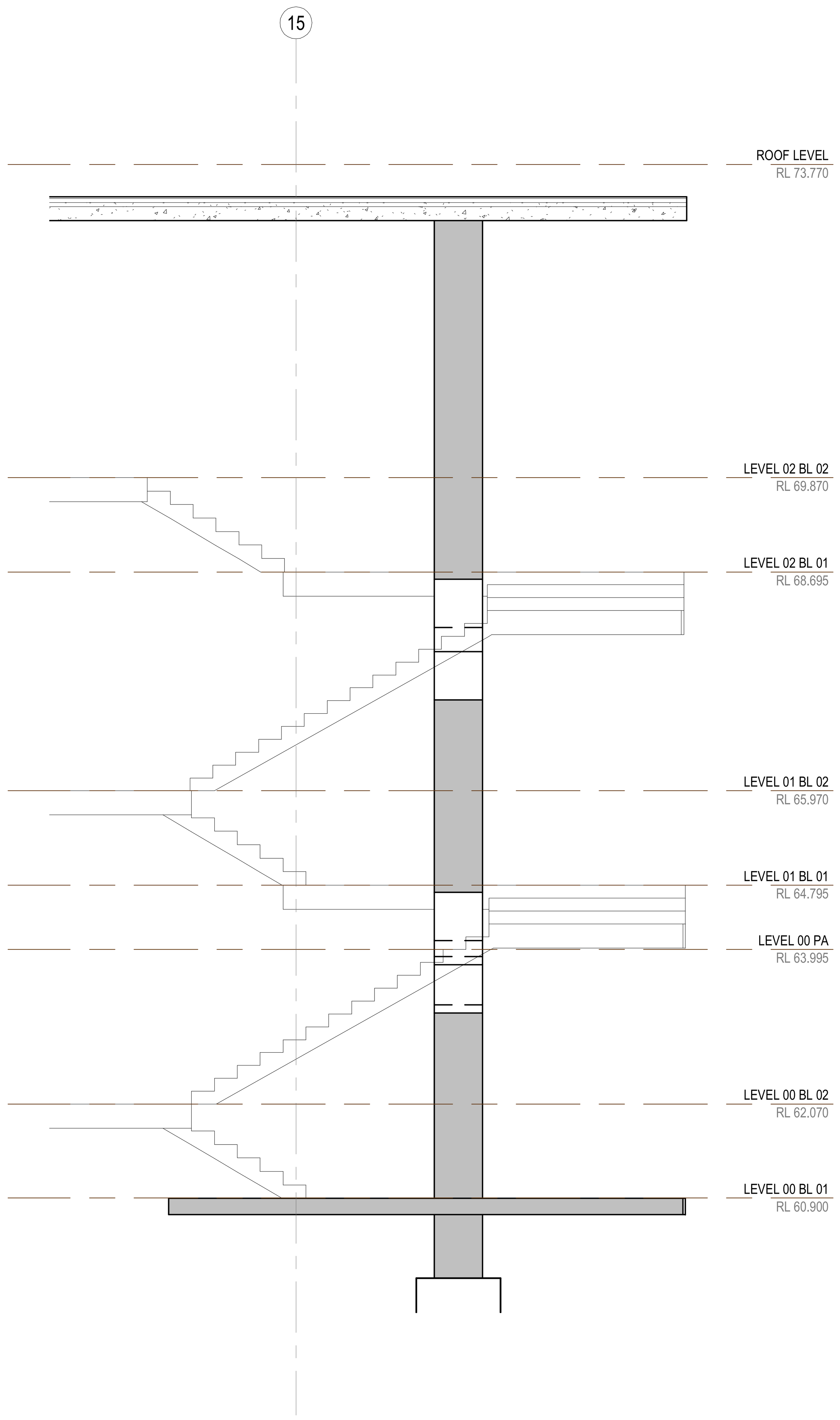
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 3 - LEVEL 02 - GENERAL ARRANGEMENT

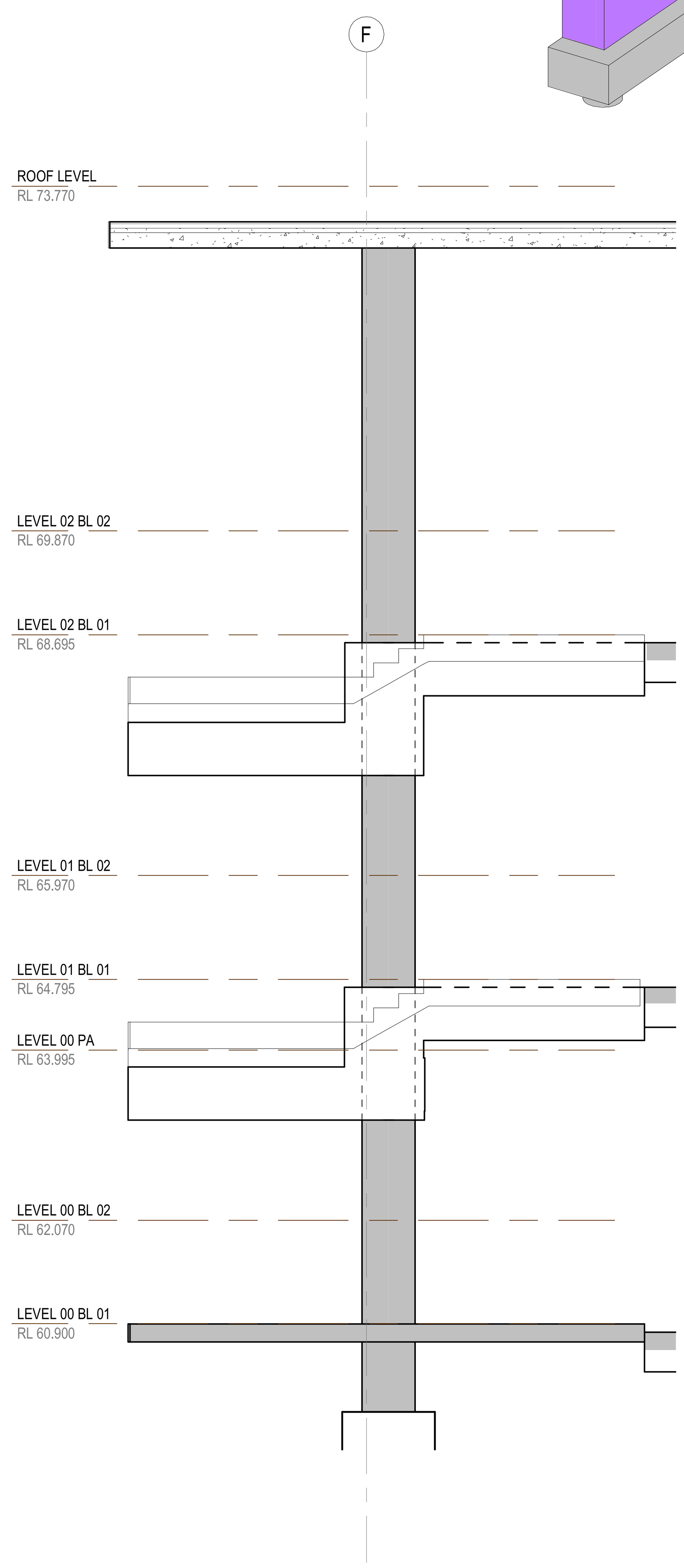
SCALE: 1 : 100

STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



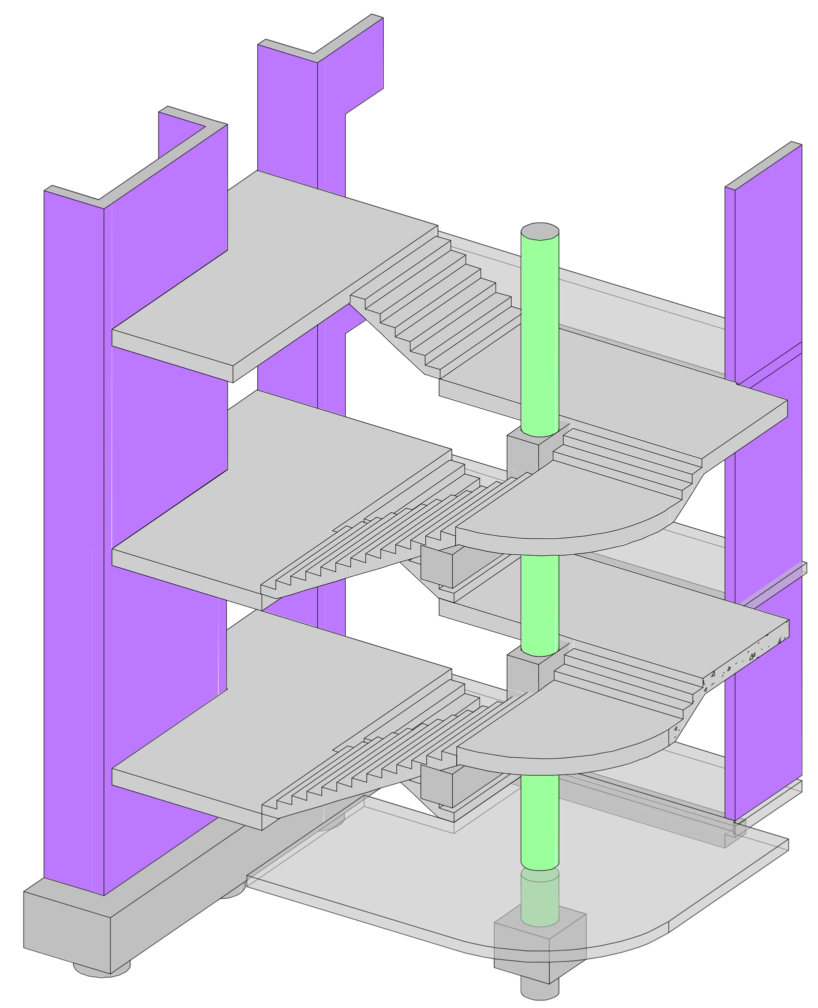
ELEVATION 4 (009-02)

1 : 50



ELEVATION 5 (009-02)

1 : 50



STAIR 3 - ISOMETRIC

SCALE:

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
STAIR 3 - PLAN AND ELEVATIONS

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

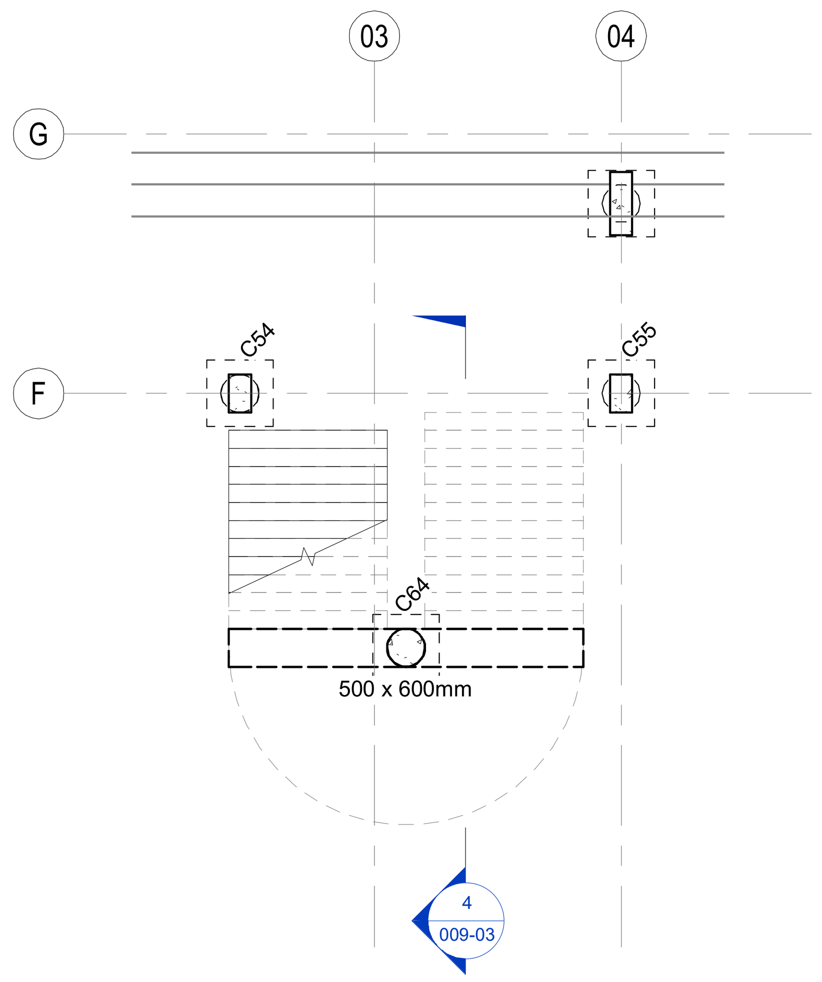
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER: ST-009-02
REV.: B

27/10/2021 5:04:48 PM

A1

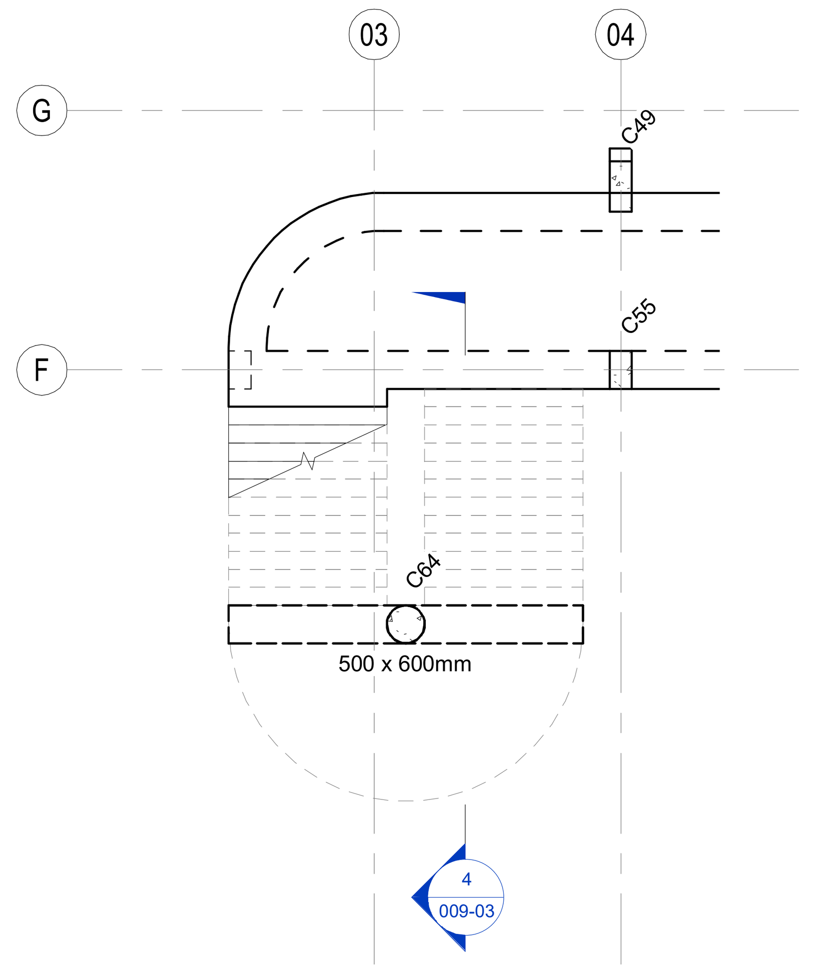
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



STAIR 4 - GROUND FLOOR - GENERAL ARRANGEMENT

SCALE: 1 : 100

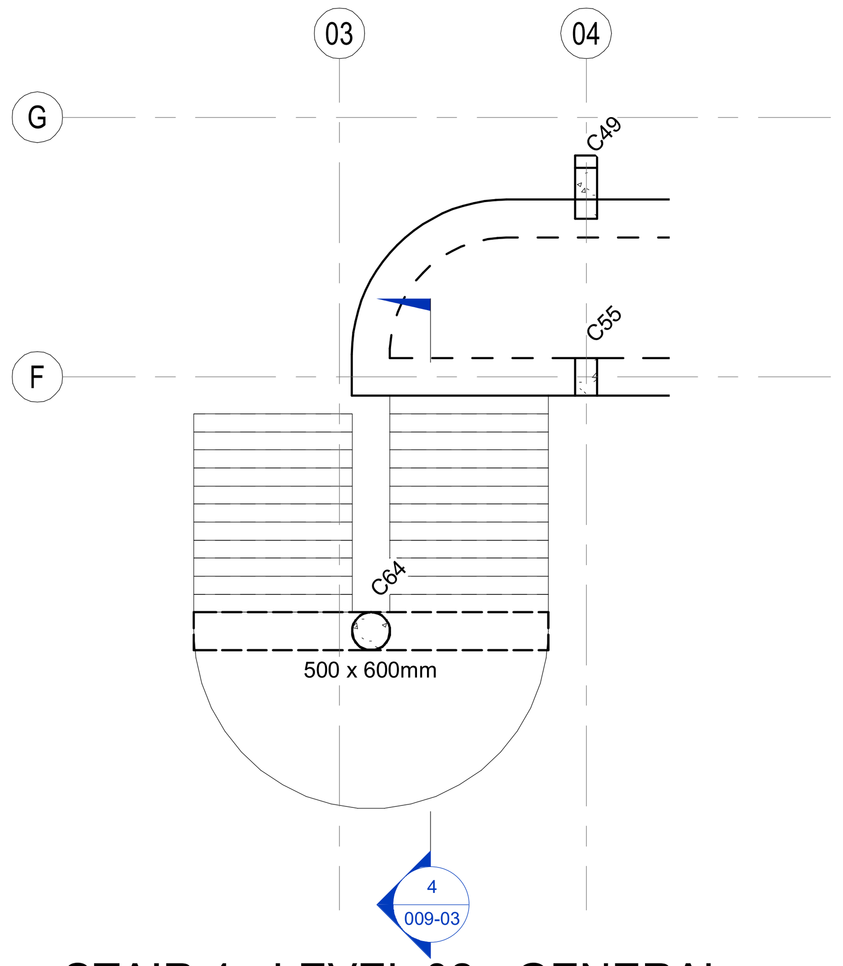
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 4 - LEVEL 01 - GENERAL ARRANGEMENT

SCALE: 1 : 100

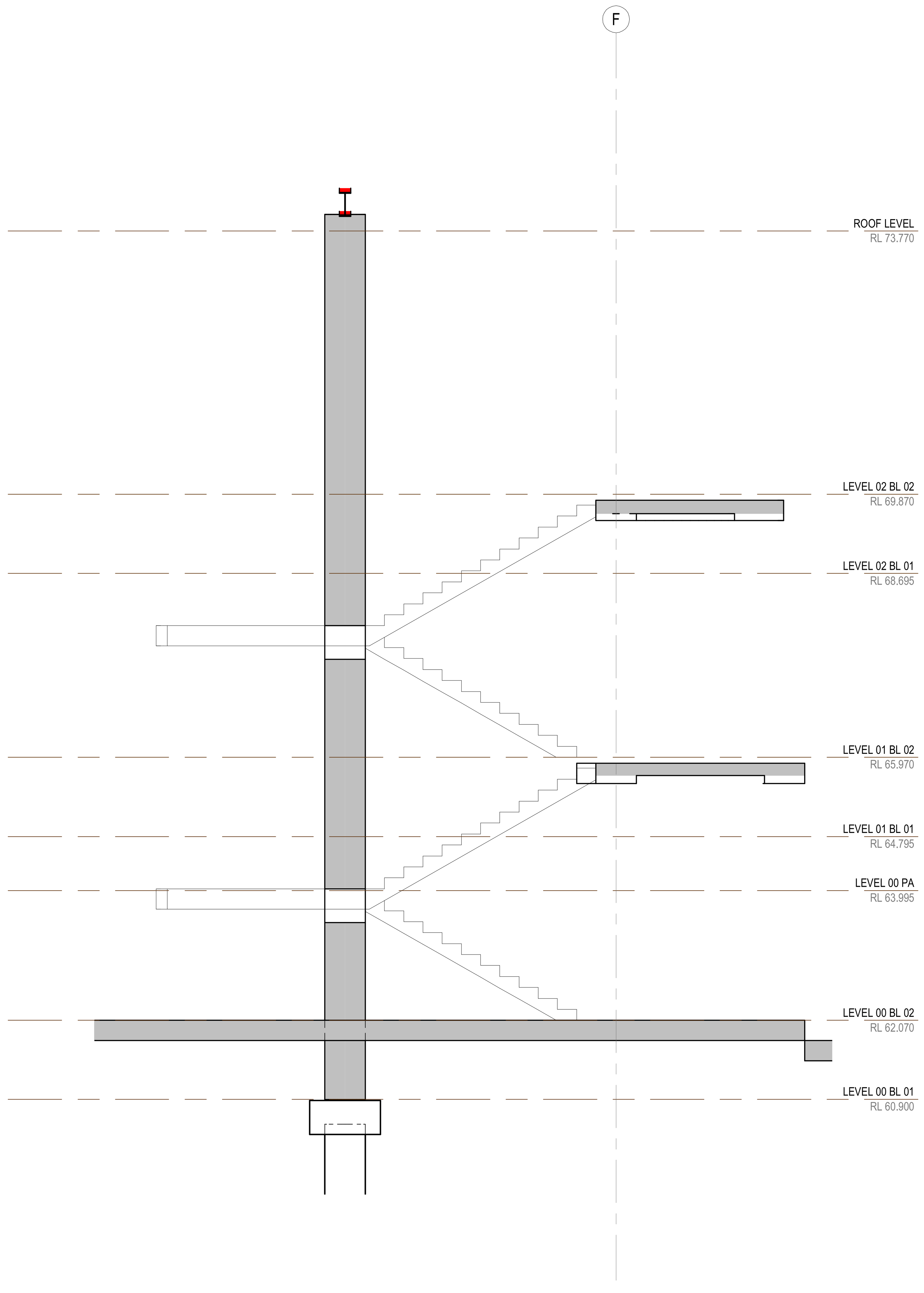
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



STAIR 4 - LEVEL 02 - GENERAL ARRANGEMENT

SCALE: 1 : 100

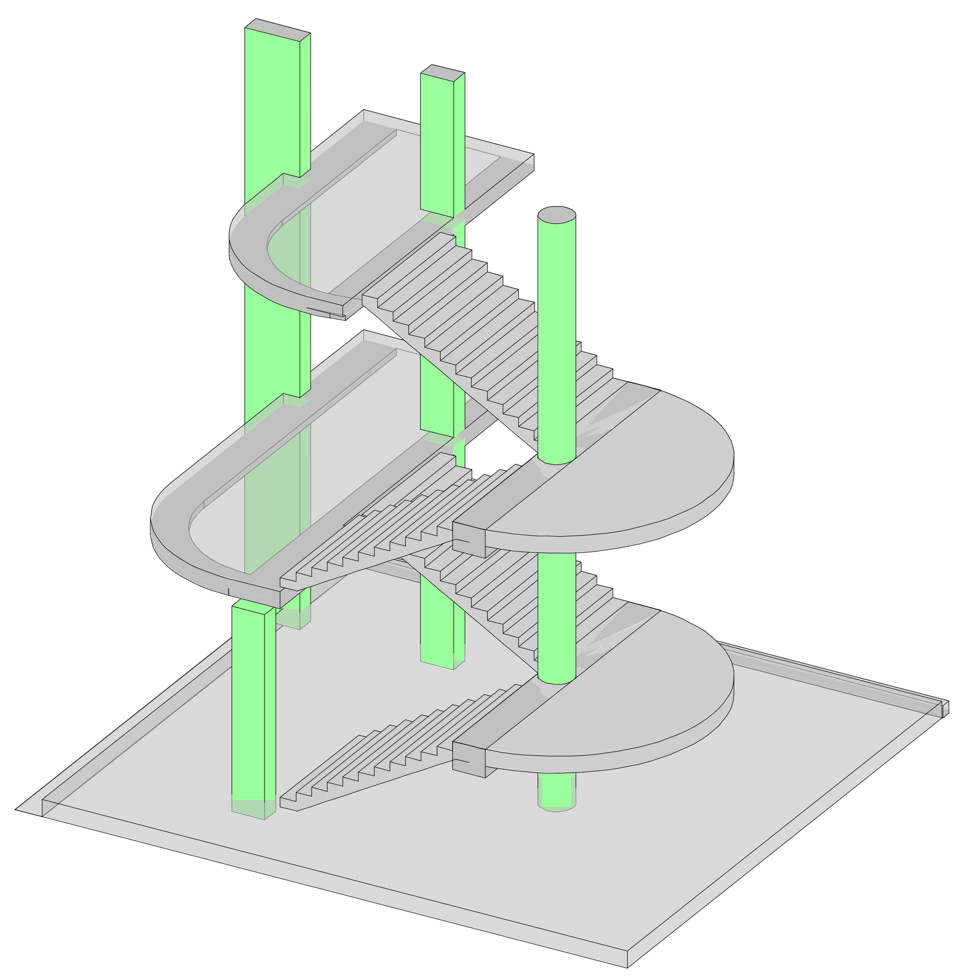
STAIRS 220 THROAT THICKNESS U.N.O.
CONCRETE STRENGTH f'c = 40 MPa



ELEVATION

4
009-03

1 : 50



STAIR 4 - ISOMETRIC

SCALE:

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

STAIR 4 - PLAN AND ELEVATIONS

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

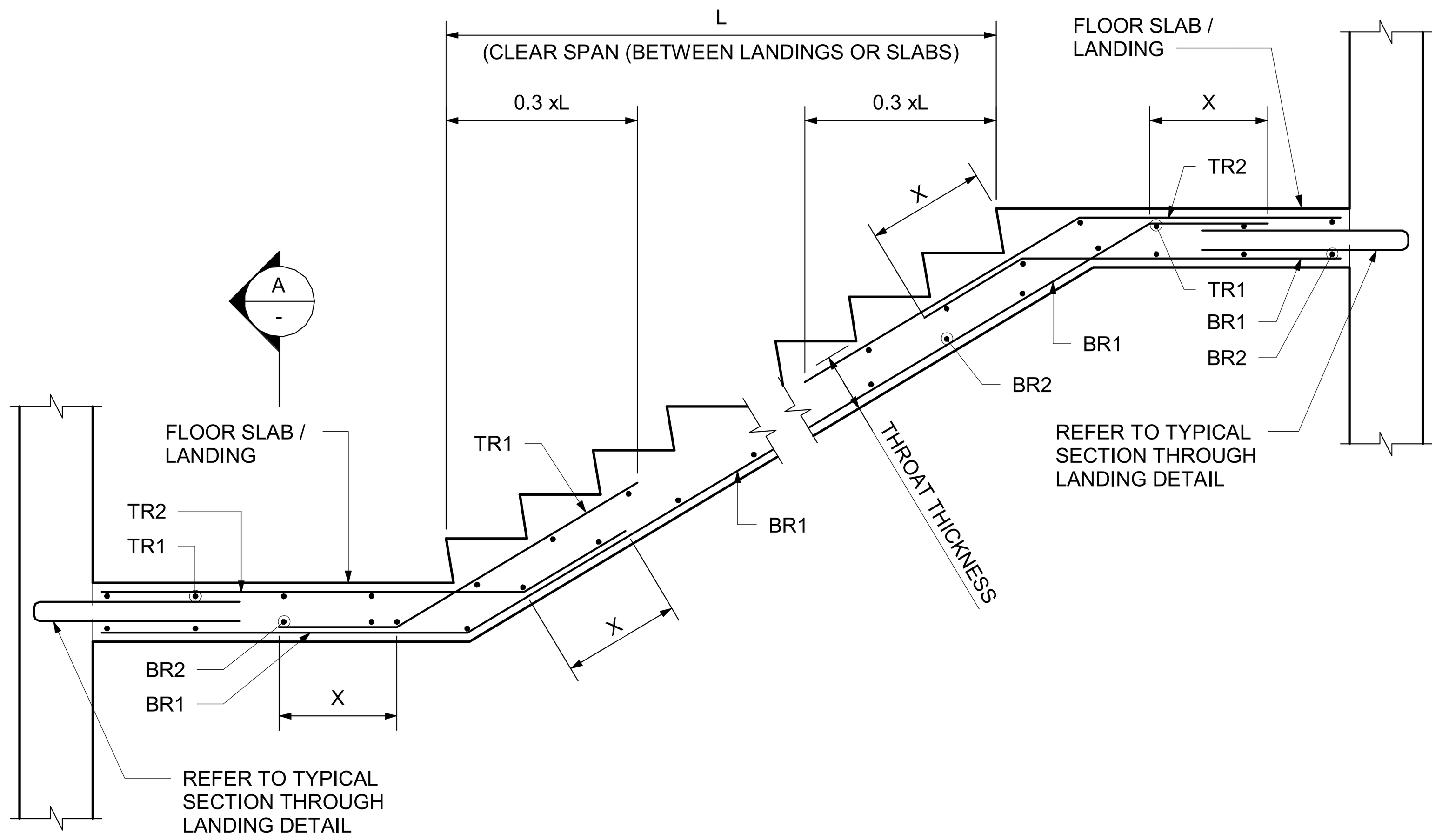
PRELIMINARY

DRAWING NUMBER: ST-009-03

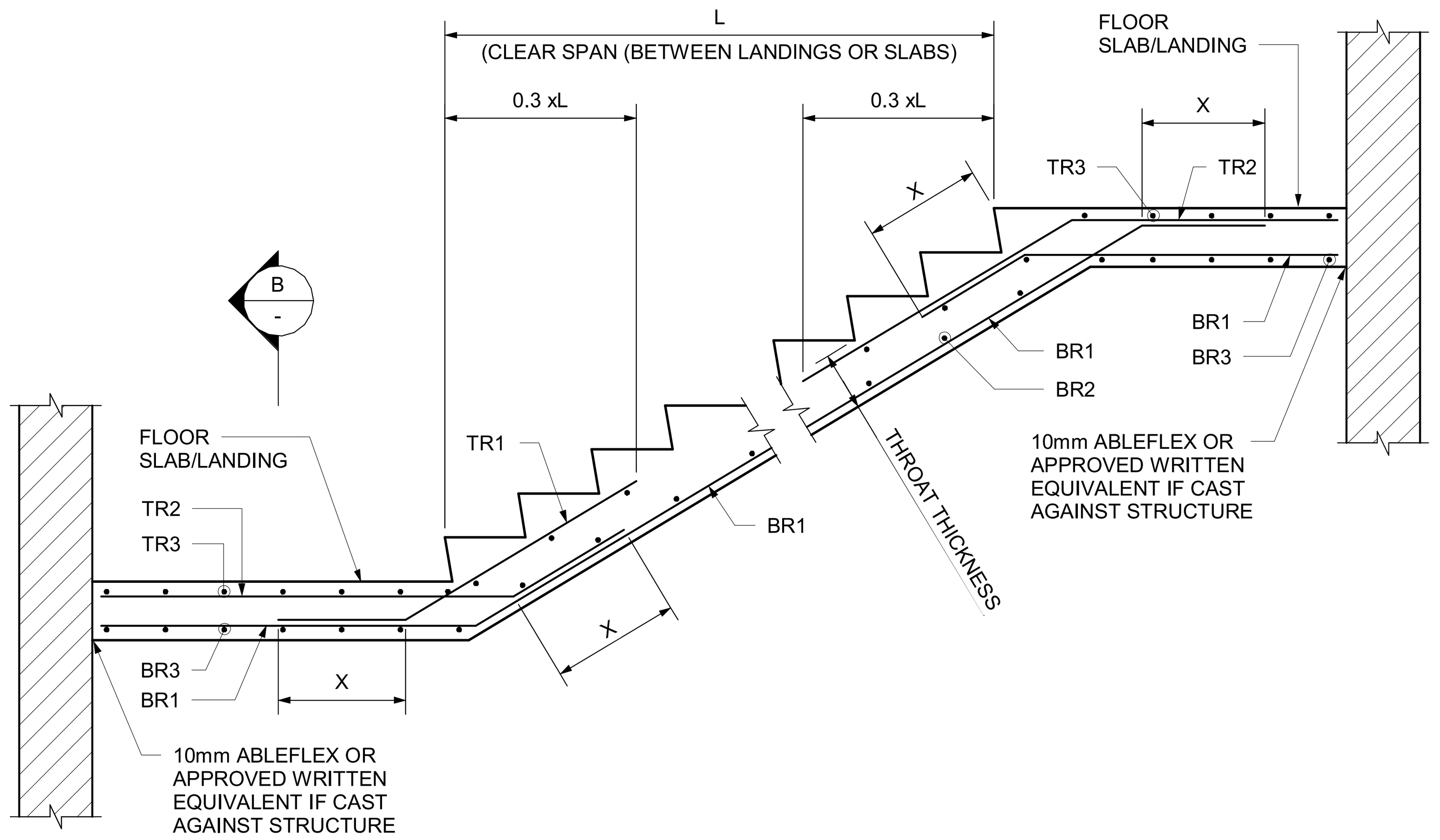
REV.: B

27/10/2021 5:04:53 PM

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



STAIR TYPE 'A'
STAIR FLIGHT SPANNING BETWEEN WALLS / STRUCTURE



STAIR TYPE 'B'
STAIR FLIGHT SPANNING BETWEEN LANDINGS

NOTES:
- STAIR FLIGHTS TO BE 200 THICK U.N.O, LANDINGS TO 230 THICK U.N.O
- MAIN REINFORCEMENT BARS TO BE N16-200 TOP AND BOTTOM (U.N.O), PROVIDE N12-250 DISTRIBUTION REINFORCEMENT BARS TOP AND BOTTOM (U.N.O)
- COVER TO REINFORCEMENT TO BE 25mm TOP AND BOTTOM
- CONCRETE STRENGTH (f'c) = 40 MPa
- FOR REINFORCEMENT BAR DESIGNATIONS REFER TO STAIR ELEVATIONS DRAWINGS FOR REINFORCEMENT SCHEDULE

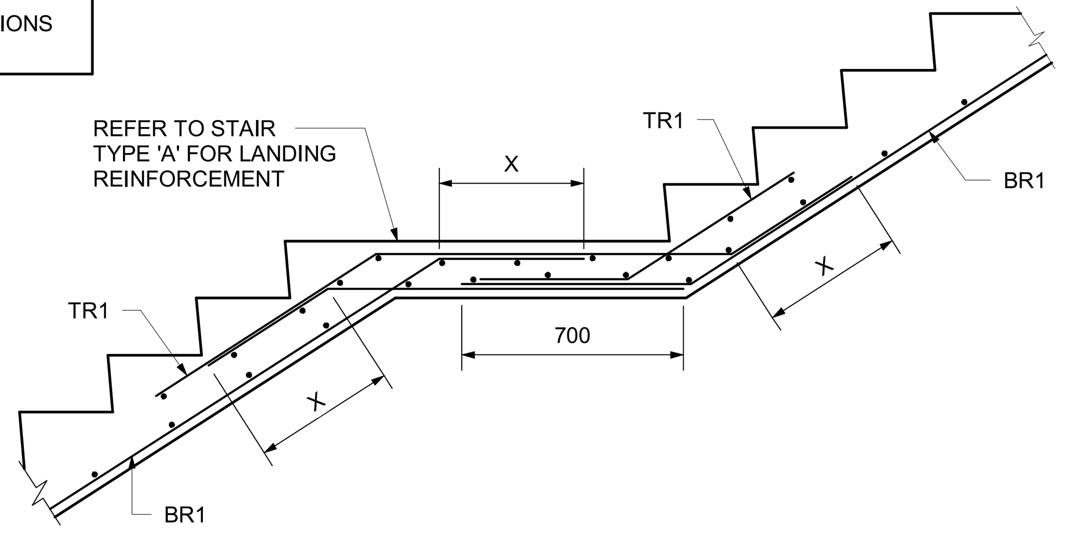
REINFORCEMENT LAP SCHEDULE

BAR	LAP LENGTH 'X' (mm)
N12	500
N16	650
N20	800

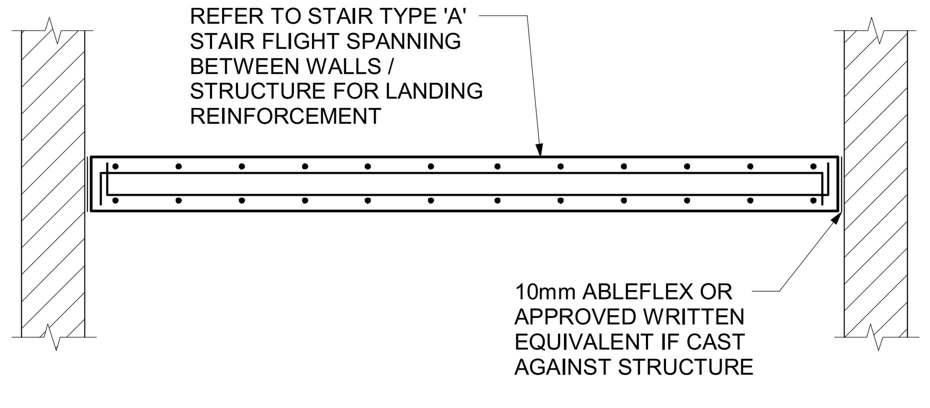
NOTES:
- STAIR FLIGHTS TO BE 200 THICK U.N.O, LANDINGS TO 230 THICK U.N.O
- MAIN REINFORCEMENT BARS TO BE N16-200 TOP AND BOTTOM (U.N.O), PROVIDE N12-250 DISTRIBUTION REINFORCEMENT BARS TOP AND BOTTOM (U.N.O)
- COVER TO REINFORCEMENT TO BE 25mm TOP AND BOTTOM
- CONCRETE STRENGTH (f'c) = 40 MPa
- FOR REINFORCEMENT BAR DESIGNATIONS REFER TO STAIR ELEVATIONS DRAWINGS FOR REINFORCEMENT SCHEDULE

REINFORCEMENT LAP SCHEDULE

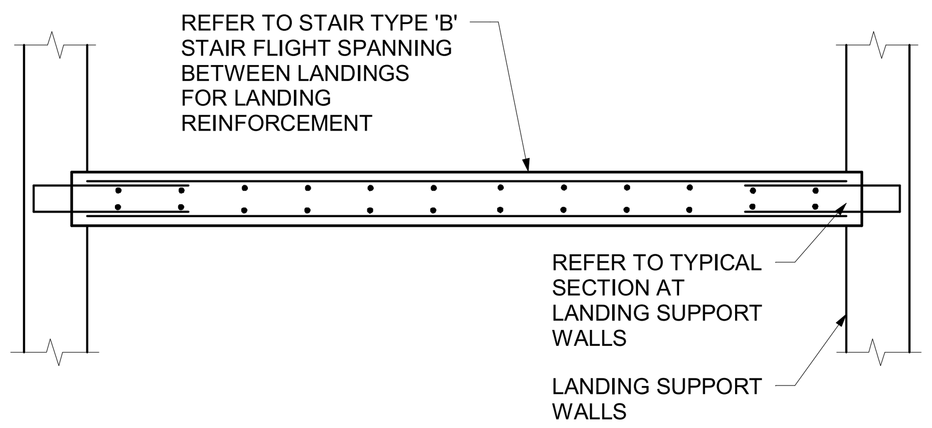
BAR	LAP LENGTH 'X' (mm)
N12	500
N16	650
N20	800



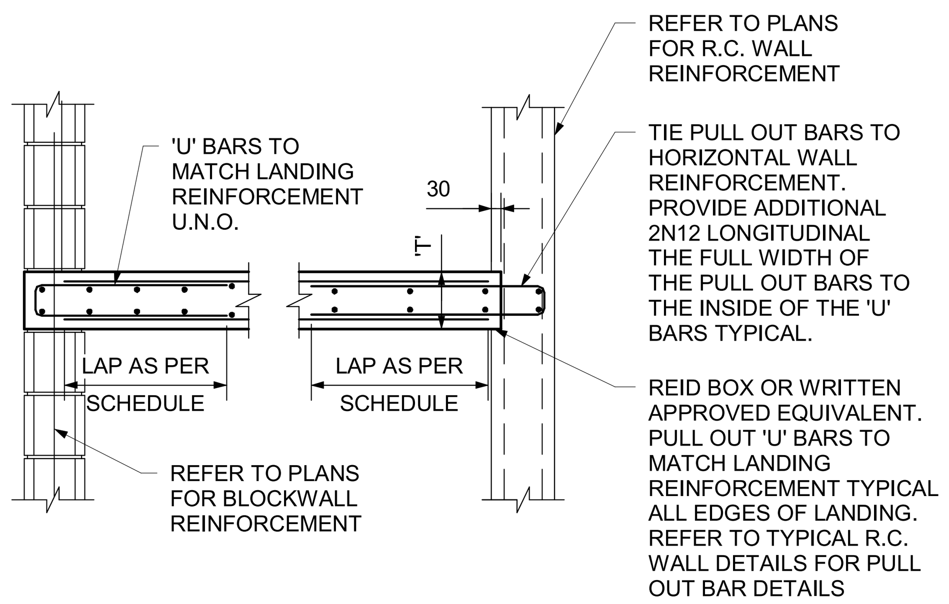
TYPICAL SECTION THROUGH MID-LANDING



STAIR TYPE 'A' LANDING SECTION A



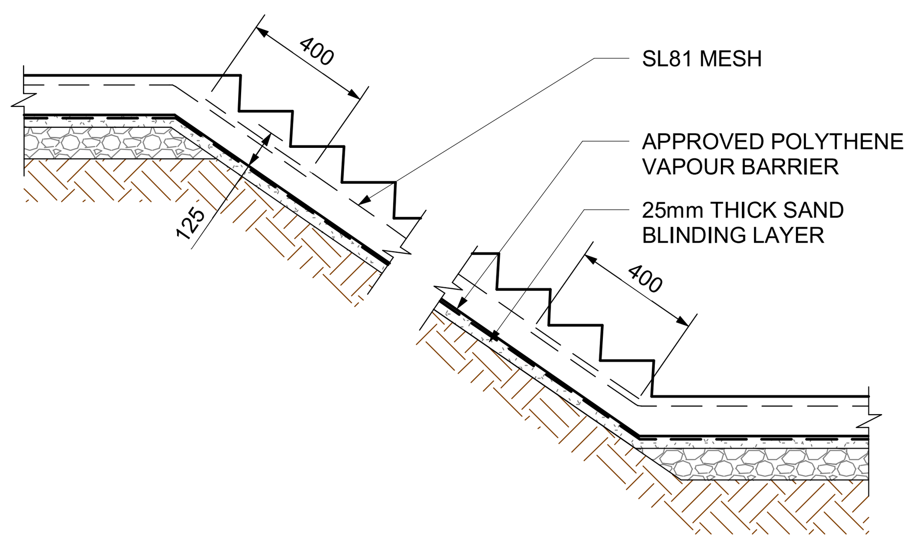
STAIR TYPE 'B' LANDING SECTION B



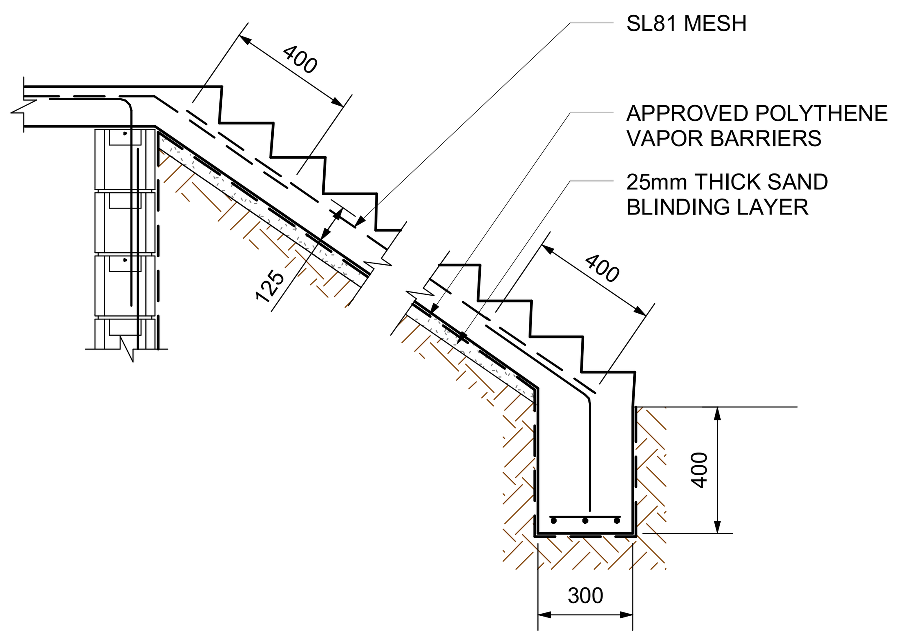
TYPICAL AT BLOCK WALL

TYPICAL AT R.C. WALL

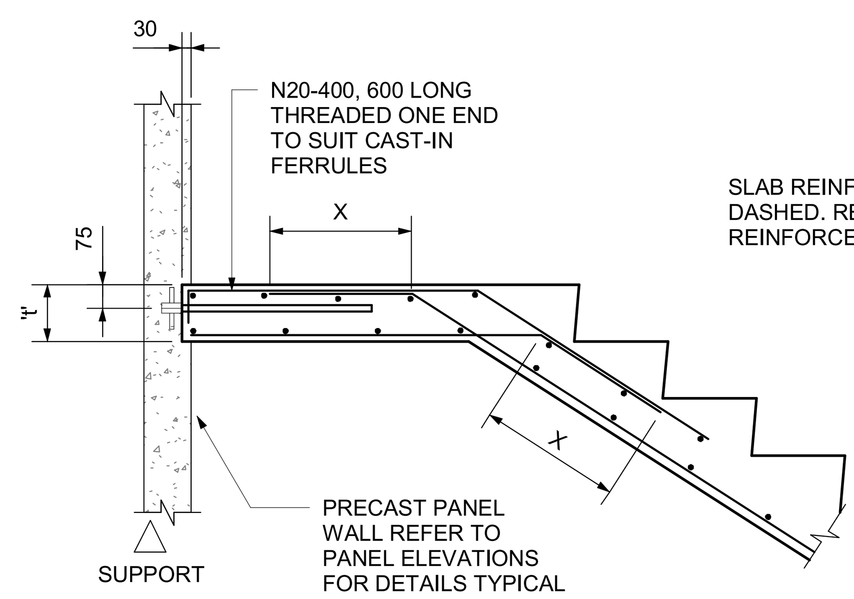
TYPICAL SECTION AT LANDING SUPPORT WALLS



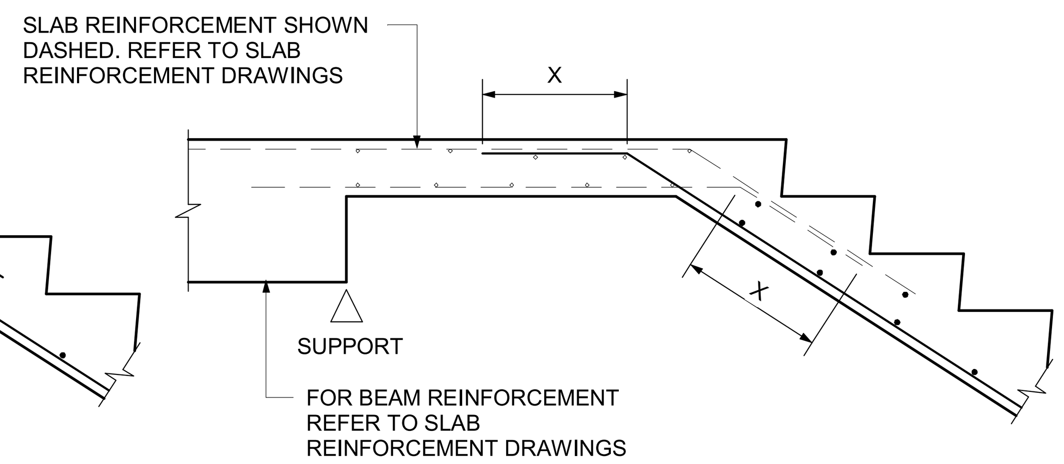
TYPICAL STAIR ON GRADE SECTION



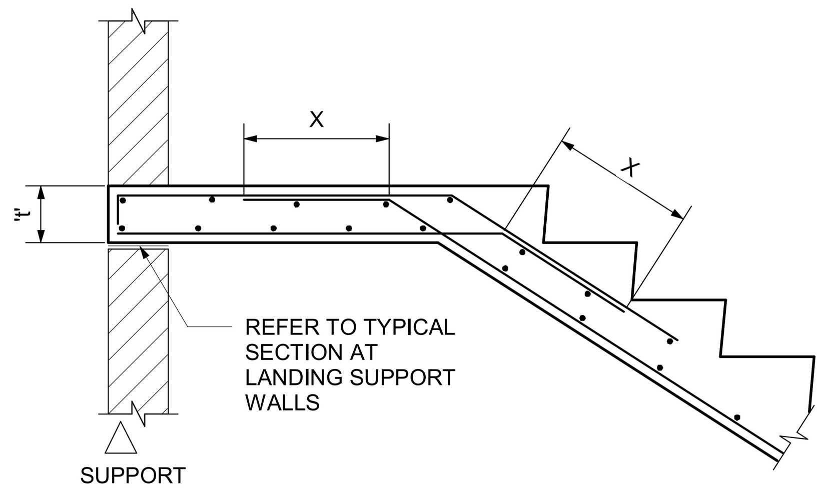
TYPICAL STAIR ON GRADE SECTION



TILT PANEL WALL

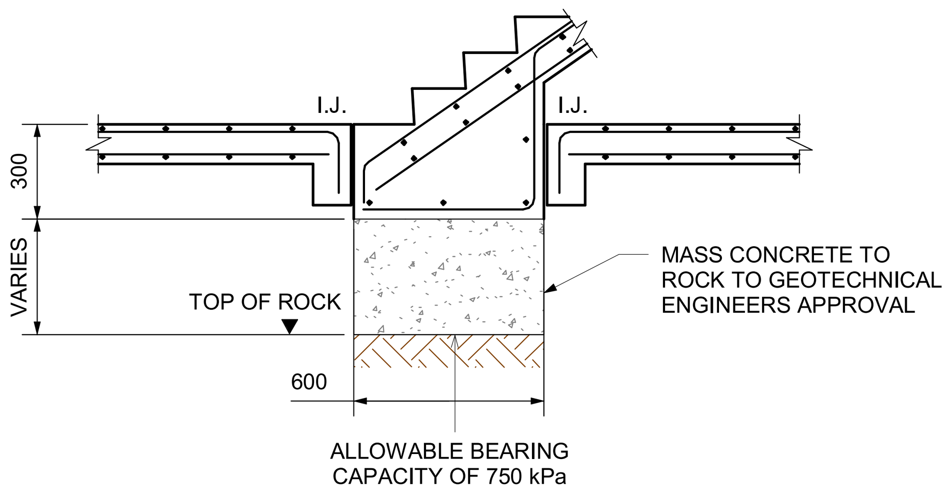


R.C BEAM

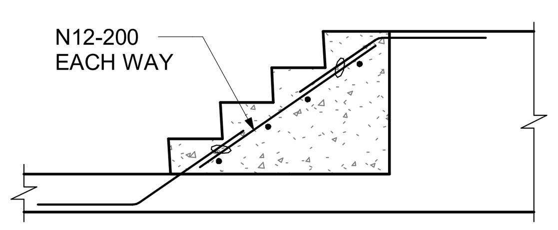


BLOCKWORK ALL

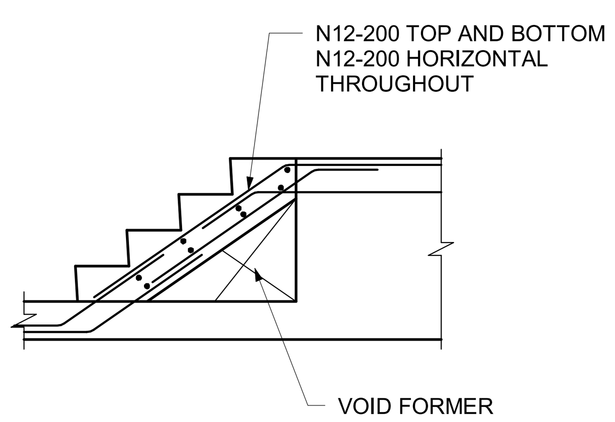
TYPICAL STAIR SUPPORT DETAILS



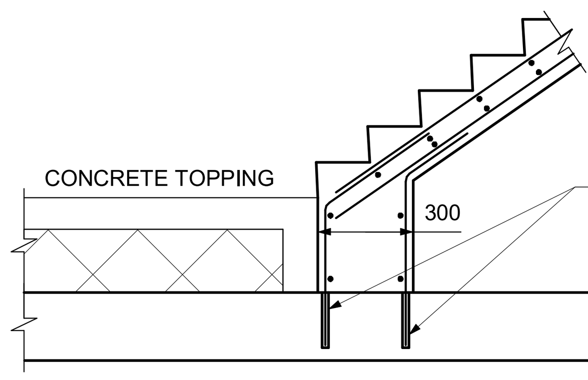
STAIRS POURED ONTO ROCK BASE



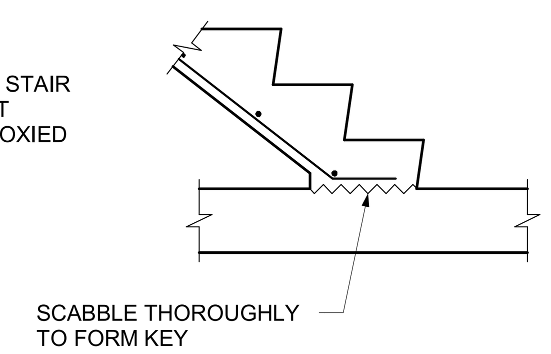
MASS CONCRETE STAIR



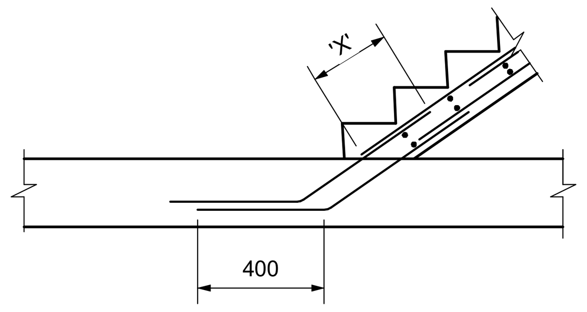
VOID FORMER STAIR



TYPICAL STAIR TURNDOWN AT CONCRETE TOPPING



STAIR BUILT ONTO SLAB OR EXISTING SLAB



TYPICAL DETAIL AT STAIR BASE

TYPICAL STAIR BASE DETAILS

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL STAIR DETAILS

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

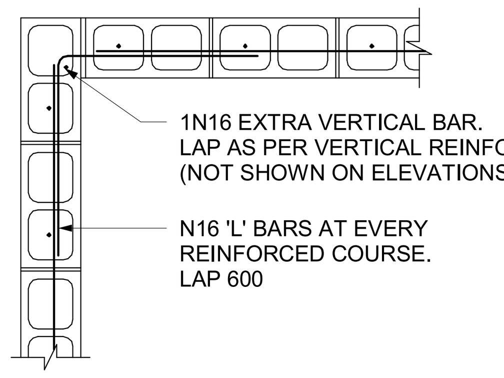
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER ST-009-31
REV. B

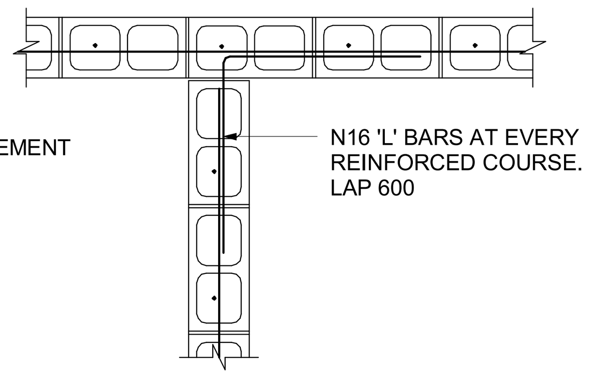
27/10/2021 5:07:54 PM

A1

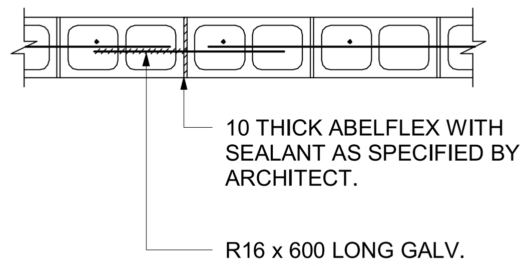
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



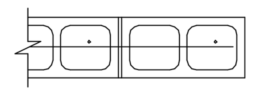
BLOCK CORNER SINGLE LAYER REINFORCEMENT



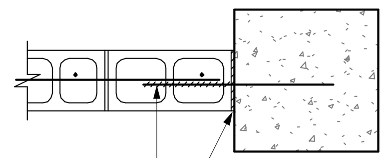
BLOCK JUNCTION SINGLE LAYER REINFORCEMENT



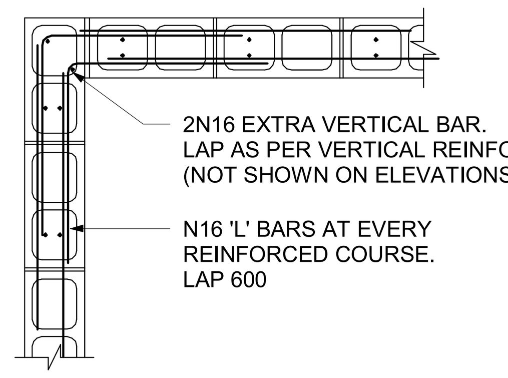
BLOCK EXPANSION JOINT SINGLE LAYER REINFORCEMENT



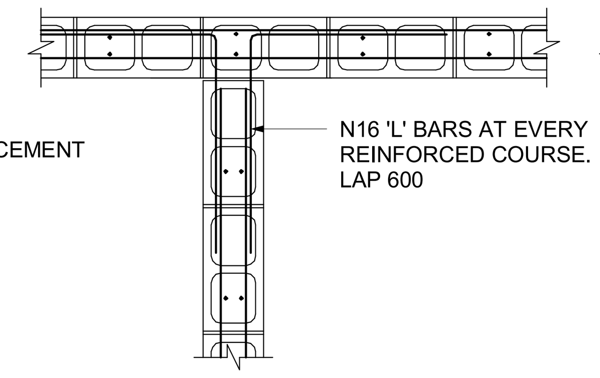
BLOCK END SINGLE LAYER REINFORCEMENT



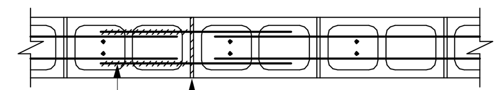
BLOCK END AT CONCRETE SINGLE LAYER REINFORCEMENT



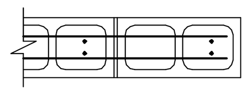
BLOCK CORNER REINFORCEMENT E.F.



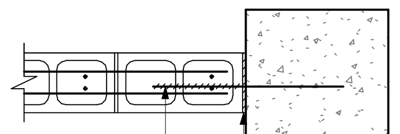
BLOCK JUNCTION REINFORCEMENT E.F.



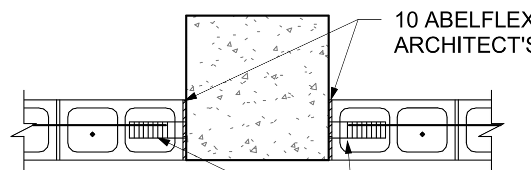
BLOCK EXPANSION JOINT REINFORCEMENT E.F.



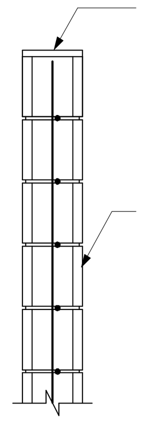
BLOCK END REINFORCEMENT E.F.



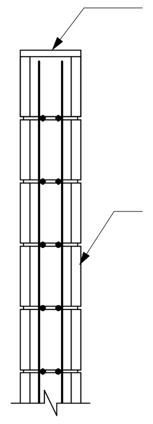
BLOCK END REINFORCEMENT E.F. AT CONCRETE



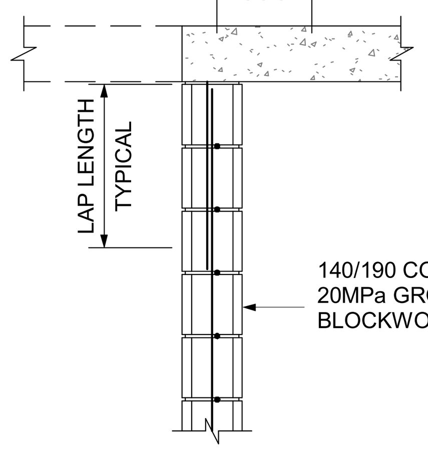
TYPICAL BLOCK WALL TO CONCRETE COLUMN FIXING DETAIL



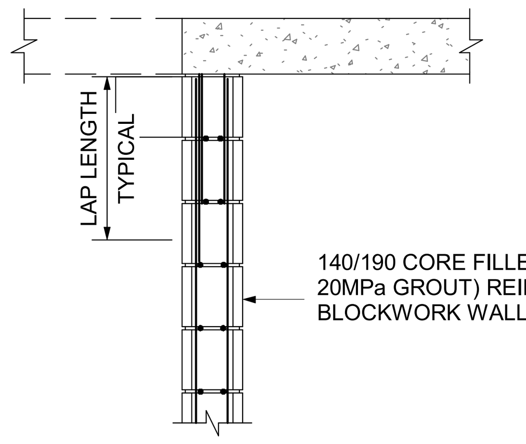
CANTILEVERED LOAD BEARING BLOCKWORK SINGLE LAYER REINFORCEMENT



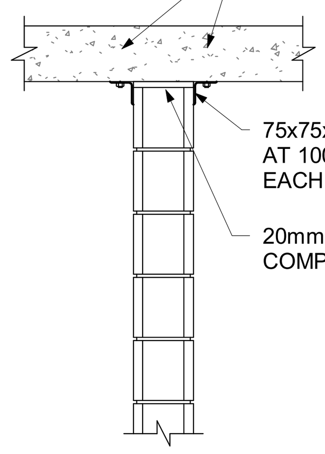
CANTILEVERED LOAD BEARING BLOCKWORK REINFORCEMENT E.F.



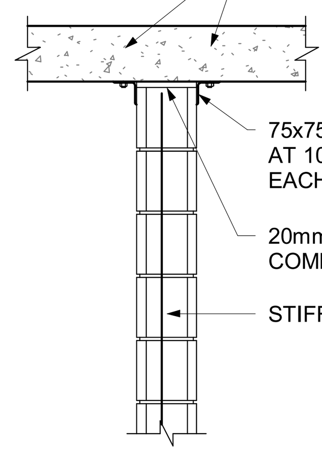
LOAD BEARING RETAINING BLOCKWORK TO UNDERSIDE OF SLAB SINGLE LAYER REINFORCEMENT



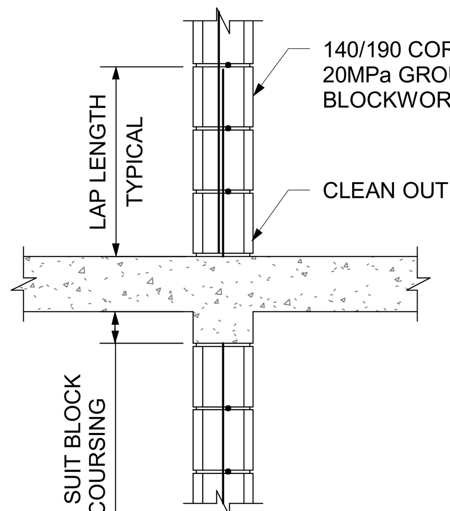
LOAD BEARING RETAINING BLOCKWORK TO UNDERSIDE OF SLAB REINFORCEMENT E.F.



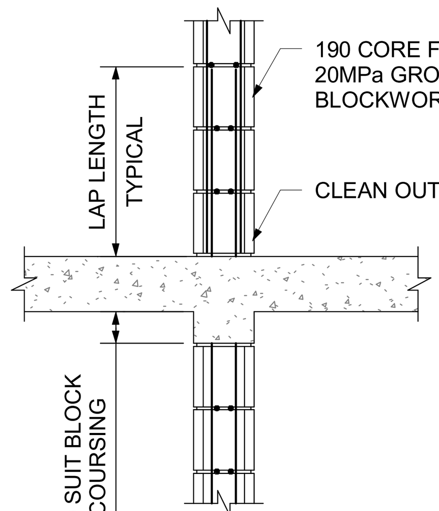
NON-LOAD BEARING INTERNAL BLOCKWORK TO UNDERSIDE OF SLAB



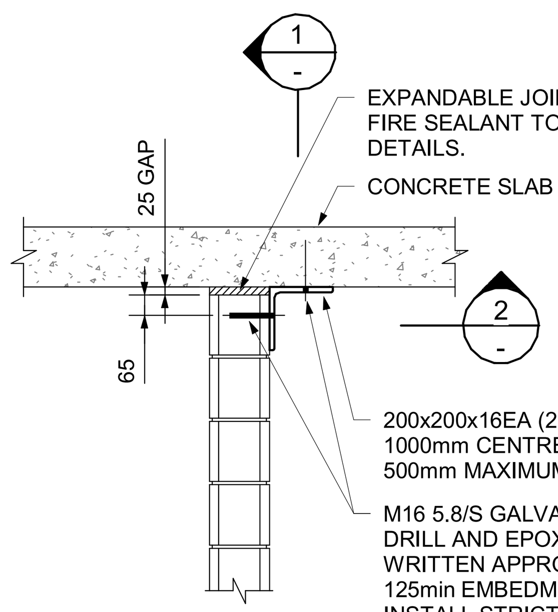
NON-LOAD BEARING INTERNAL BLOCKWORK TO UNDERSIDE OF SLAB WITH STIFFENER

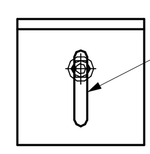


LOAD BEARING BLOCKWORK TO INTERMEDIATE SLAB SINGLE LAYER REINFORCEMENT

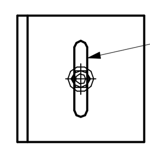


LOAD BEARING BLOCKWORK TO INTERMEDIATE SLAB REINFORCEMENT E.F.



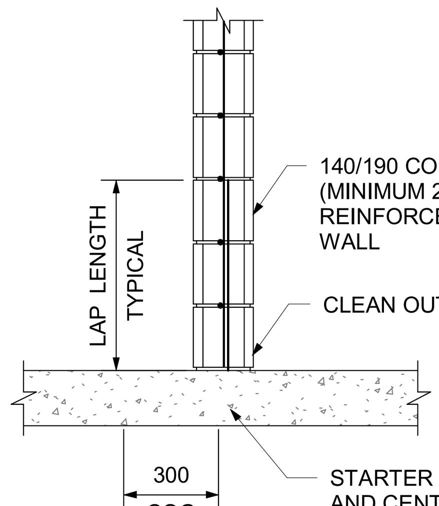


SECTION 1 -
SCALE = N.T.S

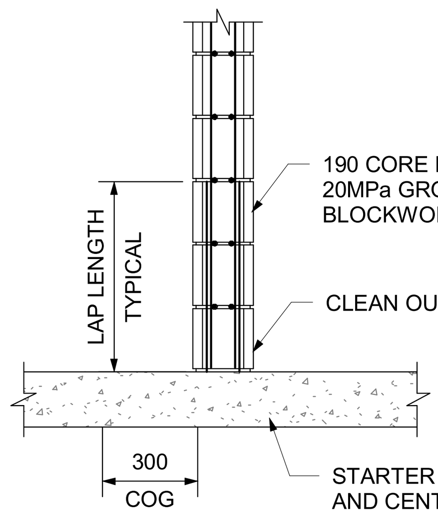


SECTION 2 -
SCALE = N.T.S

HEAD RESTRAINT DETAIL TO SLAB SOFFIT TYPE A



LOAD BEARING BLOCKWORK AT BASE SINGLE LAYER REINFORCEMENT



LOAD BEARING BLOCKWORK AT BASE REINFORCEMENT E.F.

REINFORCED MASONRY LAP SCHEDULE

20mm COVER TO REINFORCEMENT - 20MPa GROUT

SIZE	Lsyt	1.3 Lsyt
N12	650	850
N16	950	125
N20	1250	1700

USE 1.3 Lsyt FOR ALL HORIZONTAL REINFORCEMENT WHEN MORE THAN 300mm OF CONCRETE IS CAST BELOW THE BAR

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

STRUCTURAL / CIVIL CONSULTANT

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CLIENT

NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL BLOCKWORK DETAILS SHEET 1

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

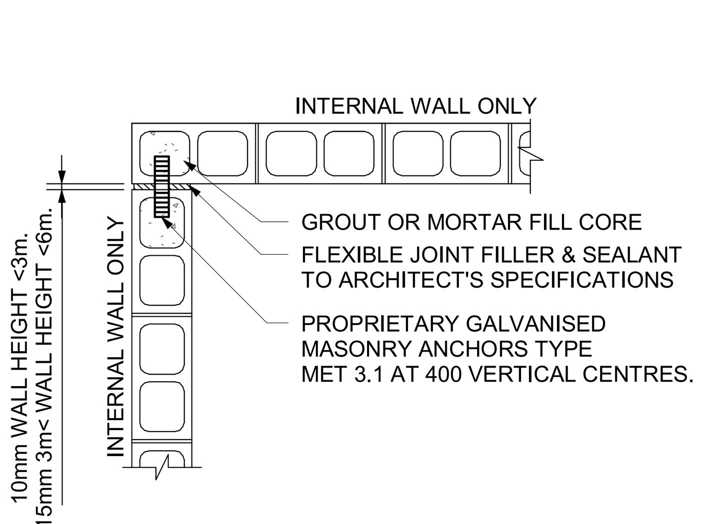
DRAWING NUMBER
ST-010-31

REV.
B

27/10/2021 5:04:58 PM

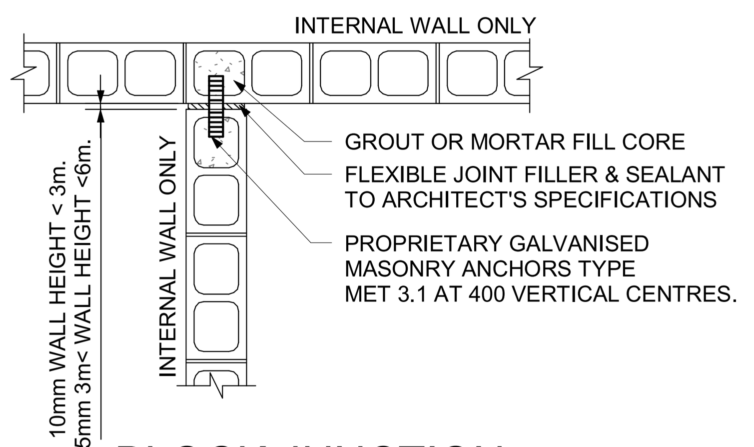
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



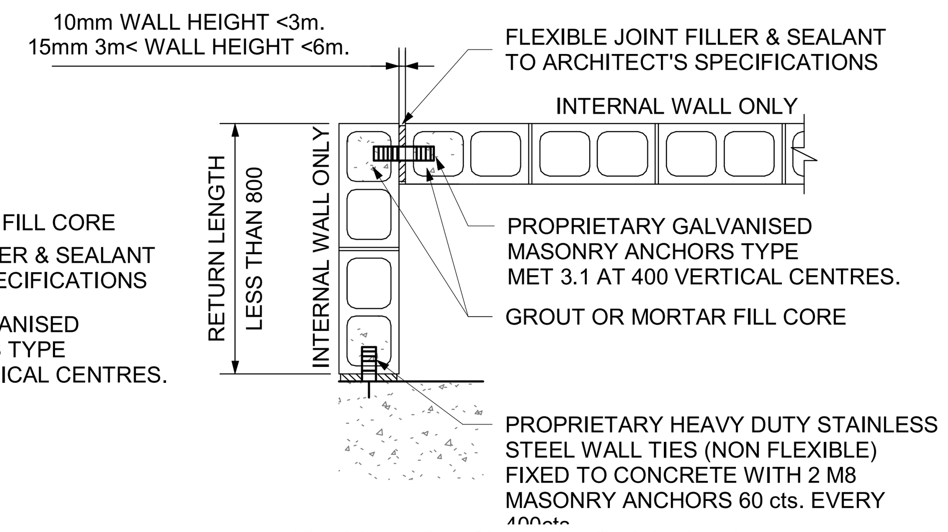
BLOCK CORNER
INTERNAL WALLS

- MINIMUM 1000mm RETURN

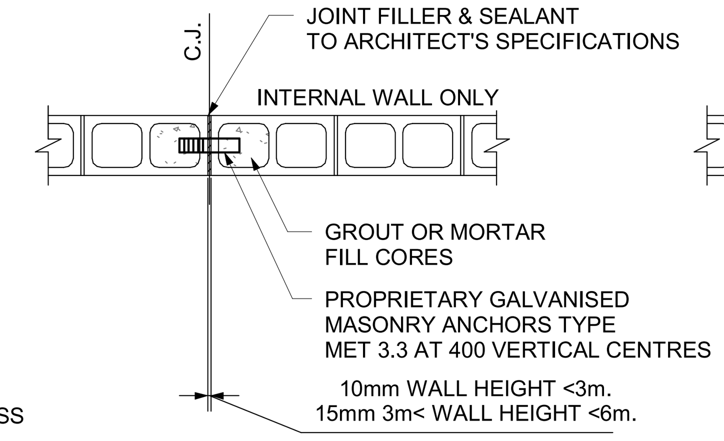


BLOCK JUNCTION
INTERNAL WALLS

- MINIMUM 1000mm RETURN

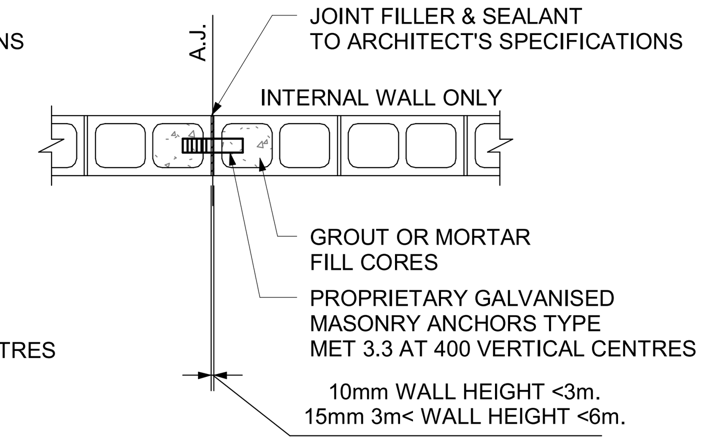


RESTRAINT TO WALL WITH SHORT RETURN
INTERNAL WALLS



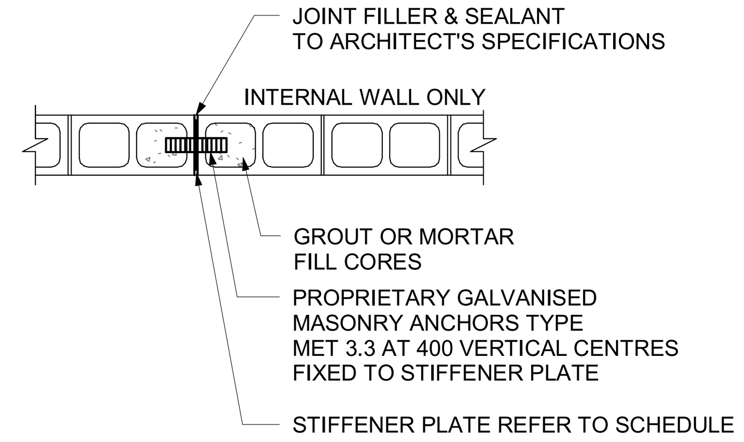
CONTRACTION JOINT (C.J.) IN UN-REINFORCED BLOCK WALL
INTERNAL WALLS

- REFER TO TYPICAL C.J. NOTES
- 6m MAX. SPACINGS
- CONTRACTION JOINTS TO BE AT LOCATIONS NOMINATED ON ARCHITECTURAL DRAWINGS.
- CONTRACTION JOINTS TO ALIGN WITH SLAB JOINTS IN SLAB ON GRADE & MOVEMENT JOINTS IN SUSPENDED SLABS



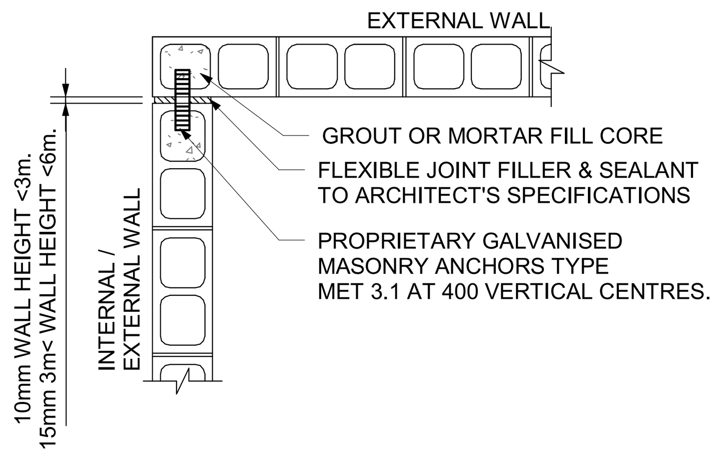
ARTICULATION JOINT (A.J.) IN UN-REINFORCED BLOCK WALL
INTERNAL WALLS

- REFER TO TYPICAL A.J. NOTES
- 6m MAX. SPACINGS

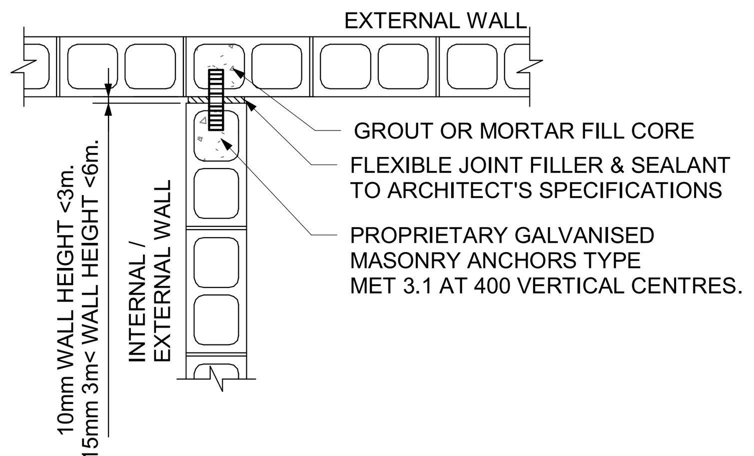


STIFFENER IN UN-REINFORCED BLOCK WALL
INTERNAL WALLS

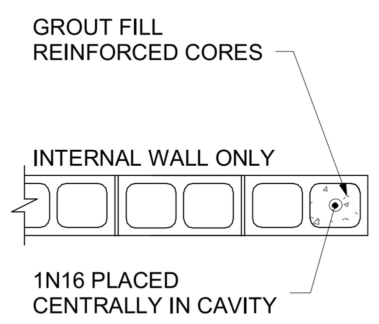
- REFER TO TYPICAL A.J. NOTES
- 6m MAX. SPACINGS



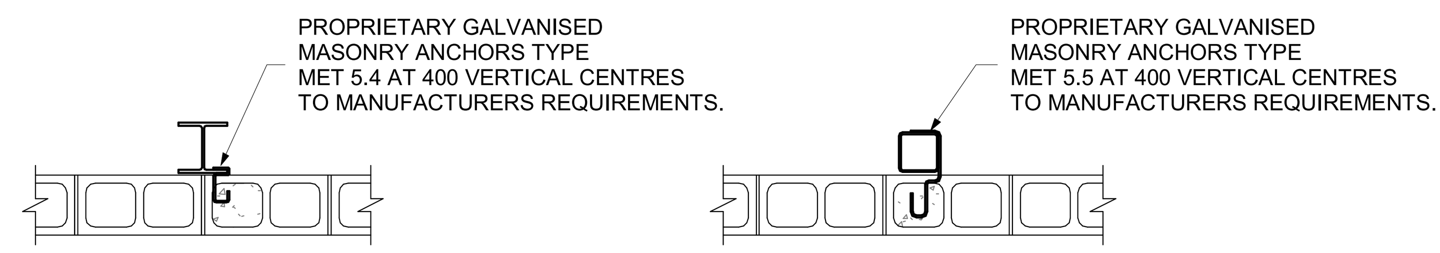
BLOCK CORNER
EXTERNAL WALLS



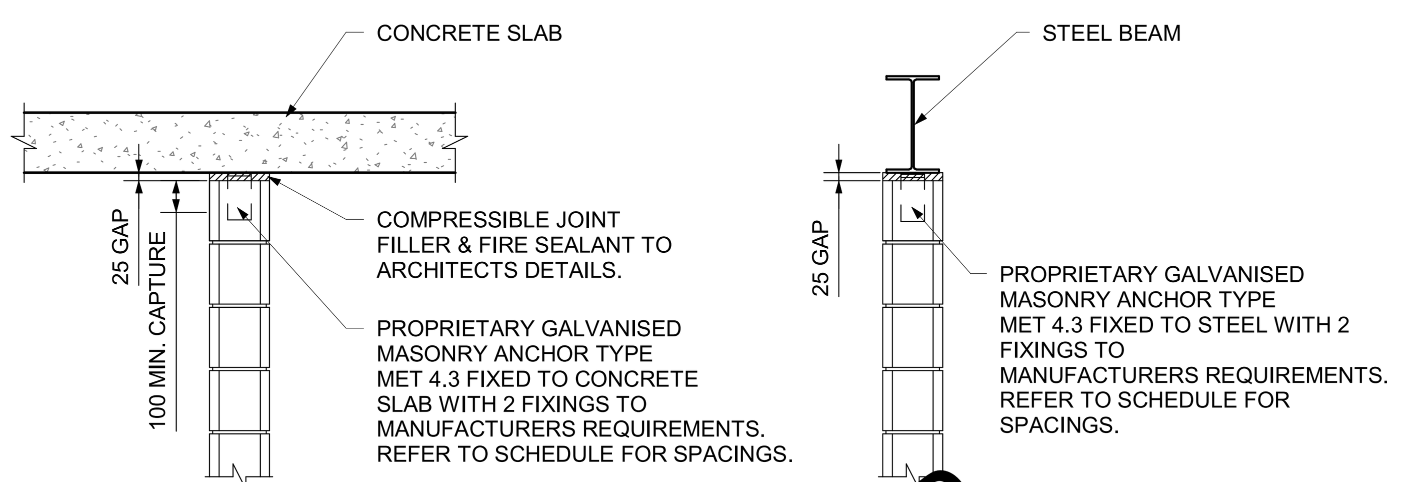
BLOCK JUNCTION
EXTERNAL WALLS



BLOCK END
INTERNAL WALLS



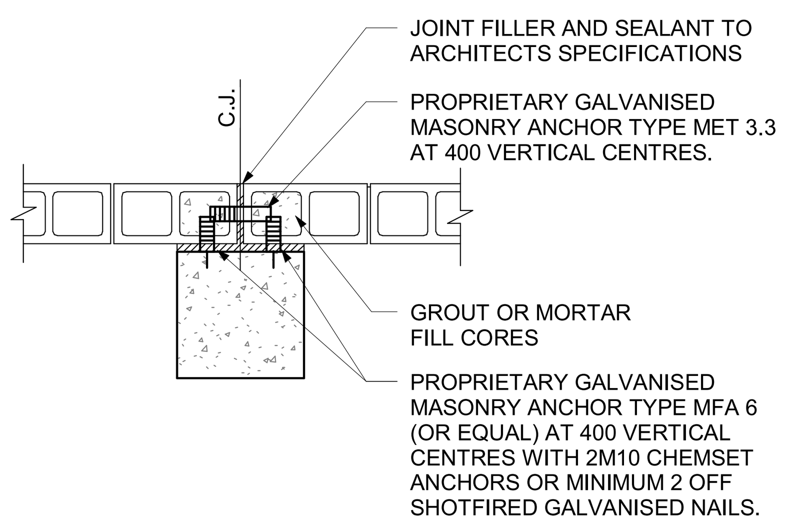
TYPICAL EXPANSION TIE FOR BLOCKWORK/BRICKWORK TO COLUMN DETAILS
INTERNAL WALLS



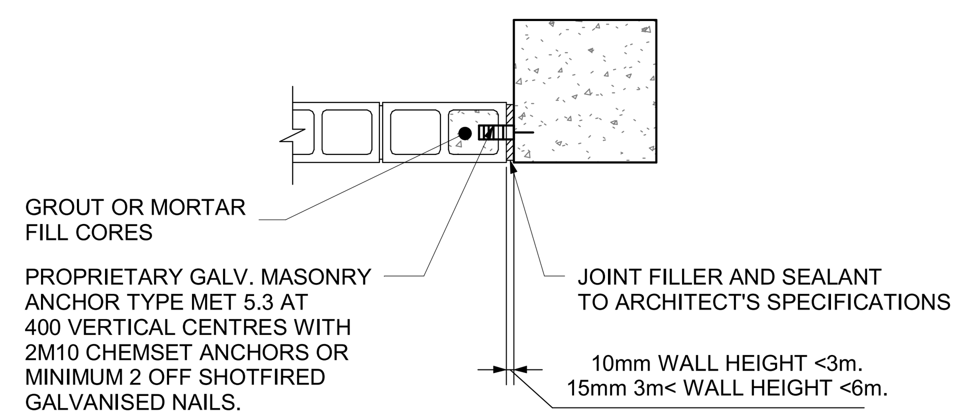
HEAD RESTRAINT FIXING SCHEDULE

TO BE ENGINEERED

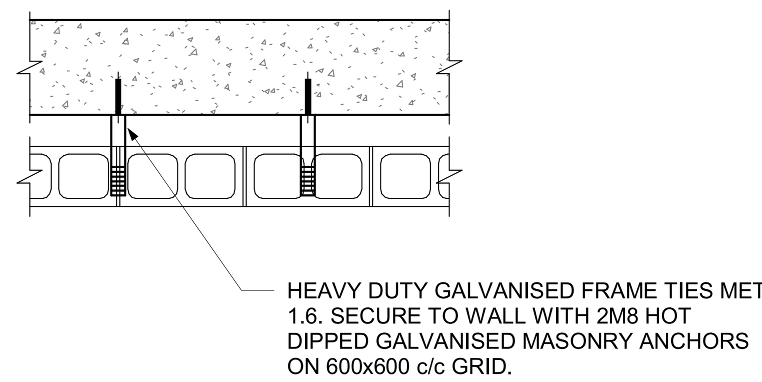
WALL HEIGHT (m)	MAX. SPACING (mm)
EXTERNAL OR MECHANICALLY PRESSURISED WALLS	
0-2.7	600
2.7-4.0	400
4.0-8.0	200
INTERNAL NON PRESSURISED WALLS	
0-4.0	800
4.0-8.0	400



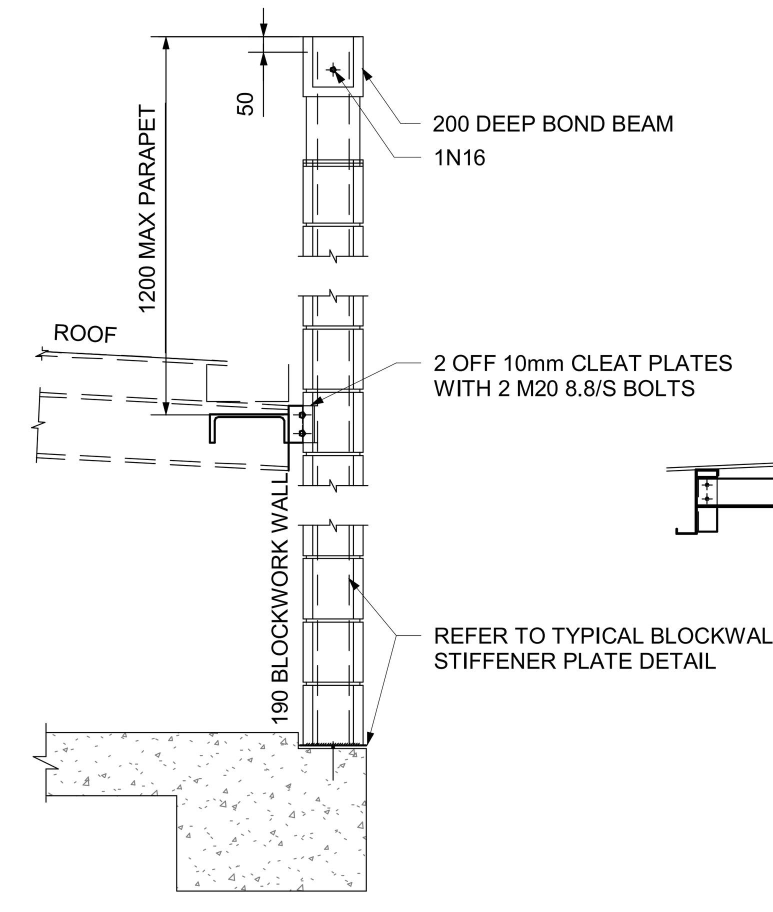
ALTERNATE CONTRACTION JOINT (C.J.) AT R.C. COLUMN OR WALLS
INTERNAL WALLS



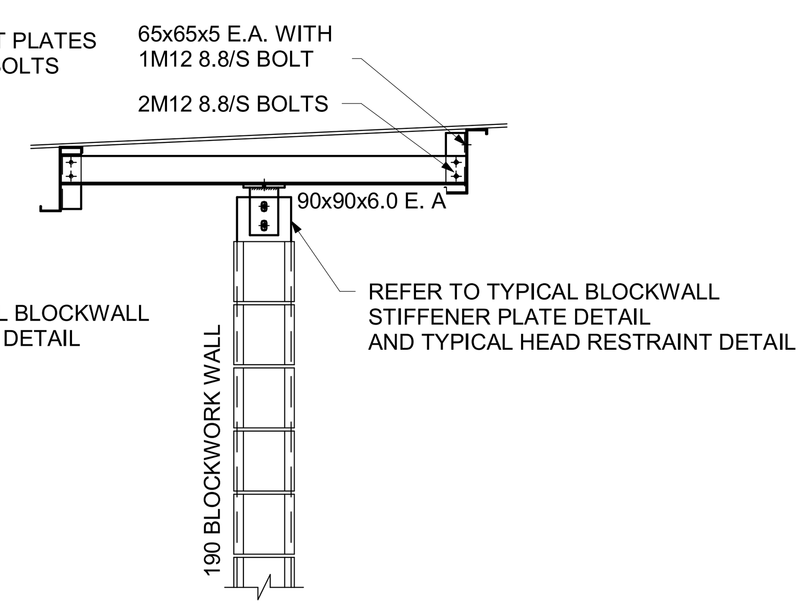
CONTRACTION JOINT (C.J.) AT R.C. COLUMN OR WALLS
INTERNAL WALLS



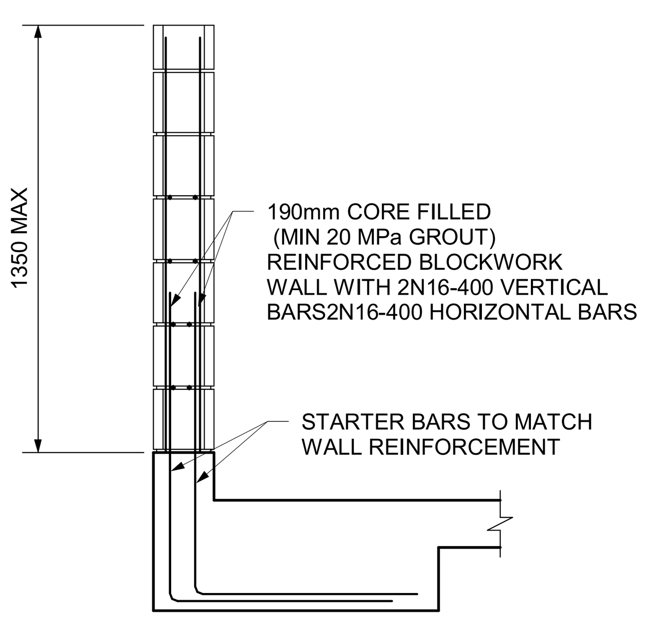
PLAN- RESTRAINT TO BLOCKWALL, WALL ADJACENT TO R.C. WALL
INTERNAL WALLS



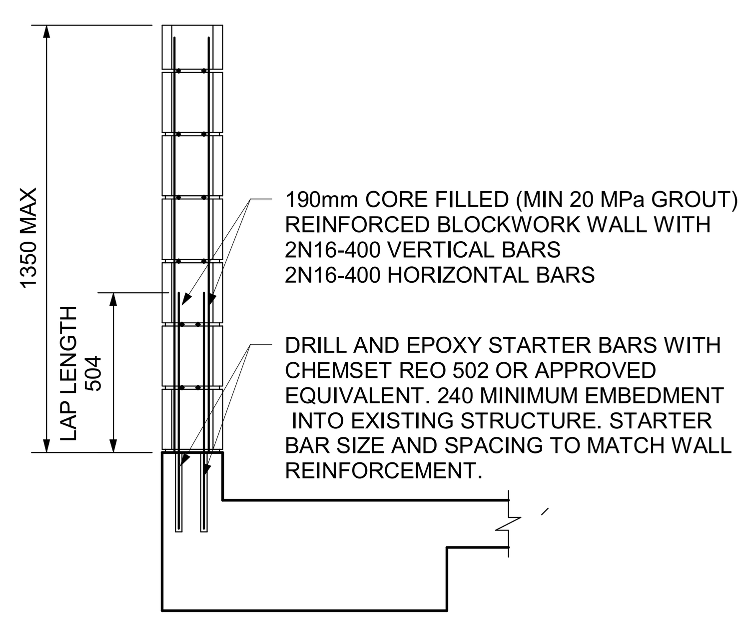
TYPICAL EXTERNAL BLOCKWALL WITH PARAPET



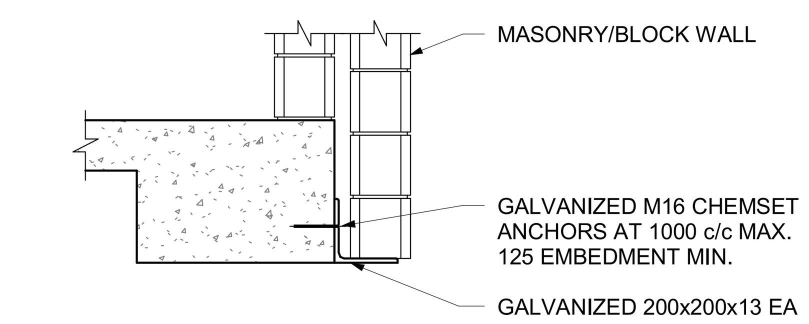
TYPICAL BLOCKWALL PARALLEL TO PURLINS



TYPICAL BLOCKWORK CRASH BARRIER DETAIL
SCALE = 1:20



TYPICAL BLOCKWORK CRASH BARRIER DETAIL AT EXISTING STRUCTURE
SCALE = 1:20



TYPICAL SHELF ANGLE BLOCKWALL SUPPORT DETAIL
SCALE = 1:20

NOTES:
- CONTRACTION JOINTS (C.J.) TO BE AT 6.0m SPACING MAXIMUM
- CONTRACTION JOINTS (C.J.)TO ALIGN WITH SLAB JOINTS IN SLAB ON GRADE AND MOVEMENT JOINTS IN SUSPENDED SLABS.
- CONTRACTION JOINTS TO BE AT LOCATIONS NOMINATED ON ARCHITECTURAL DRAWINGS.
- ALL PROPRIETARY MASONRY ANCHORS TO BE M.E.T. P/L OR APPROVED EQUIVALENT
- ALL BLOCKWORK TO COMPLY WITH AS 3700
- ALL MASONRY FIXINGS, BOLTS, PLATES, ECT TO BE HOT DIPPED GALVANISED
- MASONRY UNITS TO HAVE MINIMUM UNCONFINED COMPRESSIVE STRENGTH f'uc=15 MPa
- MORTAR CLASSIFICATION -M3 Min - REFER TO PROJECT SPECIFICATION.
- ALL WALL TIES TO BE HEAVY DUTY GALVANISED
- ALL MASONRY UNITS SHALL BE LAID IN STRETCHER BOND
- JOINTS TO BE RODDED TO A MAX. DEPTH OF 3mm
- ALL GROUT AND MORTAR USED TO FILL CORES TO HAVE 300 kg/m³ OF GB OR GP CEMENT CONTENT MINIMUM.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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CLIENT
NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL BLOCKWORK DETAILS SHEET 2

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

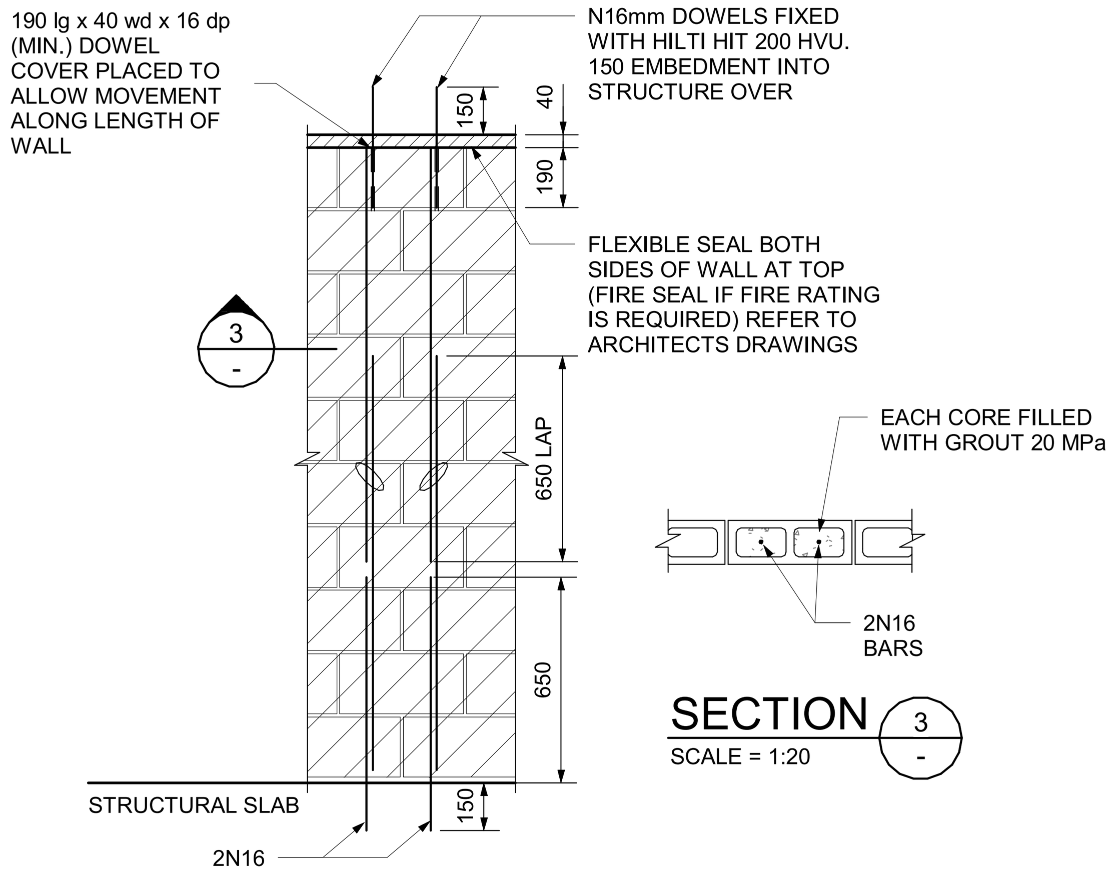
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER ST-010-32
REV. B

27/10/2021 5:05:03 PM

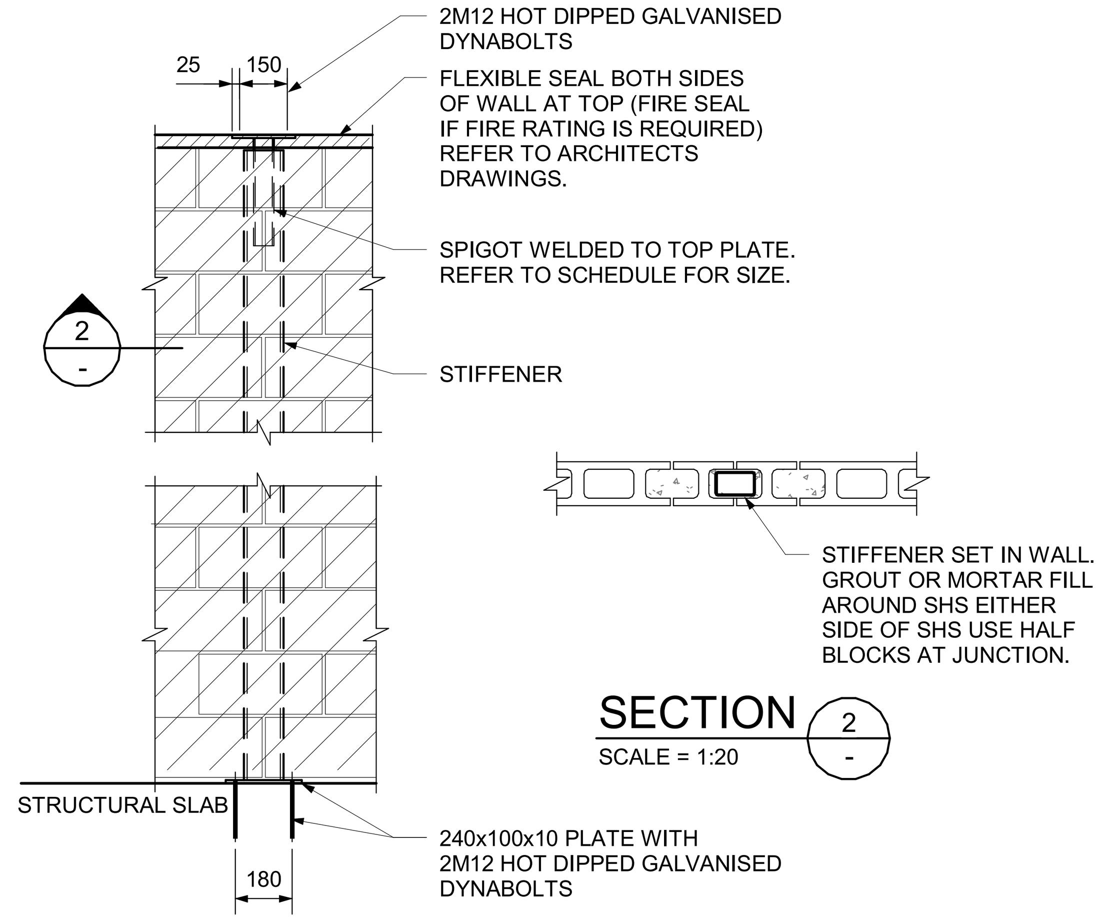
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



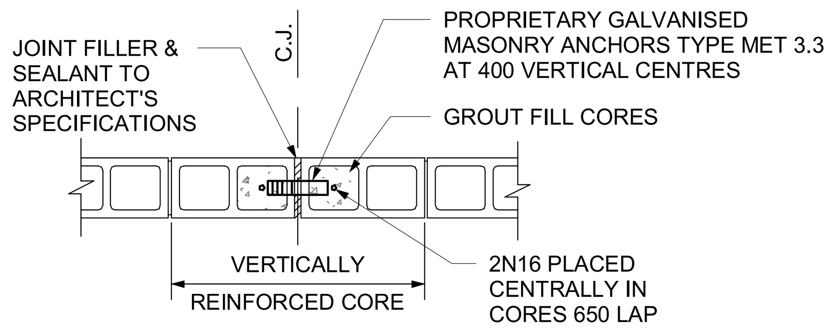
WALL STIFFENER-OPTION 1

- HATCHING DENOTES GROUT FILLED CORES
- REFER ST1-001.00 MASONRY NOTE 15



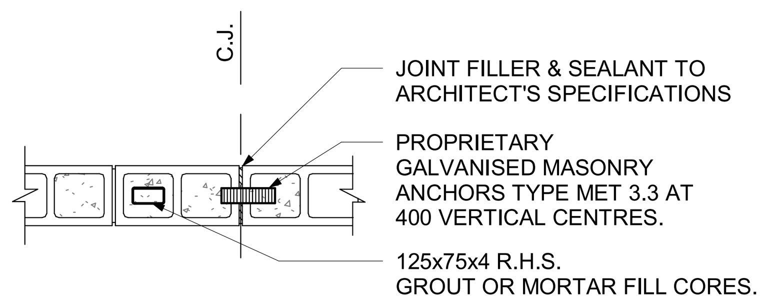
WALL STIFFENER-OPTION 2

- HATCHING DENOTES GROUT FILLED CORES
- REFER ST1-001.00 MASONRY NOTE 15



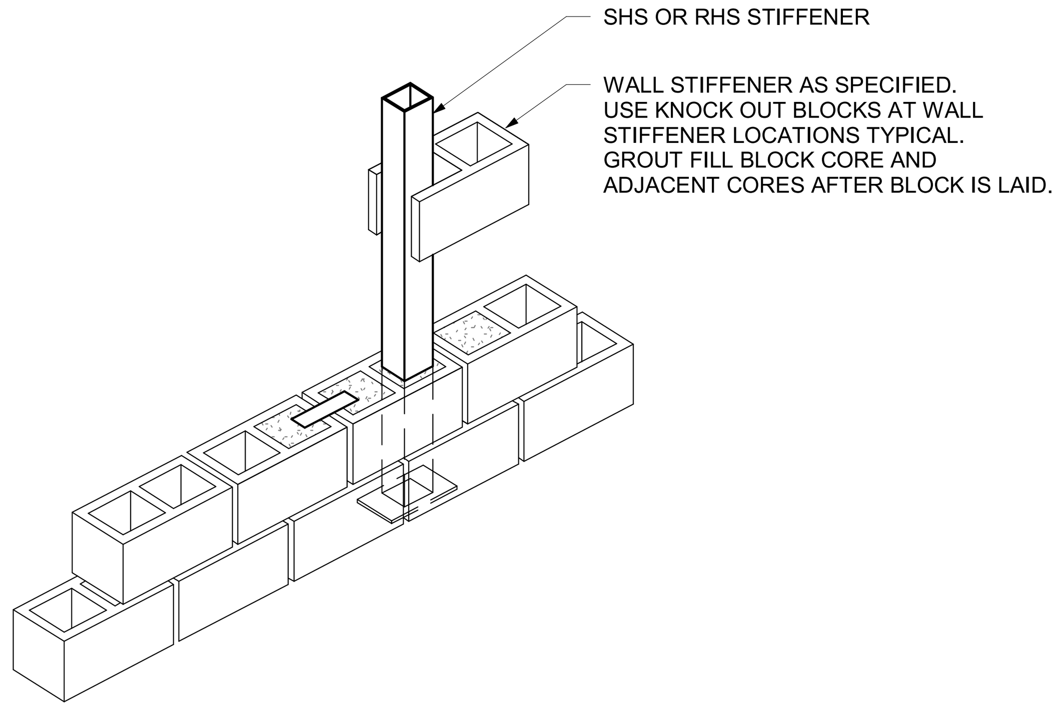
NOTE:
- FOR WALLS WHICH ARE NOT FULL HEIGHT, THE CORE FILLED & REINFORCED CORE BLOCKS ARE TO EXTEND TO UNDERSIDE OF SLAB.
- THIS IS TO BE CONSIDERED A STIFFENER AS PER THE REQUIREMENTS OF THE MASONRY WALL SCHEDULE

OPTION 1- CONTRACTION JOINT (C.J.) IN BLOCK WALL

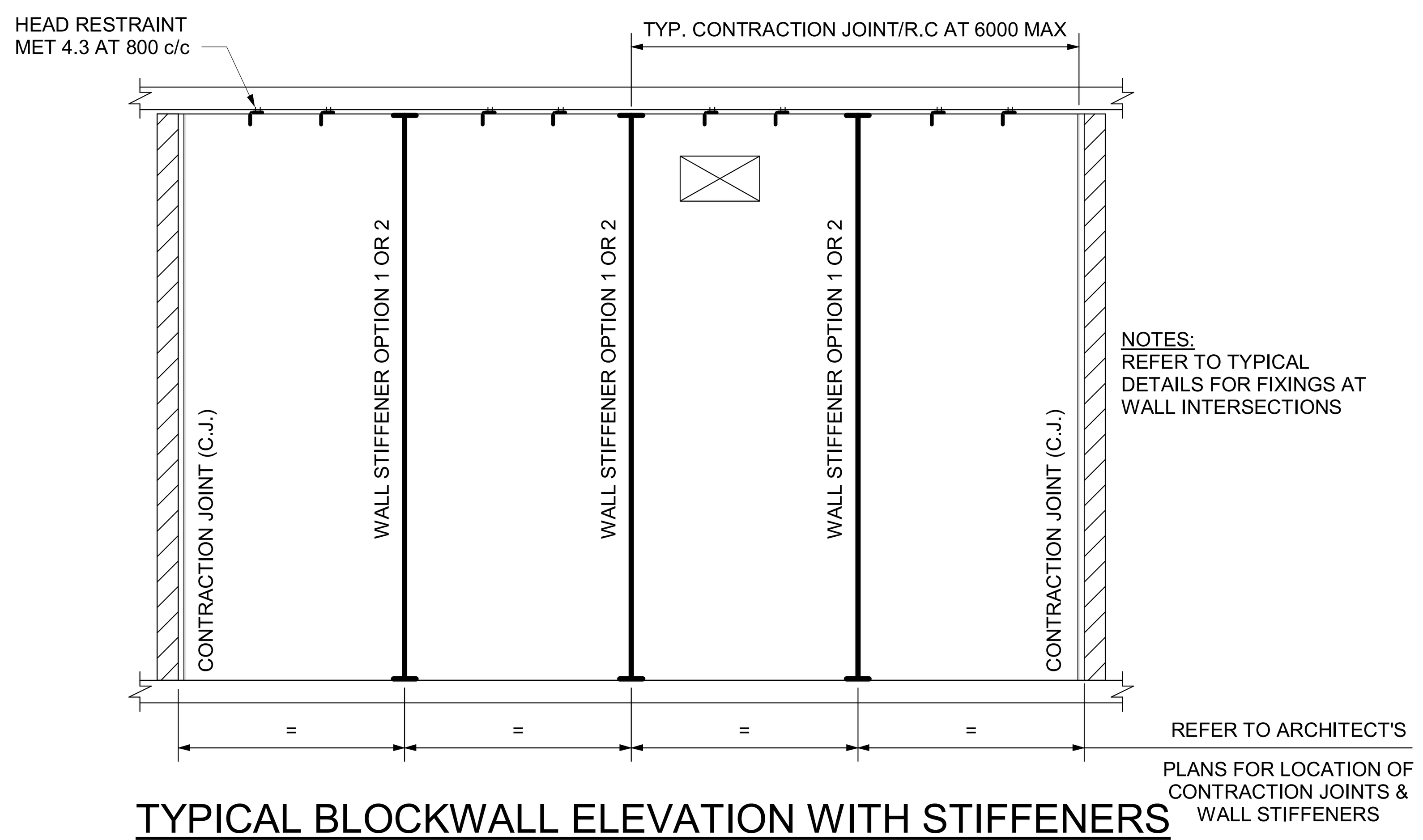


NOTE:
- THIS IS TO BE CONSIDERED A STIFFENER AS PER THE REQUIREMENTS OF THE MASONRY WALL SCHEDULE

OPTION 2- CORE FILLING AT CONTRACTION JOINT IN BLOCK WALL



BLOCKWORK WALL SHS STIFFENER ISOMETRIC DETAIL



TYPICAL BLOCKWALL ELEVATION WITH STIFFENERS

MASONRY WALL SCHEDULE - INTERNAL NON-PRESSURED WALLS FOR WALLS THAT EXTEND TO CEILING LEVEL OF MAX 3800mm

FRL	BLOCKWORK THICKNESS (mm)	STIFFENER HEIGHT (mm)	CORE FILLING	VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	STIFFENERS		
						OPTION 1	OPTION 2	
						REINFORCEMENT	WALL STIFFENER TYPE	WALL STIFFENER MAX SPACING (mm)
-	140	3000	N/A	N/A	N/A	2N16-6000	WS1	4600
-	140	4000	N/A	N/A	N/A	2N16-4400	WS1	2000
-	190	5000	N/A	N/A	N/A	2N16-2800	WS1	1200
-	190	3000	N/A	N/A	N/A	2N16-6000	WS2	6000
-	190	5000	N/A	N/A	N/A	2N16-4200	WS2	5600
-	190	6000	N/A	N/A	N/A	2N16-2800	WS2	3800
120/120/120	140 SCORIA BLEND (OR APPROVED EQUAL)	3000	N/A	N/A	N/A	2N16-4000	WS1	4000
		4000	N/A	N/A	N/A	2N16-3600	WS1	2000
120/120/120	190 SCORIA BLEND (OR APPROVED EQUAL)	3000	N/A	N/A	N/A	2N16-6000	WS2	6000
		5000	N/A	N/A	N/A	2N16-4200	WS2	4800
		6000	N/A	N/A	N/A	2N16-2800	WS2	3800

NOTE:

1. CORES FILLED IS AN ALTERNATIVE TO THE WALL STIFFENER.
2. REFER DWG ST1-10.31 FOR ADDITIONAL DETAILS.
3. INTERNAL WALLS DESIGNED FOR AN INTERNAL PRESSURE OF 0.5kPa.
4. DESIGN ASSUMES WALL EXTENDS TO CEILING LEVEL - MAX WALL HEIGHT 3800mm (IF WALL HEIGHT IS GREATER THAN THIS, ADVISE ENGINEER FOR ALTERNATE DETAILS)
5. STIFFENERS TO EXTEND FROM FLOOR LEVEL TO UNDERSIDE OF SLAB ABOVE FOR BOTH OPTION 1 AND OPTION 2.
6. STIFFENERS ARE NOT REQUIRED AT A RETURN WALL/COLUMN OR STRUCTURAL WALL PROVIDED THAT THE WALL IS ADEQUATELY TIED INTO A RETURN WALL.

MASONRY WALL SCHEDULE - INTERNAL NON PRESSURED WALLS FOR WALLS THAT EXTEND FULL HEIGHT

FRL	BLOCKWORK THICKNESS (mm)	STIFFENER HEIGHT (mm)	CORE FILLING	VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	STIFFENERS		
						OPTION 1	OPTION 2	
						REINFORCEMENT	WALL STIFFENER TYPE	WALL STIFFENER MAX SPACING (mm)
-								
-	140	3000	N/A	N/A	N/A	2N16-6000	WS1	6000
-	140	4000	N/A	N/A	N/A	2N16-4400	WS1	4400
-	140	5000	N/A	N/A	N/A	2N16-2800	WS1	2800
-	190	3000	N/A	N/A	N/A	NO STIFFENER REQUIRED		
-	190	5000	N/A	N/A	N/A	2N16-4800	WS2	5000
-	190	6000	N/A	N/A	N/A	2N16-2800	WS2	2800
UPTO 120/120/120	140	3000	YES	N12-400	N12-400	N/A	N/A	N/A
120/120/120	140 SCORIA BLEND (OR APPROVED EQUAL)	3000	N/A	N/A	N/A	2N16-6000	WS1	6000
		4000	N/A	N/A	N/A	2N16-4400	WS1	4400
120/120/120	190 SCORIA BLEND (OR APPROVED EQUAL)	3000	N/A	N/A	N/A	NO STIFFENER REQUIRED		
		5000	N/A	N/A	N/A	2N16-4800	WS2	5000
		6000	N/A	N/A	N/A	2N16-2800	WS2	2800
UPTO 240/240/240	190	3000	YE	N12-400	N12-400	N/A	N/A	N/A
	190	5000	YE	N12-400	N12-400	N/A	N/A	N/A
	190	6000	YE	N12-400	N12-400	N/A	N/A	N/A
UPTO 240/240/240	190 SCORIA BLEND (OR APPROVED EQUAL)	3000	N/A	N/A	N/A	NO STIFFENER REQUIRED		
		5000	N/A	N/A	N/A	2N16-4800	NOT PERMITTED	
		6000	N/A	N/A	N/A	2N16-2800	NOT PERMITTED	

NOTE:

1. CORES FILLED IS AN ALTERNATIVE TO THE WALL STIFFENER.
2. REFER DWG ST1-10.31 FOR ADDITIONAL DETAILS.
3. INTERNAL WALLS DESIGNED FOR AN INTERNAL PRESSURE OF 0.5kPa.
4. DESIGN ASSUMES WALL EXTENDS FULL HEIGHT.
5. STIFFENERS ARE NOT REQUIRED AT A RETURN WALL/COLUMN OR STRUCTURAL WALL PROVIDED THAT THE WALL IS ADEQUATELY TIED INTO A RETURN WALL.

MASONRY WALL SCHEDULE - EXTERNAL WALLS

TO BE ENGINEERED

FRL	BLOCKWORK THICKNESS (mm)	STIFFENER HEIGHT (mm)	CORE FILLING	VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	STIFFENERS		
						OPTION 1	OPTION 2	
						REINFORCEMENT	WALL STIFFENER TYPE	WALL STIFFENER MAX SPACING (mm)
-	140	3000	YES	N12-400	N12-400	N/A	N/A	N/A
-	140	3600	YES	N12-400	N12-400	N/A	N/A	N/A
-	190	4000	N/A	N/A	N/A	2N16-800	WS2	2000
-	190	4300	N/A	N/A	N/A	2N16-800	WS2	2000
-	190	5200	YES	N16-400	N12-400	N/A	N/A	N/A
-	190	6200	YES	N16-400	N16-400	N/A	N/A	N/A
120/120/120	140 SCORIA BLEND (OR APPROVED EQUAL)	3000	YES	N12-400	N12-400	2N12-800	WS1	1800
120/120/120	140 SCORIA BLEND (OR APPROVED EQUAL)	3600	YES	N12-400	N12-400	2N16-800	WS1	1800
120/120/120	190 SCORIA BLEND (OR APPROVED EQUAL)	4000	N/A	N/A	N/A	2N16-800	WS2	2000
		4300	N/A	N/A	N/A	2N16-800	WS2	2000
		5200	YES	N16-400	N16-400	N/A	N/A	N/A
		6200	YES	N16-400	N16-400	N/A	N/A	N/A
240/240/240	190 SCORIA BLEND (OR APPROVED EQUAL)	4500	YES	N16-400	N16-400	N/A	N/A	N/A

NOTE:

1. ALL WALLS TO SPAN VERTICALLY BETWEEN THE SLAB AND ROOF STRUCTURAL STEELWORK.
2. ONLY RETURN WALLS THAT ARE TOOTHED INTO MAIN WALL CAN BE RELIED UPON TO PROVIDE LATERAL SUPPORT.

MASONRY WALL STIFFENER MEMBER SCHEDULE

MARK	SECTION	NOTES	SPIGOT
WS1	100x50x5.0 RHS	DURAGAL	76x38x3.0 RHS 300 LONG
WS2	100x100x4 SHS	DURAGAL	89x89x3.0 SHS 300 LONG

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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Telephone (02) 8904 1444
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CLIENT

NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL BLOCKWORK DETAILS SHEET 3

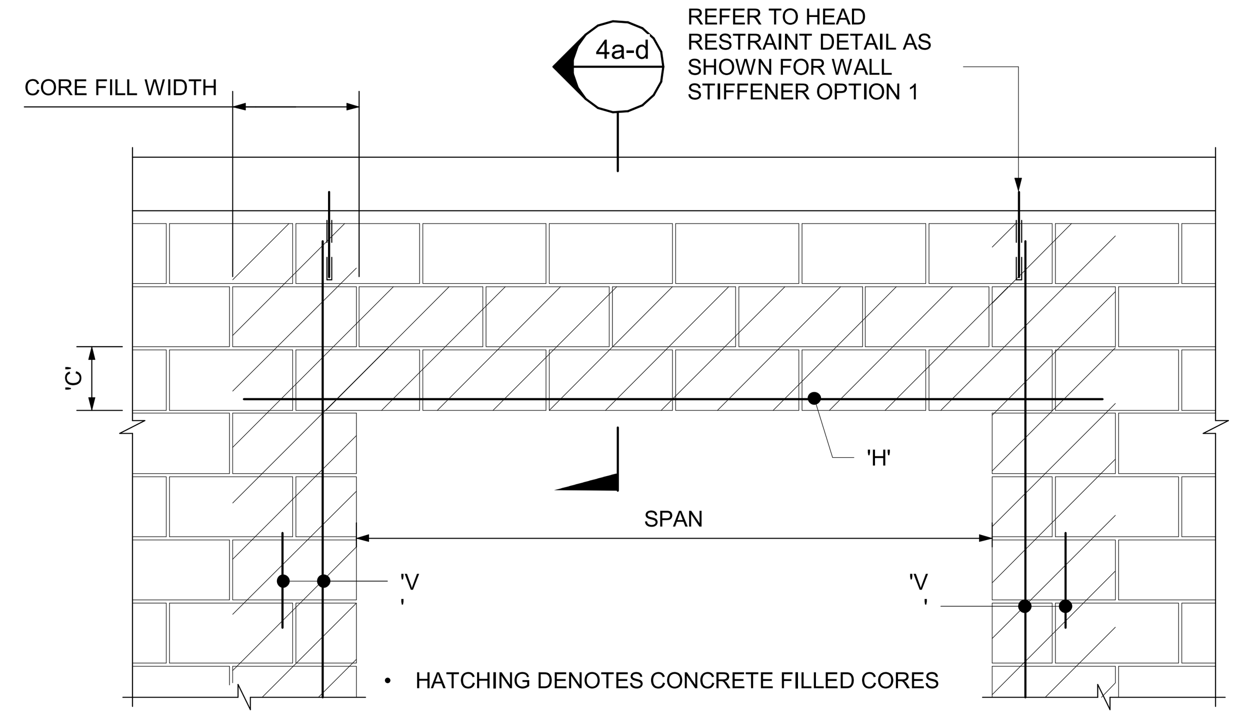
SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

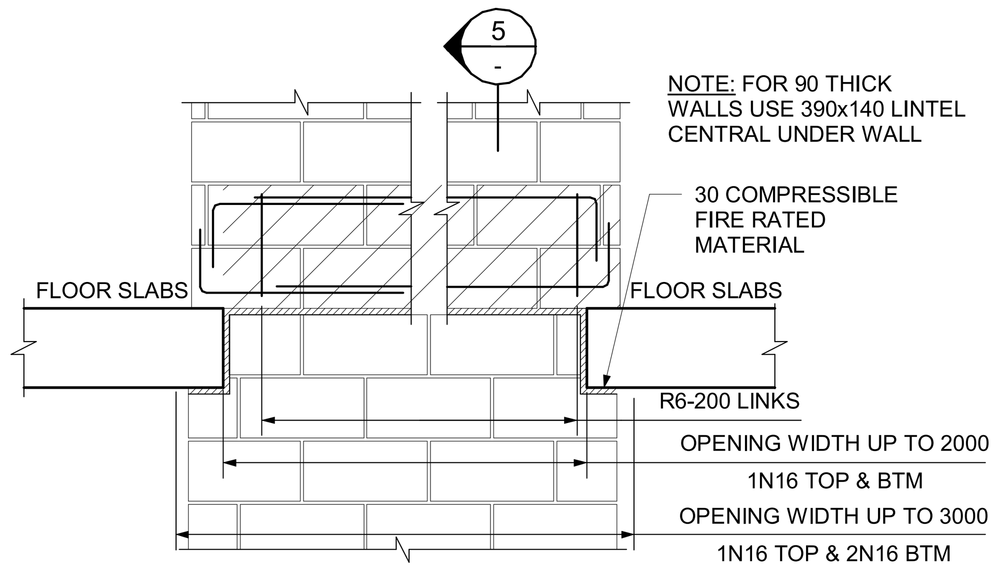
DRAWING NUMBER ST-010-33
REV. B

27/10/2021 5:05:09 PM

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



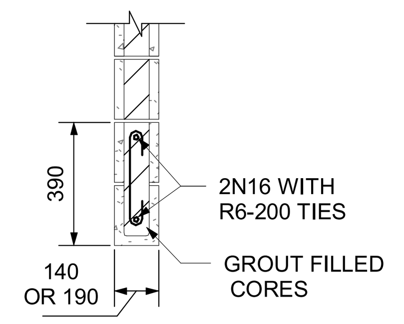
TYPICAL LINTEL DETAIL (NON LOAD BEARING BLOCKWORK)



RISER LINTEL DETAIL

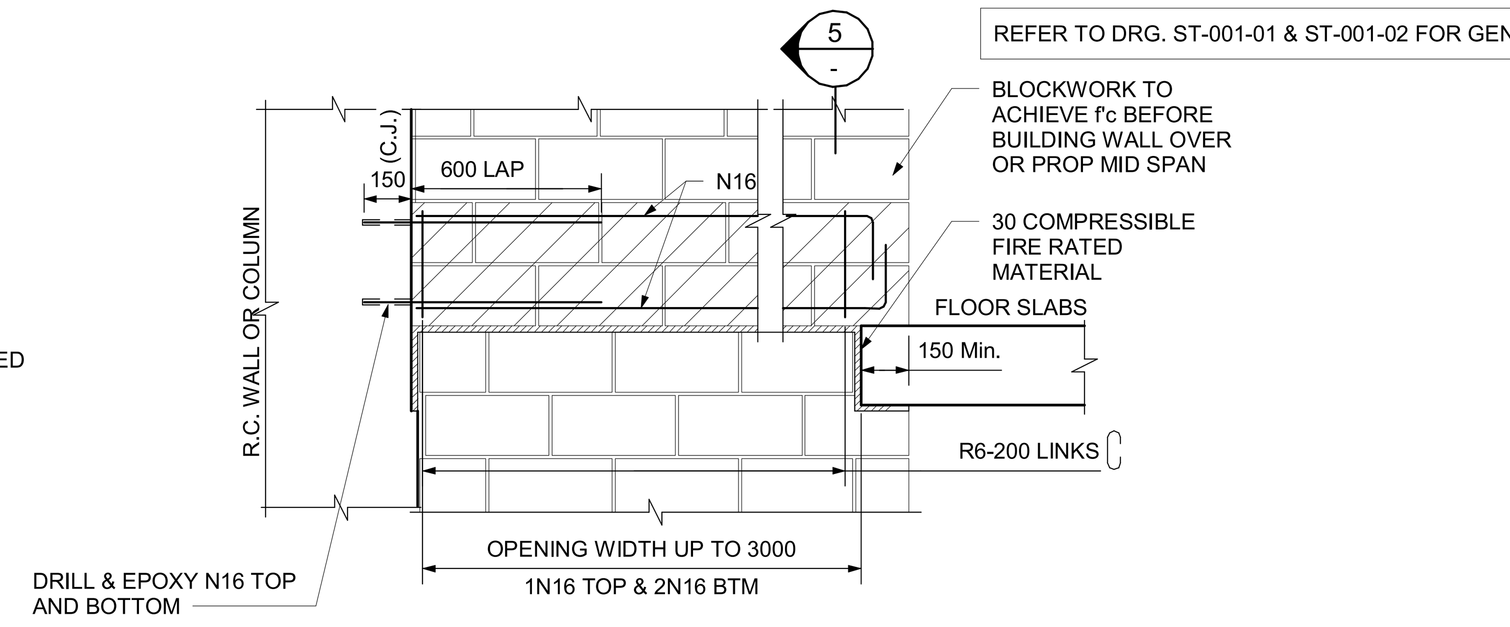
SCALE 1:20

- HATCHING DENOTES GROUT FILLED CORES



SECTIO 5 -

SCALE = 1:20

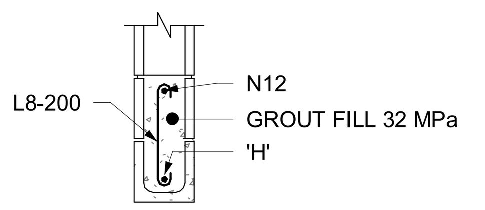


RISER LINTEL DETAIL TO WALL OR COLUMN

SCALE 1:20

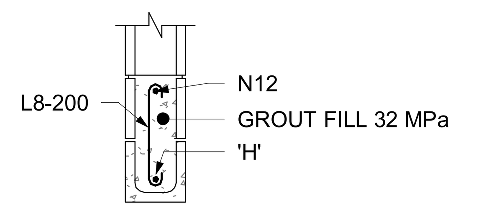
- HATCHING DENOTES GROUT FILLED CORES

NON LOAD BEARING BLOCKWORK						
WALL	SPAN	BAR 'H'	BAR 'V'	CORE FILL DEPTH	'C' COURSES	REF. SECTIONS
140	1.2 m	1N12	N16-200 CENTRAL	400	2	4a
140	2.4 m	1N16	N16-200 CENTRAL	400	2	4b
190	4.5 m	1N20	N16-400 EACH FACE	600	3	4c
190	4.8 m	2N20	N16-200 EACH FACE	600	3	4d



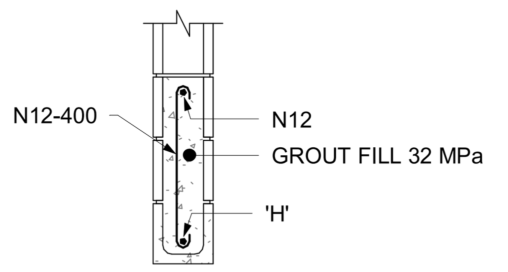
SECTION 4a -

SCALE = 1:20



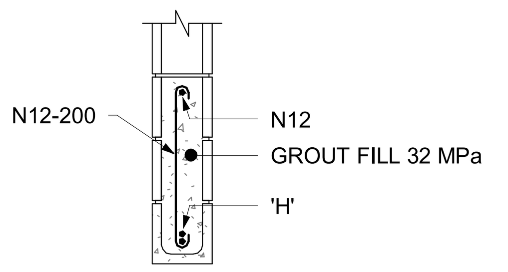
SECTION 4b -

SCALE = 1:20



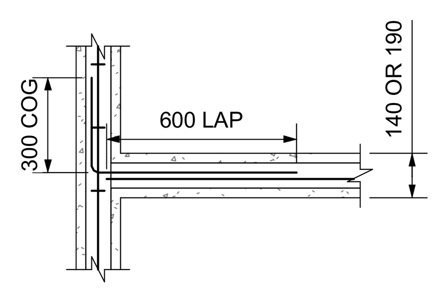
SECTION 4c -

SCALE = 1:20



SECTION 4d -

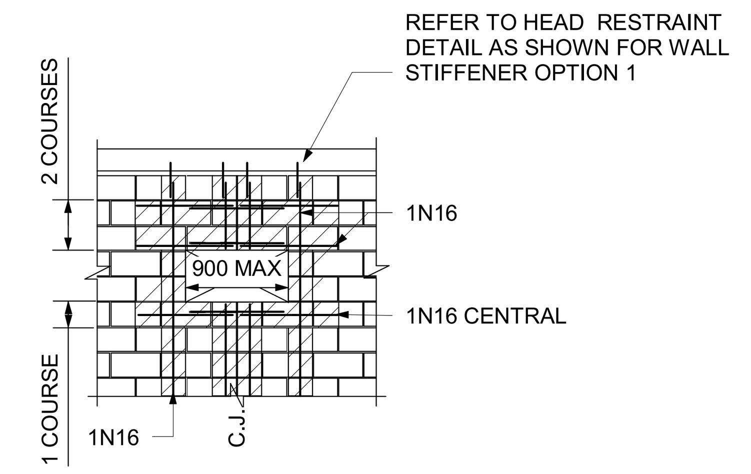
SCALE = 1:20



PLAN AT LINTEL INTERSECTION

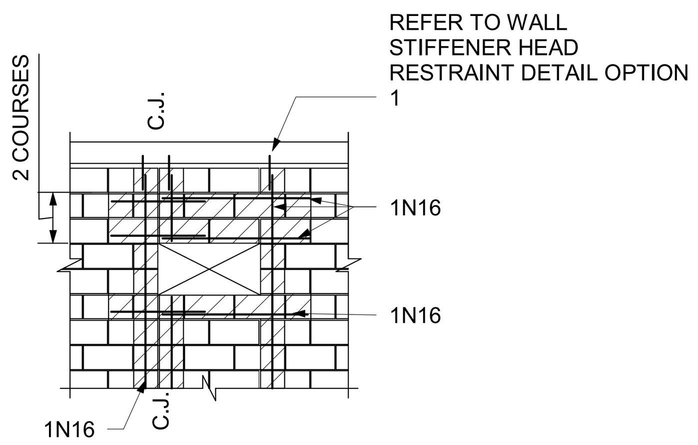
REINFORCED MASONRY LAP SCHEDULE		
20mm COVER TO REINFORCEMENT - 20MPa GROUT		
SIZE	Lsyt	1.3 Lsyt
N12	650	850
N16	950	125
N20	1250	1700

USE 1.3 Lsyt FOR ALL HORIZONTAL REINFORCEMENT WHEN MORE THAN 300mm OF CONCRETE IS CAST BELOW THE BAR



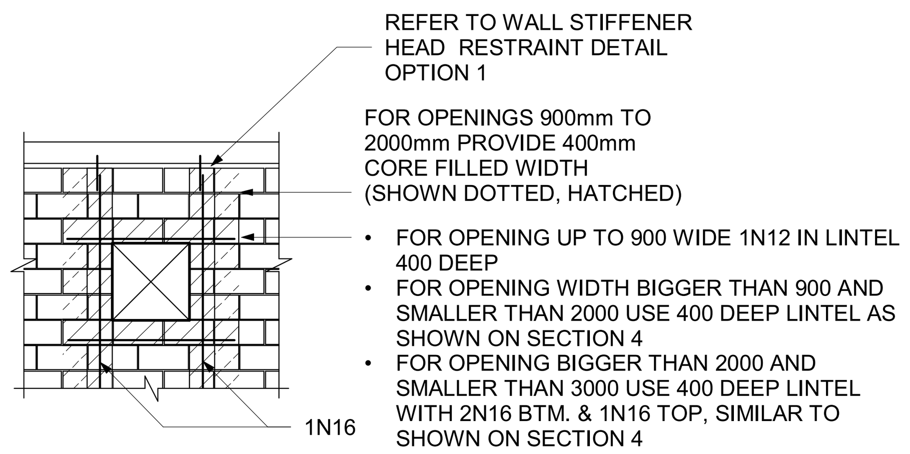
TYPICAL BLOCKWORK PENETRATION AT CONTRACTION JOINTS (C.J.)

SCALE = 1:50



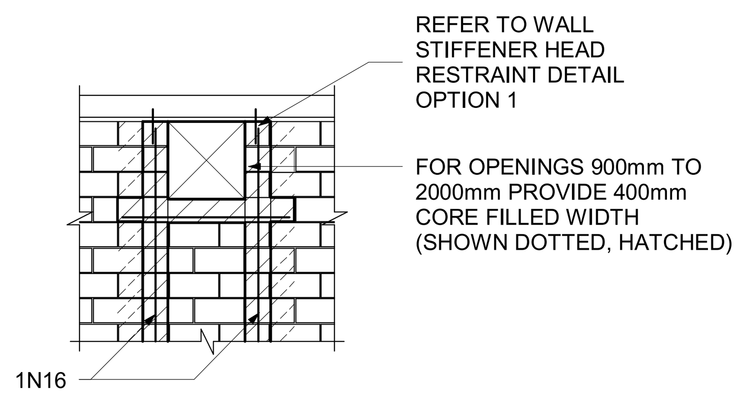
TYPICAL BLOCKWORK PENETRATION ADJACENT TO CONTRACTION JOINTS (C.J.)

SCALE = 1:50



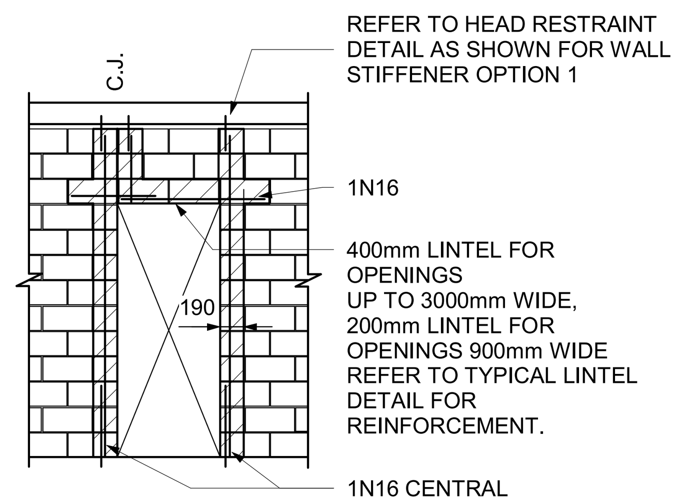
TYPICAL BOND BEAM ARRANGEMENT AT PENETRATION

SCALE = 1:50



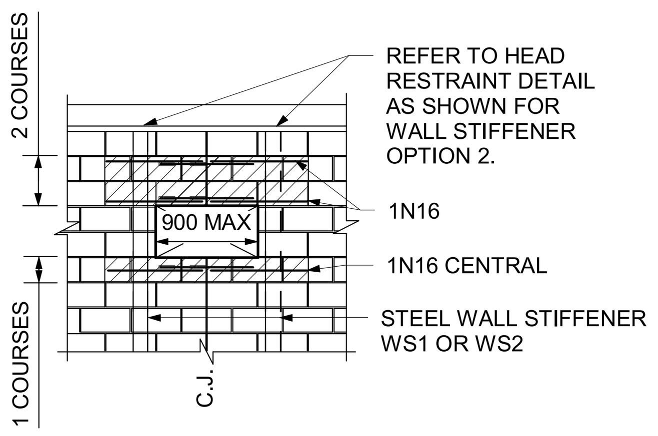
TYPICAL ALTERNATE BOND BEAM ARRANGEMENT AT PENETRATION

SCALE = 1:50



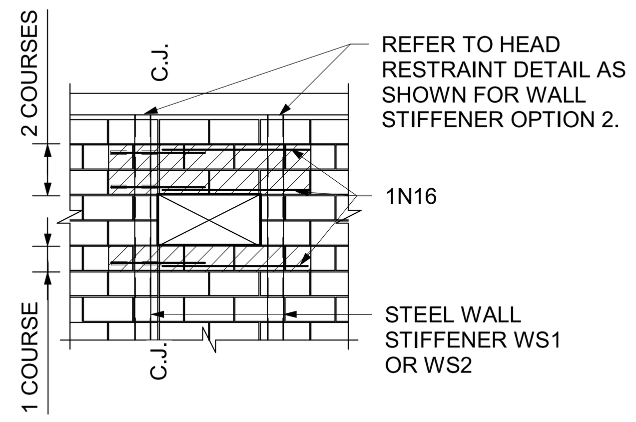
WALL STIFFNER WITH C.J. AT DOOR OPENING

SCALE 1:50



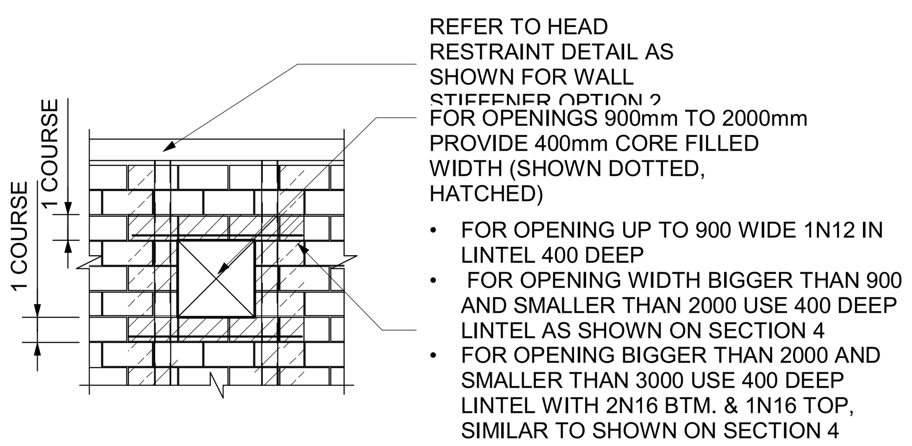
TYPICAL BLOCKWORK PENETRATION AT CONTRACTION JOINTS (C.J.) STEEL STIFFENER OPTION

SCALE = 1:50



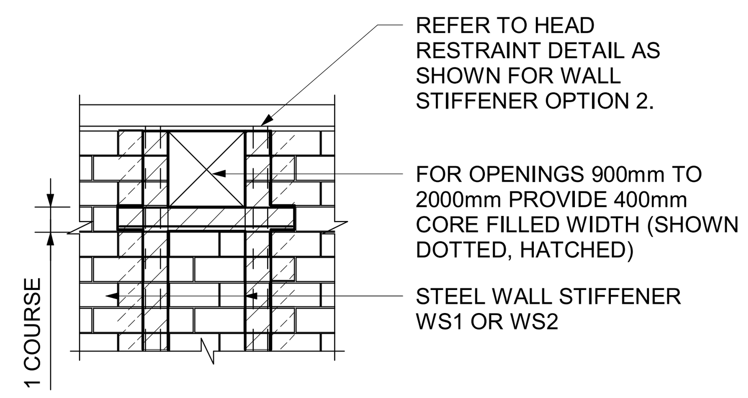
TYPICAL BLOCKWORK PENETRATION ADJACENT TO CONTRACTION JOINTS (C.J.) STEEL STIFFENER OPTION

SCALE = 1:50



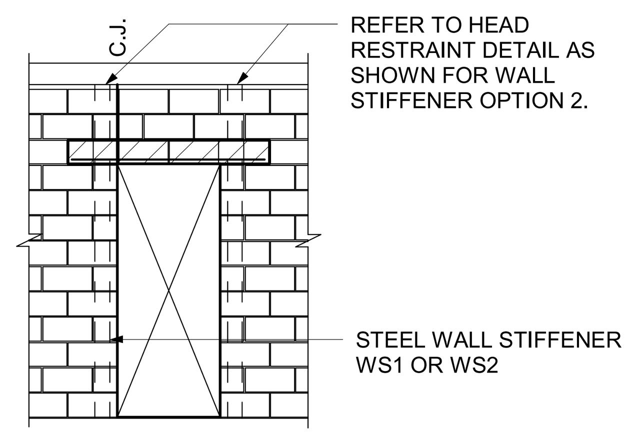
TYPICAL BOND BEAM ARRANGEMENT AT PENETRATION STEEL STIFFENER OPTION

SCALE = 1:50



TYPICAL ALTERNATE BOND BEAM ARRANGEMENT AT PENETRATION STEEL STIFFENER OPTION

SCALE = 1:50



WALL STIFFENER AT C.J. DOOR OPENING STEEL STIFFENER OPTION

SCALE = 1:50

NOTES:
- HATCHING DENOTES GROUT FILLED CORES
- FOR PENETRATIONS LESS THAN 600 x 600 ONLY BOND BEAM OVER PENETRATION REQUIRED, NO OTHER STIFFENING TO BE PROVIDED (EXCEPT DETAILS WHERE C.J. IS LOCATED)
- VERTICAL STIFFENER IS NOT REQUIRED AT THE EDGE OF OPENING WITHIN 2.5m FOR 140 BLOCK (OR 4.0m FOR 190 BLOCK) OF A WALL STIFFENER, RETURN WALL, CONCRETE COLUMN OR ELEMENT THAT PROVIDES LATERAL RESTRAINT.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

TYPICAL BLOCKWORK DETAILS SHEET 4

SCALE AT A1: As indicated
DRAWN BY: Author
CHECKED BY: Checker

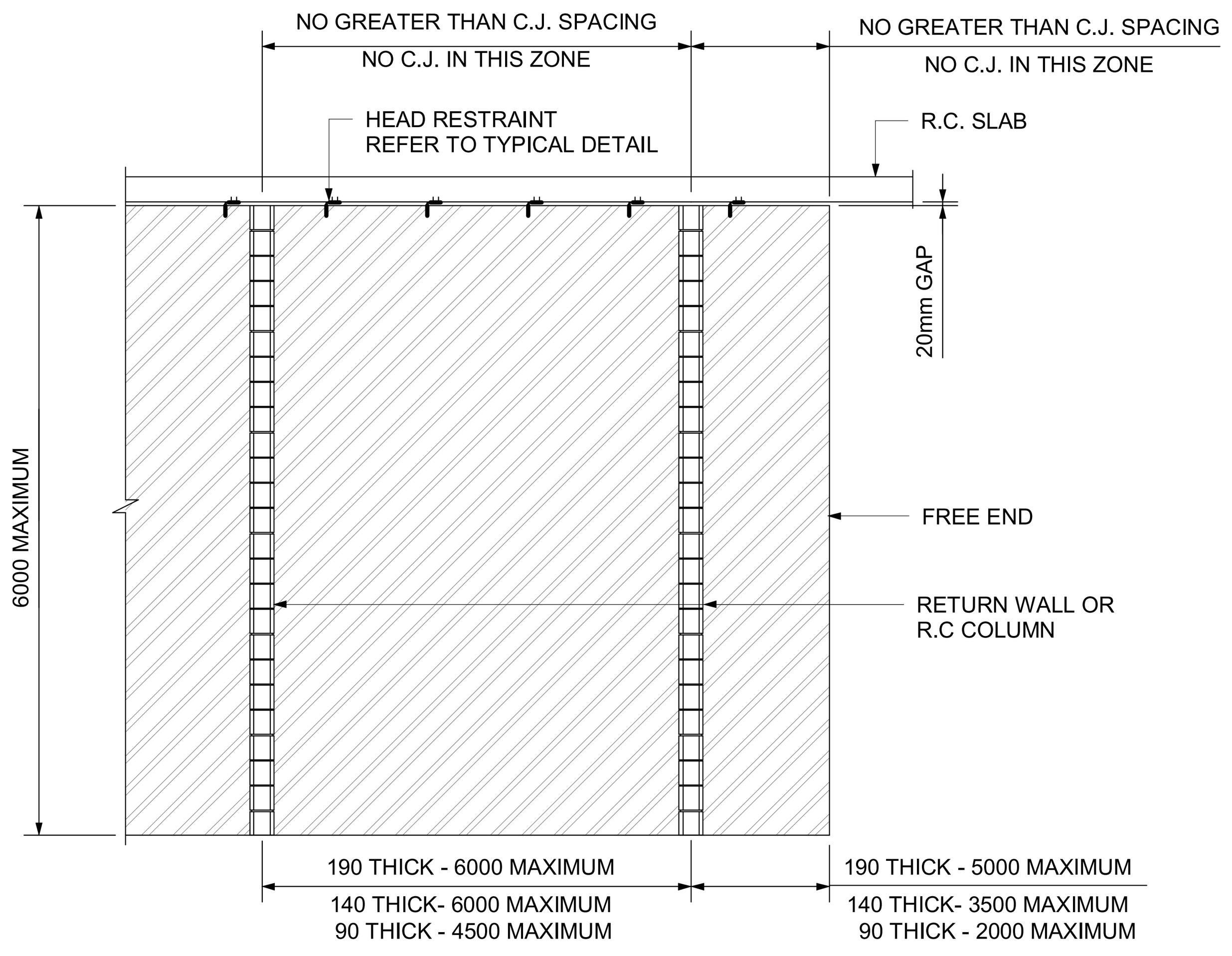
DRAWING STATUS

PRELIMINARY

DRAWING NUMBER: ST-010-34
REV.: B

27/10/2021 5:05:14 PM

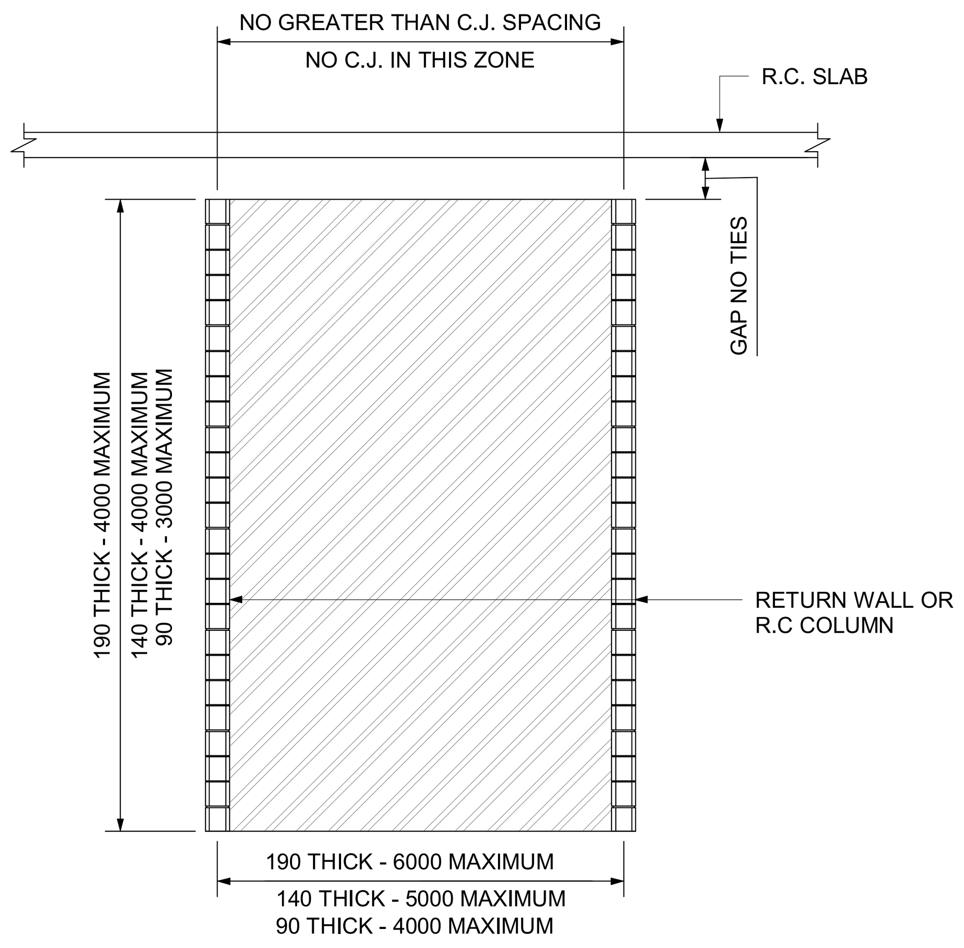
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



TYPICAL INTERNAL TWO WAY UNREINFORCED BLOCKWALL MAXIMUM SPANS (NON FIRE RATED)

SCALE = 1:50

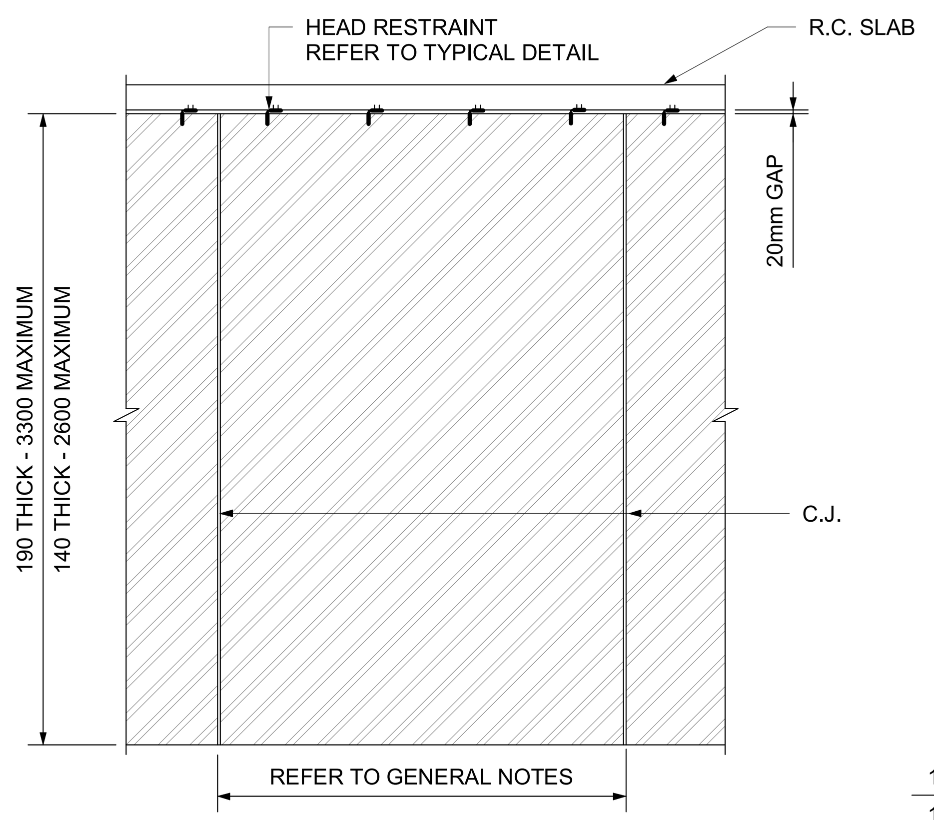
- REFER TO TYPICAL DETAILS FOR FIXINGS AT WALL INTERSECTIONS



TYPICAL INTERNAL HORIZONTAL SPANNING UNREINFORCED BLOCKWALL MAXIMUM SPANS (NON FIRE RATED)

SCALE = 1:50

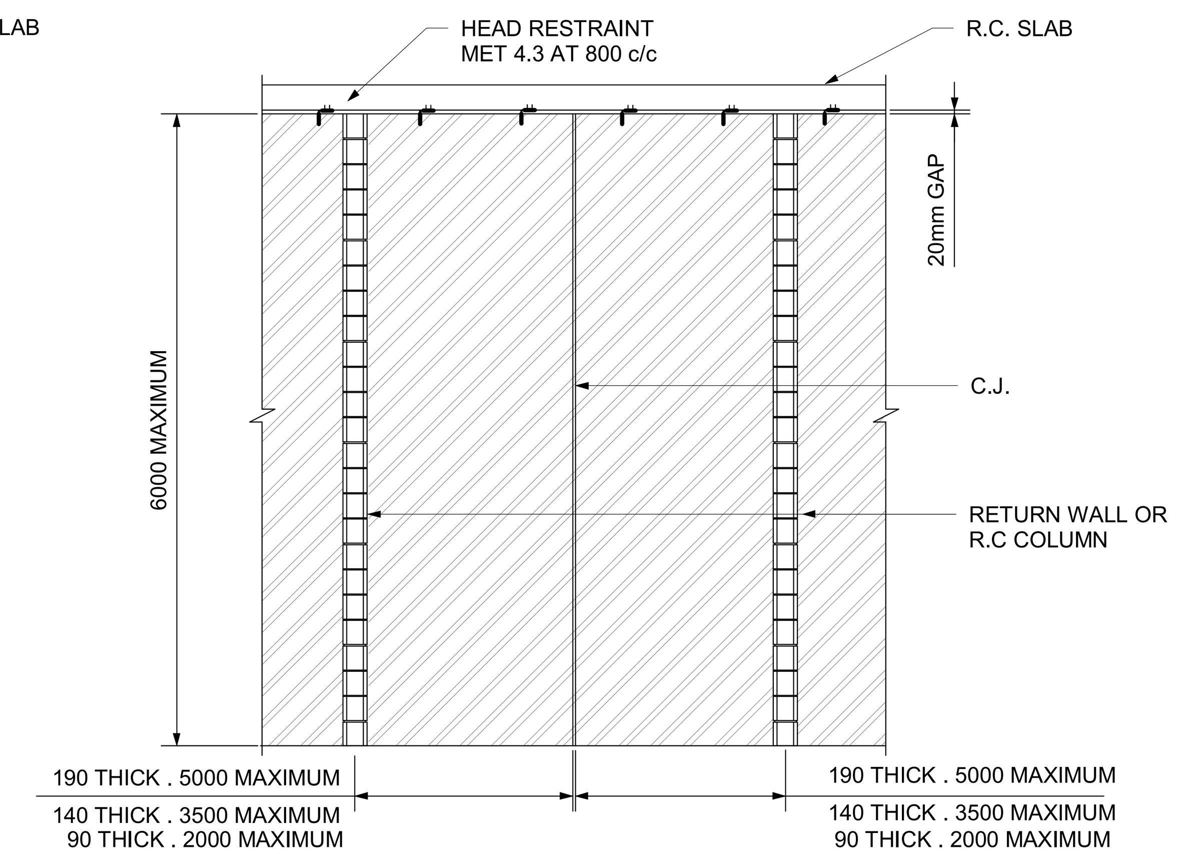
- REFER TO TYPICAL DETAILS FOR FIXINGS AT WALL INTERSECTIONS



TYPICAL INTERNAL VERTICAL SPANNING UNREINFORCED BLOCKWALL MAXIMUM SPANS (NON FIRE RATED)

SCALE = 1:50

- REFER TO TYPICAL DETAILS FOR FIXINGS AT WALL INTERSECTIONS



TYPICAL INTERNAL 3 SIDED SUPPORT UNREINFORCED BLOCKWALL MAXIMUM SPANS (NON FIRE RATED)

- REFER TO TYPICAL DETAILS FOR FIXINGS AT WALL INTERSECTIONS

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL BLOCKWORK DETAILS SHEET 5

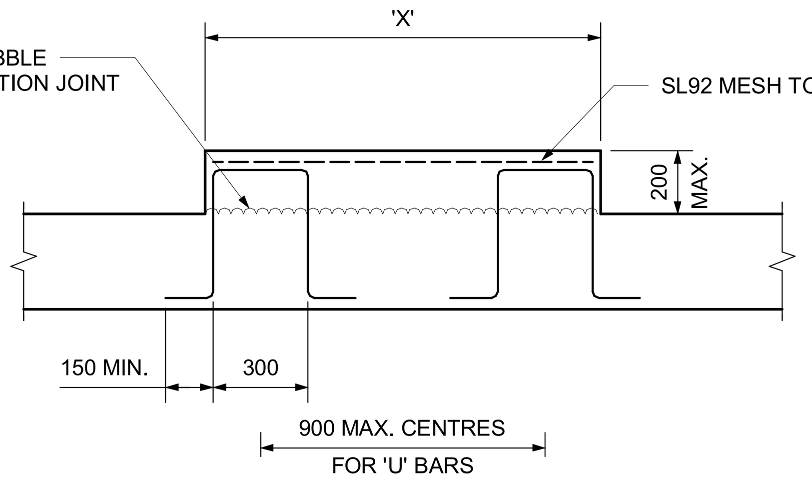
SCALE AT A1: 1 : 50
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER: ST-010-35
REV.: B

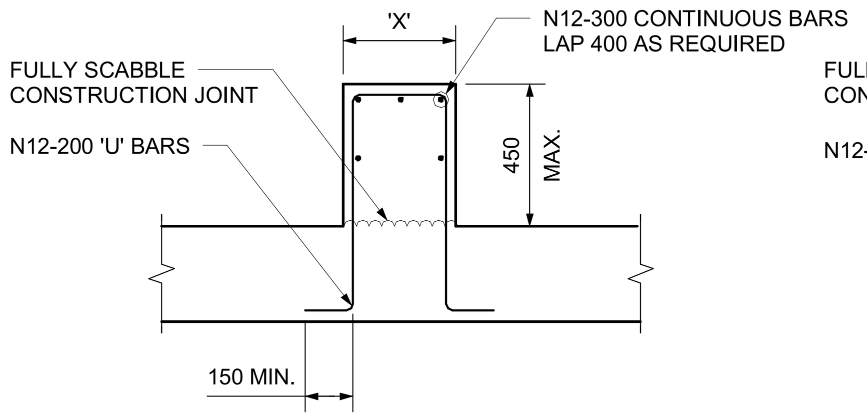
27/10/2021 5:05:18 PM

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

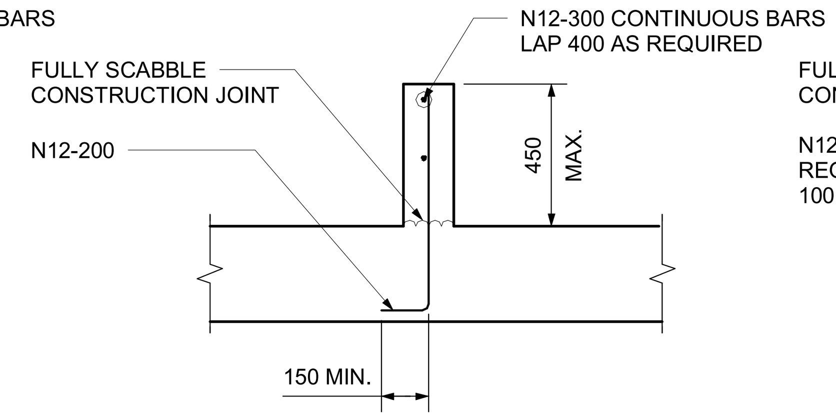


TYPE 1: WHERE 'X' > 1200mm

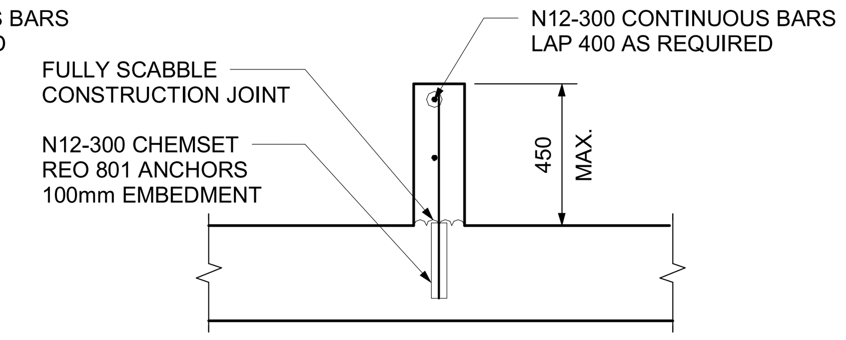
1. ADD FURTHER ROWS OF 'U' BARS AT 900 MAXIMUM CENTRES FOR WIDER PLINTHS



TYPE 2: WHERE 'X' ≤ 1200mm



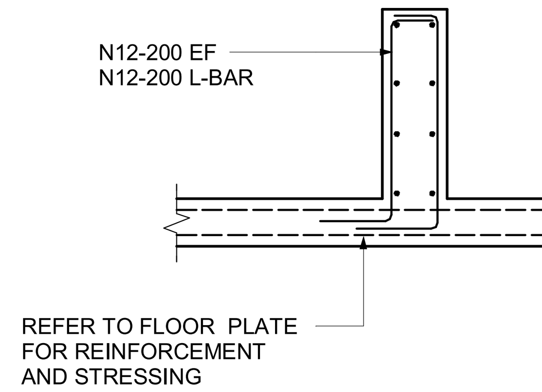
TYPE 3: WHERE 'X' ≤ 150mm



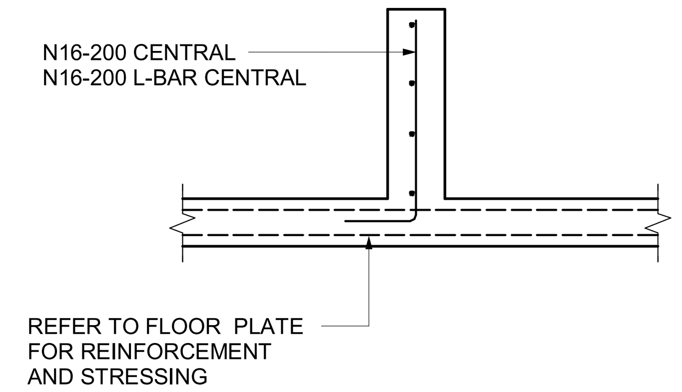
TYPE 4: WHERE 'X' ≤ 150mm AND NOT IN P.T SLAB

TYPICAL PLINTH KERB / HOB DETAILS

SCALE 1:20



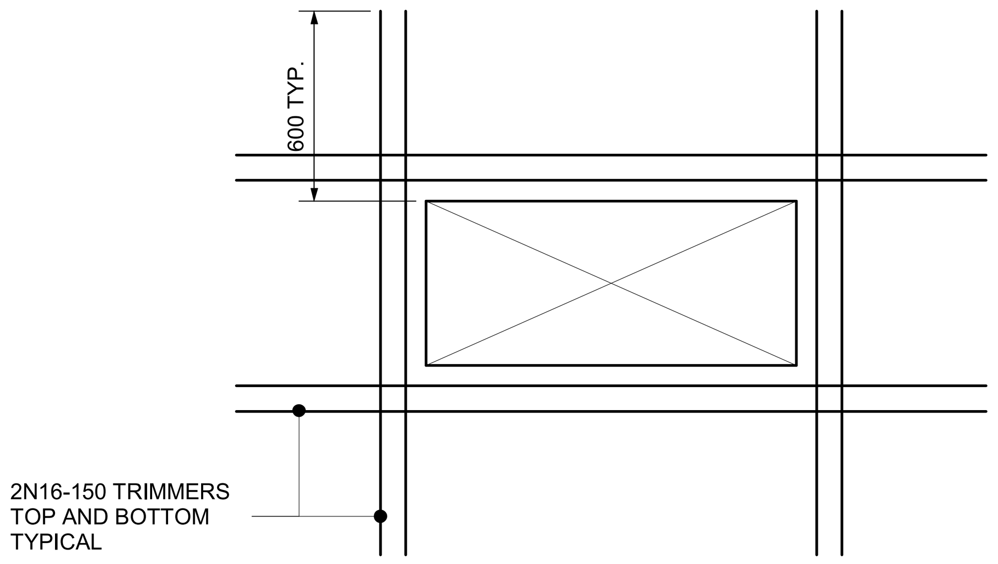
200mm WIDE R.C. UPSTAND



180mm WIDE R.C. UPSTAND

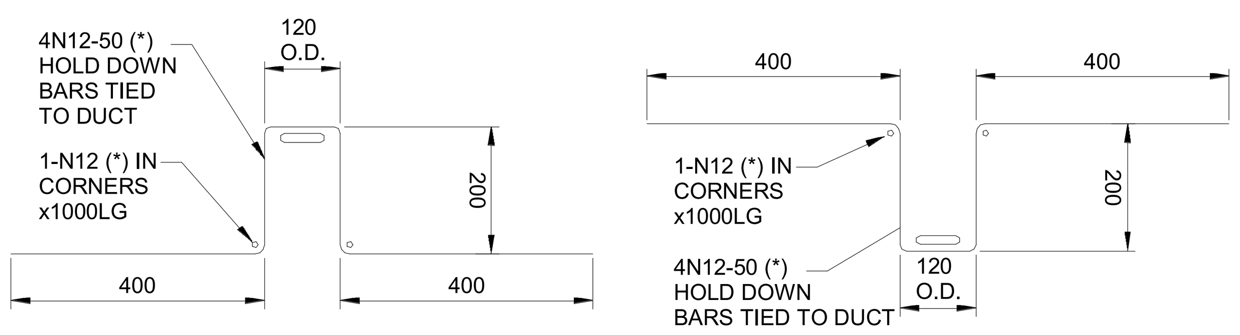
TYPICAL R.C. UPSTAND DETAIL LIGHT CAR PARK BARRIER

SCALE 1:20



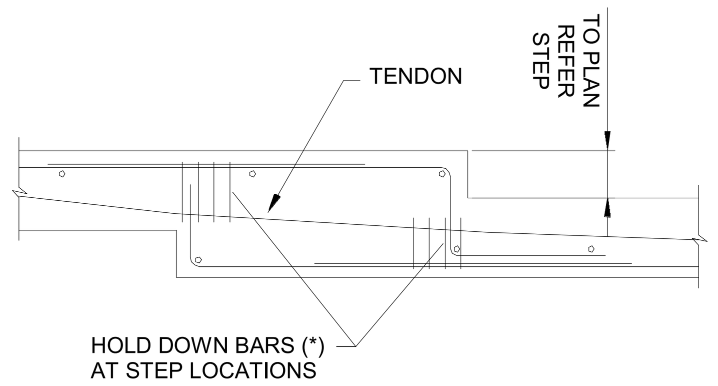
TYPICAL SLAB PENETRATION REINFORCEMENT DETAIL

SCALE 1:20



FRONT ELEVATION

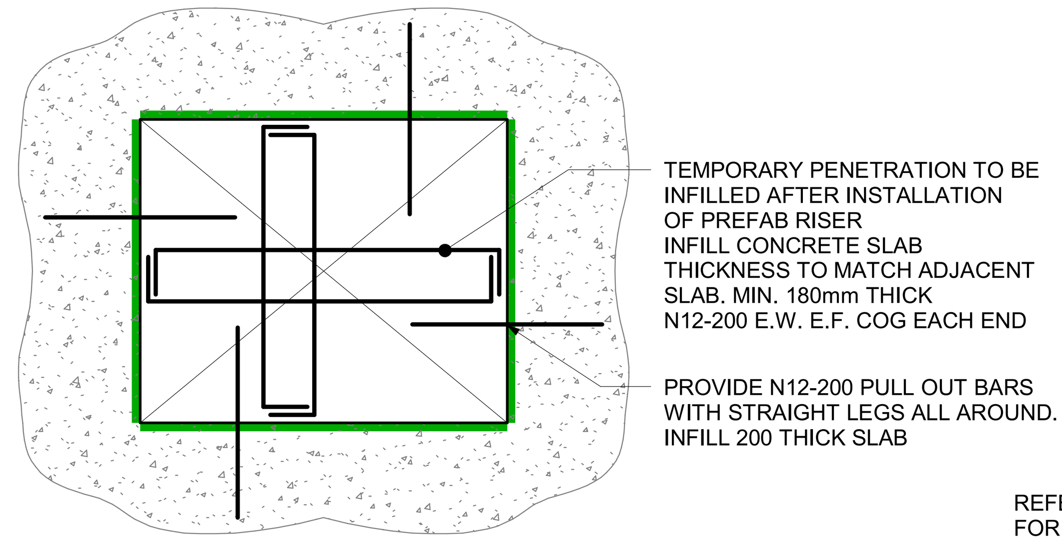
SCALE 1:10



TYPICAL SECTION THROUGH STEP

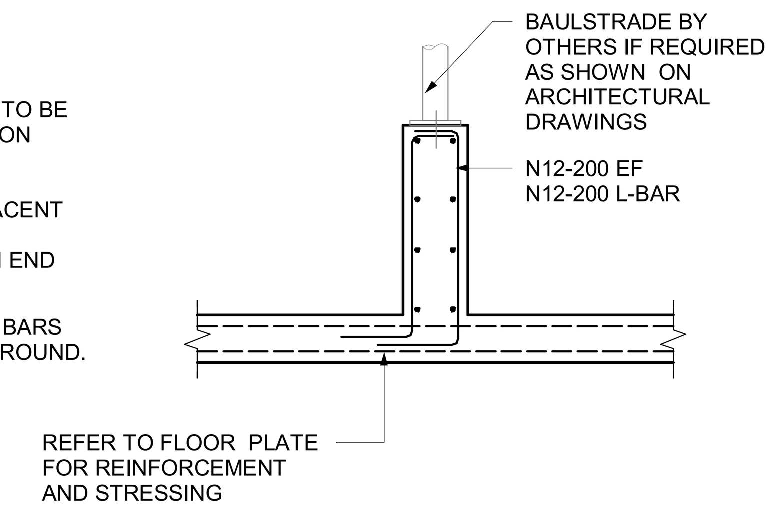
(HOLD DOWN BAR LOCATION)

SCALE 1:10

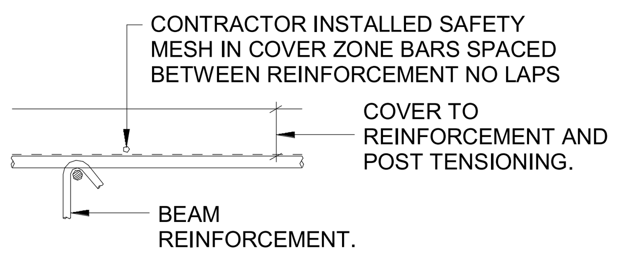


TYPICAL TEMPORARY PENETRATION INFILL DETAIL

SCALE 1:20

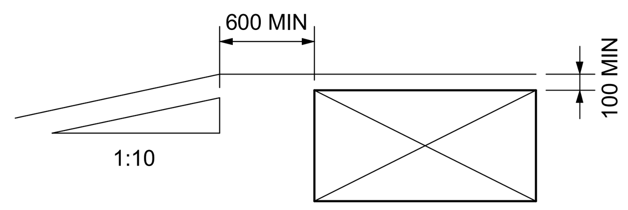


TYPICAL CONCRETE UPSTAND BALUSTRADE DETAIL 200mm WIDE R.C. UPSTAND

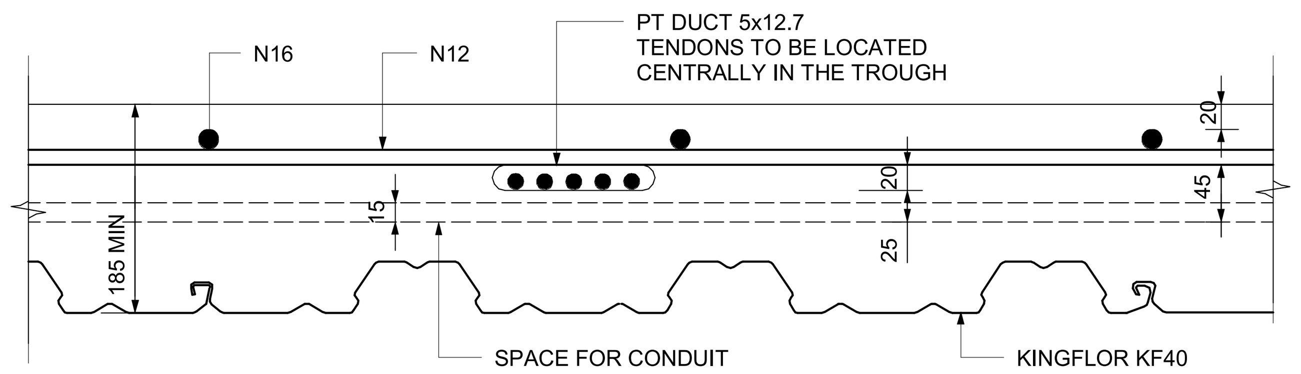


LOCATION OF SAFETY MESH

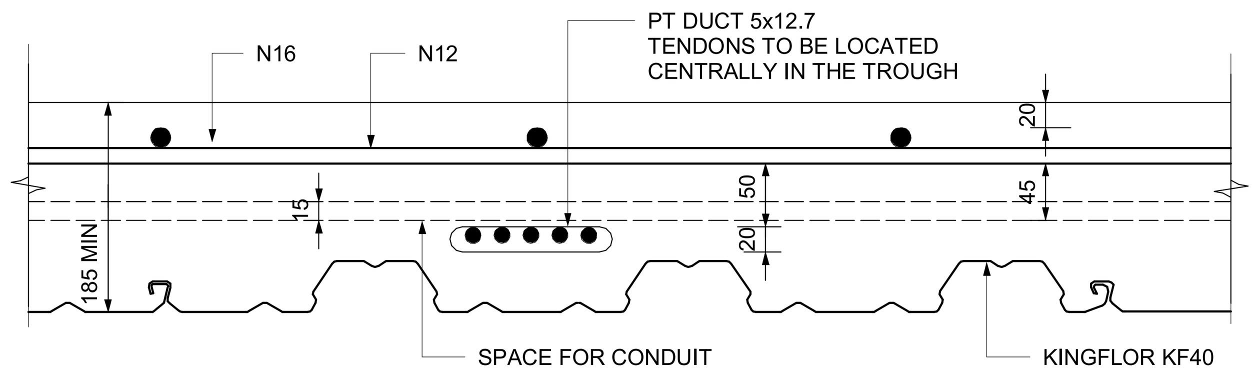
SCALE 1:10



TYPICAL TENDON DETAIL AT PENETRATIONS & OPENINGS



CONDUIT SPACE FOR PT HIGH

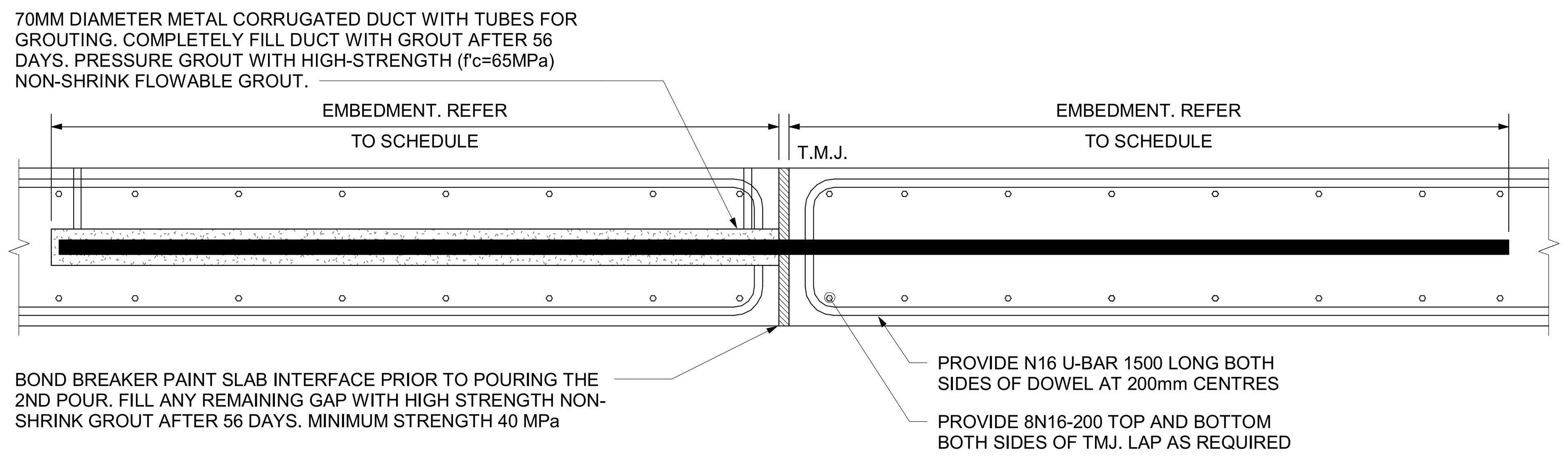


CONDUIT SPACE FOR PT LOW

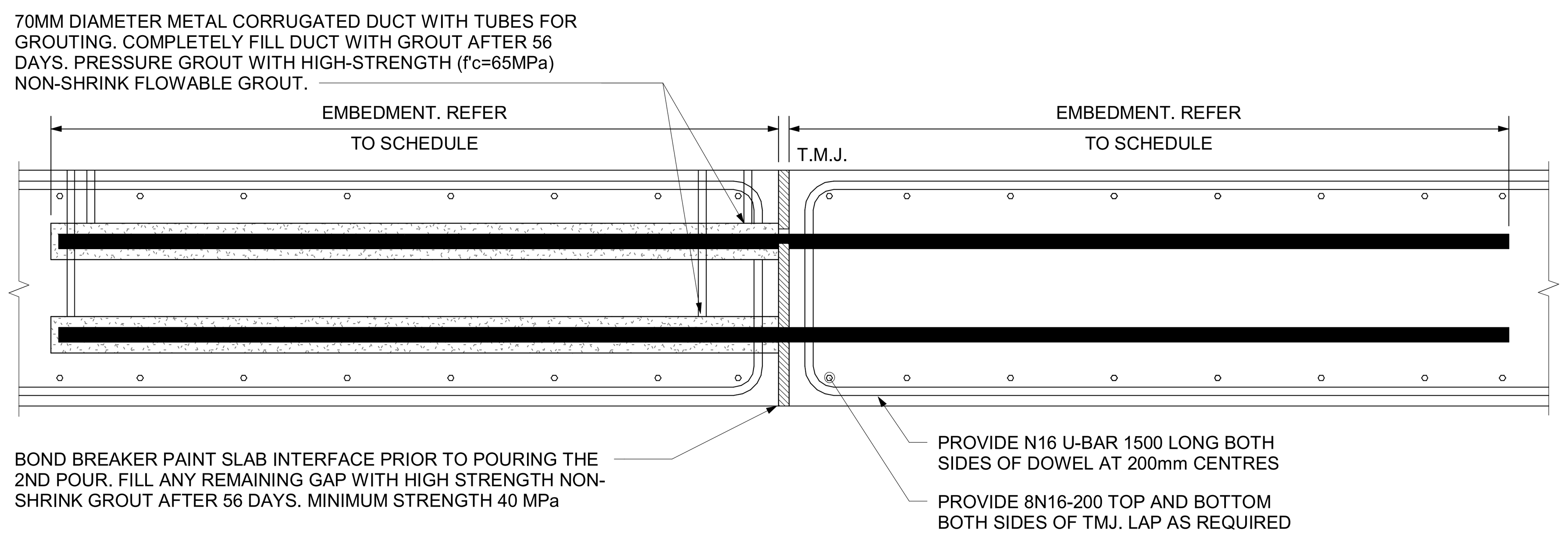
CONDUIT SPACING FOR 185mm SLAB

SCALE 1:5

NOTES:
- CONTRACTOR TO SUBMIT CONDUIT LAYOUT TO STRUCTURAL ENGINEER FOR APPROVAL.
- 1 CONDUIT/400mm MAX
- ONLY ONE CONDUIT TO BE CROSSED AT A TIME
- CONDUIT NOT TO BE BUNDLED.
- MUST KEEP 500mm SPACING FROM STRESSING ENDS.



TYPICAL T.M.J.D. DETAIL - SLAB



TYPICAL T.M.J.D. DETAIL - BEAM

TEMPORARY MOVEMENT JOINT DIAPHRAGM (TMJD) CONNECTION		
BAR SIZE (mm)	DUCT SIZE (mm)	MIN. EMBEDMENT BOTH SIDES OF TMJ (mm)
N28	70	1400

NOTES:

REFER TO DRAWING ST-005-52 FOR SLAB TO WALL CONNECTION DETAILS. ALL CAST IN PRODUCTS TO BE SUBMITTED TO ENSTRUCT FOR APPROVAL.

REFER TO MANUFACTURER'S GUIDELINES FOR SPACING.

REFER TO MANUFACTURER'S GUIDELINES FOR INSTALLATION REQUIREMENTS.

REFER TO ZONE PLANS FOR MAXIMUM SPACING AND BAR SIZES OF THE TEMPORARY MOVEMENT JOINT DIAPHRAGM DOWEL CONNECTIONS. THESE DOWELS ARE DESIGNED ONLY FOR LATERAL DESIGN ACTIONS.

CONNECTION AT TEMPORARY MOVEMENT JOINTS FOR GRAVITY/VERTICAL DESIGN ACTIONS ARE BY THE PT CONTRACTOR.

FOR UPSTANDS AND WALLS GREATER THAN 600mm HIGH PROVIDE ARTICULATION JOINTS EQUALLY SPACED AND AT MAXIMUM OF 6m c/c REFER DRAWING ST-00450 FOR DETAILS

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL SUSPENDED SLAB DETAILS SHEET 1

SCALE AT A1: As indicated
DRAWN BY: JWR
CHECKED BY: M.O.S

DRAWING STATUS
PRELIMINARY

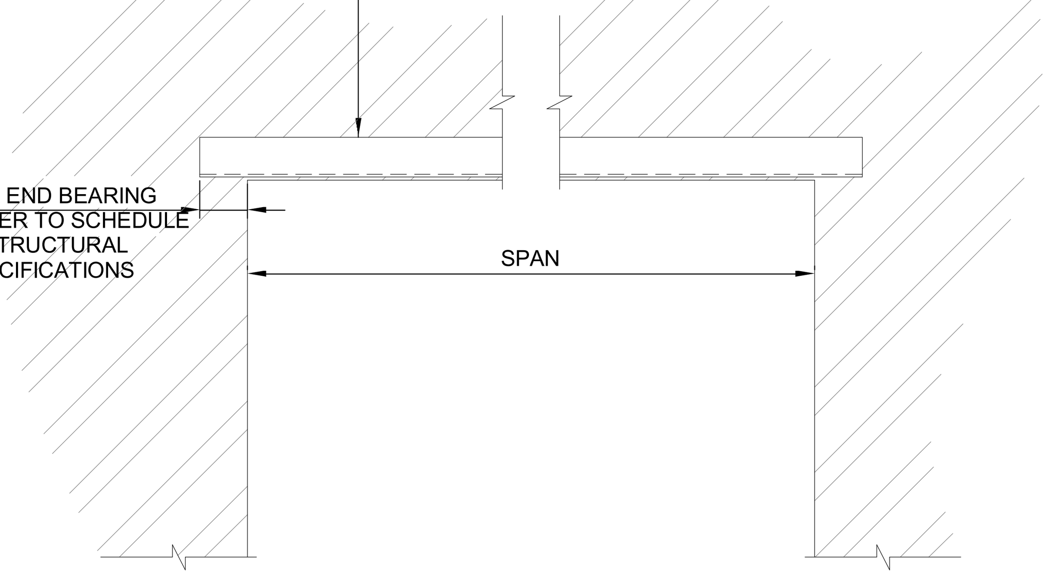
DRAWING NUMBER
ST-012-31

REV.
B

27/10/2021 5:05:22 PM

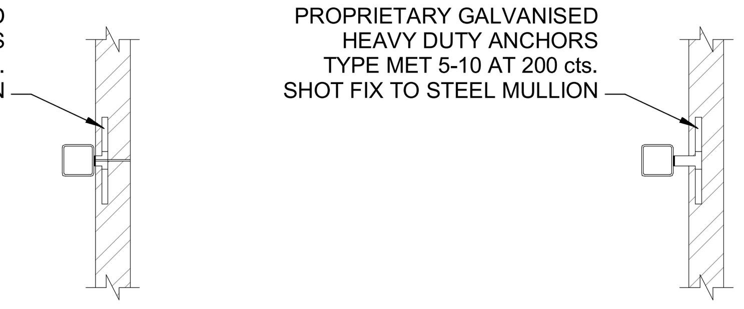
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

A1



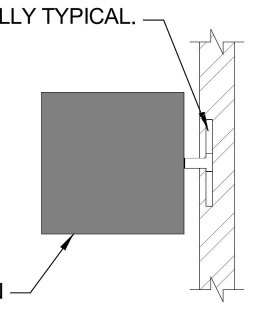
TYPICAL BRICKWORK WALL LINTEL DETAIL

1. LINTELS SHALL BE GALVANISED TO CLASS Z600
2. MAINTAIN 10mm CLEARANCE FROM HEADS AND FRAMES
3. AT LOCATIONS WHERE LINTELS CROSS ARTICULATION JOINTS, END OF LINTEL MUST BE WRAPPED IN 2 LAYERS OF ALCOR (OR APPROVED EQUIVALENT)
4. PROP LINTELS AT MID SPAN FOR OPENING 1800mm WIDE AND OVER UNTIL MORTAR SETS



STEEL MULLION CONNECTIONS TO BRICKWORK WALL

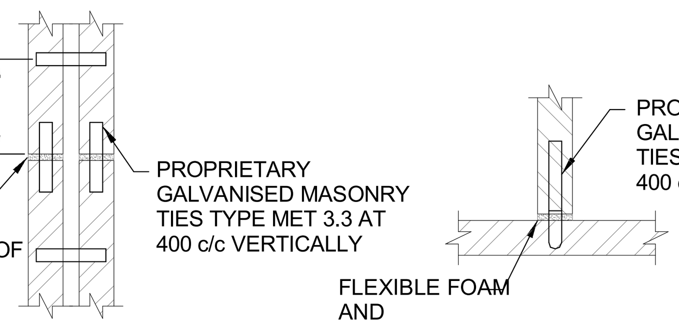
SCALE 1:20



TYPICAL WALL TIES AT CONCRETE COLUMNS

SCALE 1:20

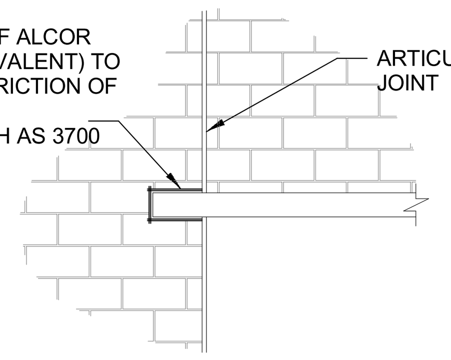
NOTE: CONCRETE WALL LOCATIONS SIMILAR



TYPICAL BRICK JOINT DETAILS

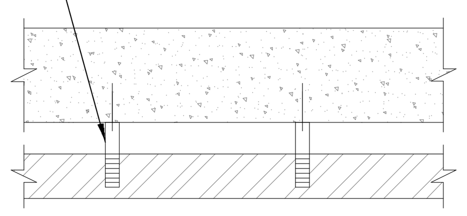
SCALE 1:20

- ALL MASONRY TO BE ARTICULATED
- REFER TO ARCHITECTURAL DRAWINGS FOR JOINT LOCATIONS



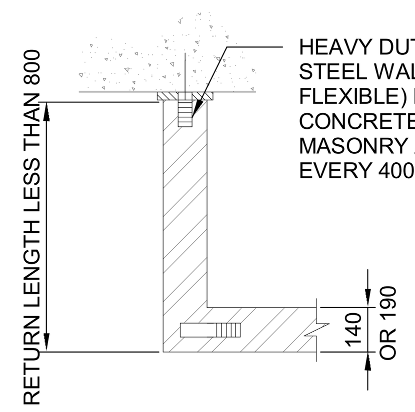
TYPICAL LINTEL AT ARTICULATION JOINT DETAIL

SCALE 1:20



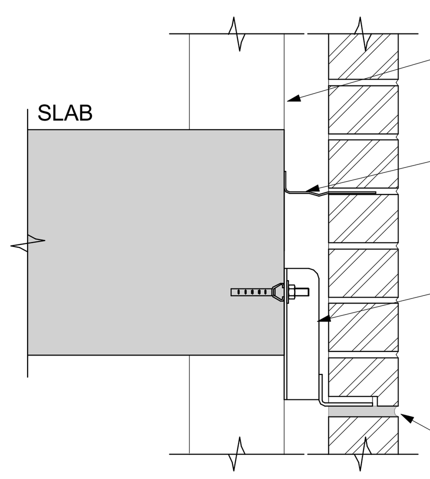
PLAN- RESTRAINT TO BRICKWORK WALL ADJACENT TO R.C. WALL OR SHOTCRETE

SCALE = 1:20



RESTRAINT TO WALL WITH SHORT RETURN

SCALE = 1:20



TYPICAL FL1 BRICKWORK SUPPORT DETAIL

SCALE 1:10

- BRICKWORK SUPPORT TO BE PROVIDED AT EACH SUSPENDED LEVEL.
- ALL STUDS SUPPORTING MASONRY VENEER TO CONTRACTOR'S DESIGN AND DETAIL.

BRICKWORK NOTES

- CONTRACTION JOINTS (C.J.) TO BE AT 6m SPACING MAXIMUM
- CONTRACTION JOINTS TO ALIGN WITH SLAB JOINTS IN SLAB ON GRADE AND MOVEMENT JOINTS IN SUSPENDED SLABS.
- ALL PROPRIETARY MASONRY ANCHORS TO BE MET BY MASONRY TIES P/L OR APPROVED EQUIVALENT.
- ALL BRICKWORK TO COMPLY WITH AS 3700
- ALL MASONRY FIXINGS, BOLTS, PLATES, ECT TO BE HOT DIPPED GALVANISED
- MORTAR CLASSIFICATION - M3
- ALL MASONRY UNITS SHALL BE LAID IN STRETCHER BOND
- MASONRY UNITS LAID IN STACKED BOND TO BE HORIZONTALLY REINFORCED TO LIMIT VERTICAL CRACKING
- JOINTS TO BE RODDED TO A MAX. DEPTH OF 3 MILLIMETERS
- CONTRACTOR RESPONSIBLE FOR ALL FIRE PROTECTION OF MASONRY WALL STIFFENERS
- REFER TO STRUCTURAL SPECIFICATION AS 3700 REQUIREMENTS U.N.O.

27/10/2021 5:05:26 PM

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

TYPICAL BRICKWORK DETAILS

SCALE AT A1: As indicated
DRAWN BY: J.D.B.
CHECKED BY: Checker

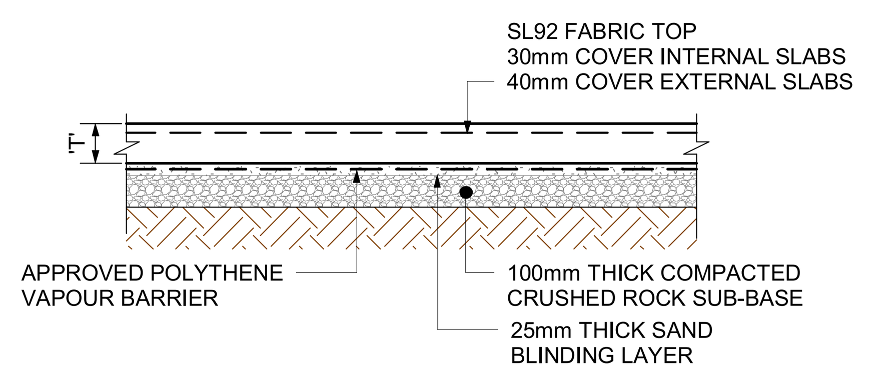
DRAWING STATUS

FOR INFORMATION

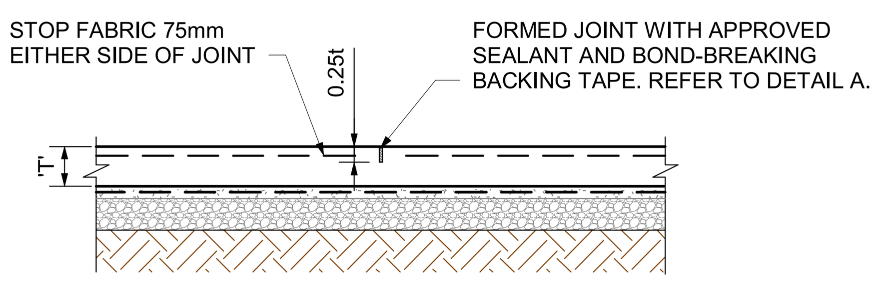
DRAWING NUMBER: ST-012-41

REV.: B

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



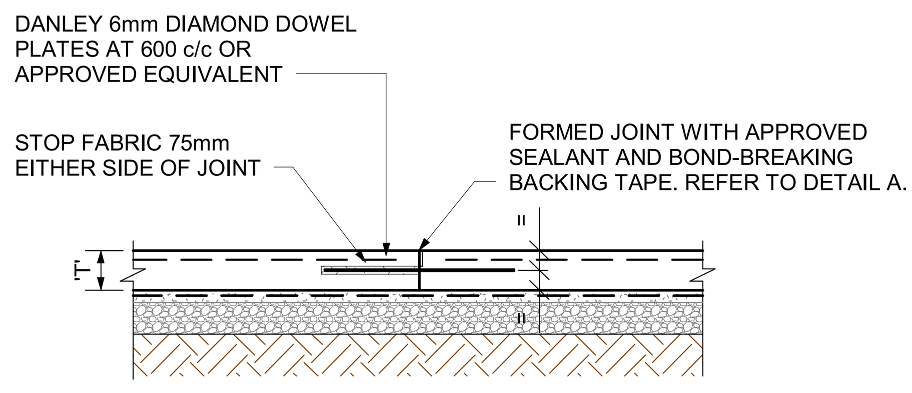
TYPICAL 150mm SLAB ON GRADE SECTION
SCALE 1:20



NOTE: SAW CUT TO BE WITHIN THE FOLLOWING TIME LIMITS.

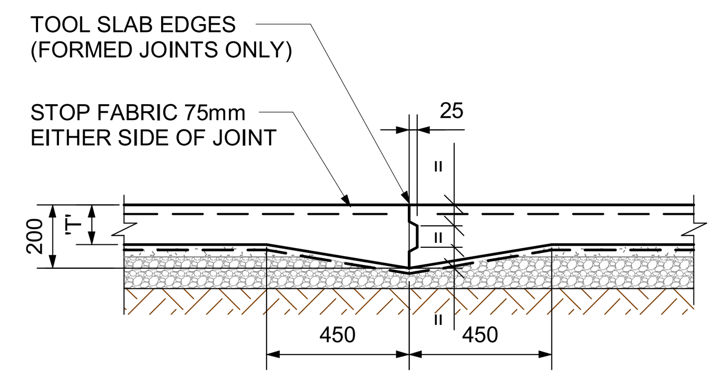
DAILY MAXIMUM TEMPERATURE (°C)	MAXIMUM TIME AFTER CONCRETE PLACEMENT FOR SAWING TO OCCUR (HOURS)
<10	48
10-20	36
20-30	24
>30	12

TYPICAL SAWN CONTRACTION JOINT (S.C.J)
SCALE 1:20



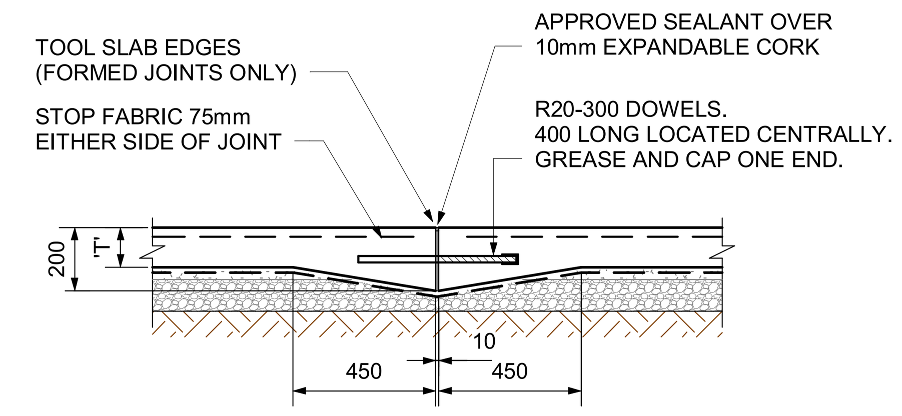
NOTE:
NOT SHOWN ON PLAN - TO BE USED AT SLAB POUR BREAKS
(LOCATIONS DETERMINED BY CONTRACTOR)

FORMED CONSTRUCTION JOINT (F.C.J)
SCALE 1:20

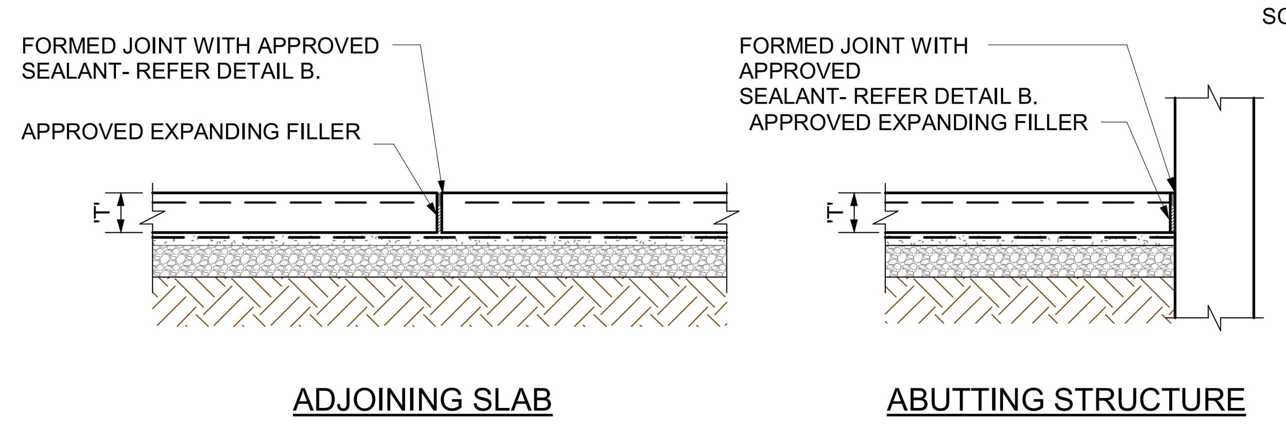


NOTE:
WHERE JOINTS ARE FORMED APPLY APPROVED
BONDBREAKER TO THE FIRST FACE POURED

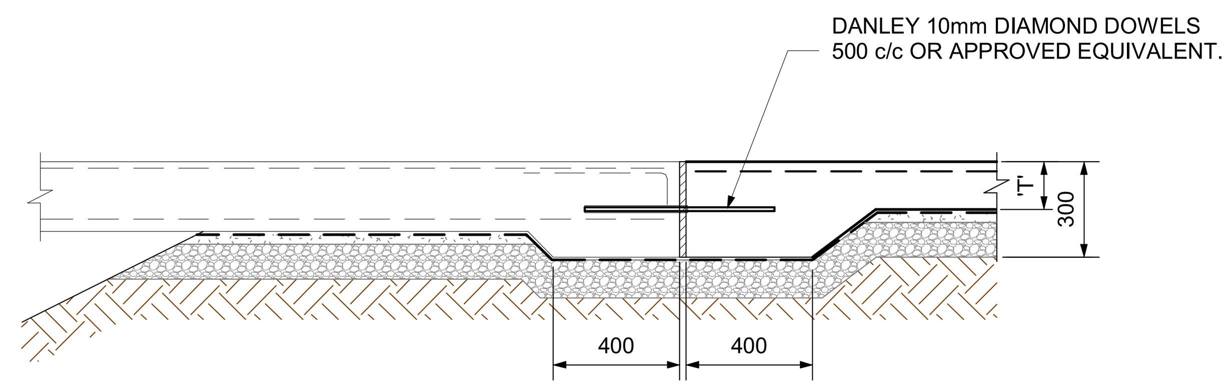
KEYED JOINT (K.J.)
SCALE 1:20



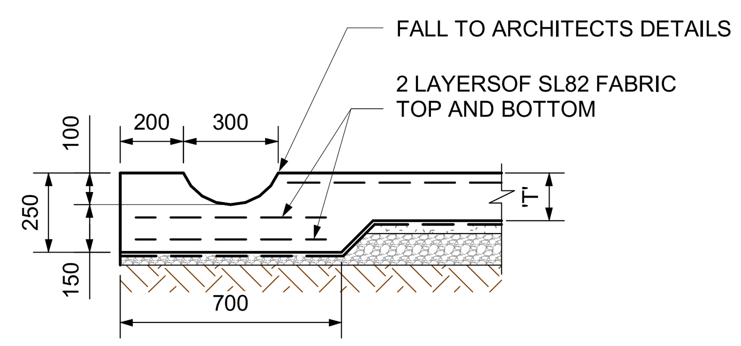
EXPANSION JOINT (E.J.)
SCALE 1:20



TYPICAL ISOLATION JOINT (I.J)
SCALE 1:20

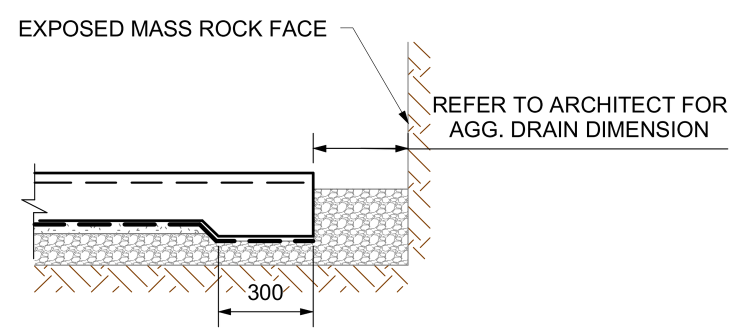


MOVEMENT JOINT (M.J.) CONNECTION TO SUSPENDED SLAB
SCALE 1:20

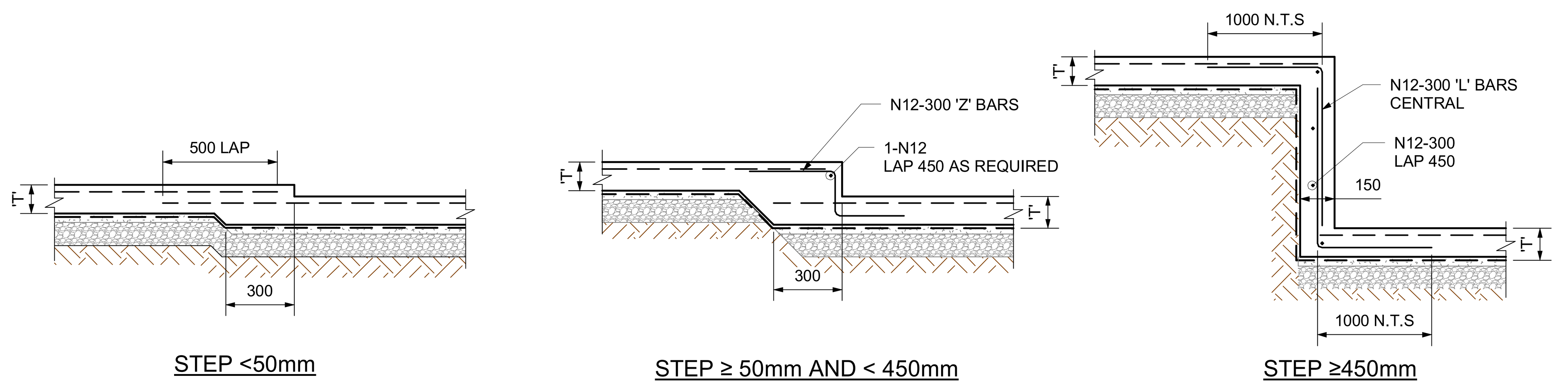


NOTE:
PROVIDE VERTICAL JOINTS IN SPOON
DRAIN TO COINCIDE WITH SLAB JOINTS.

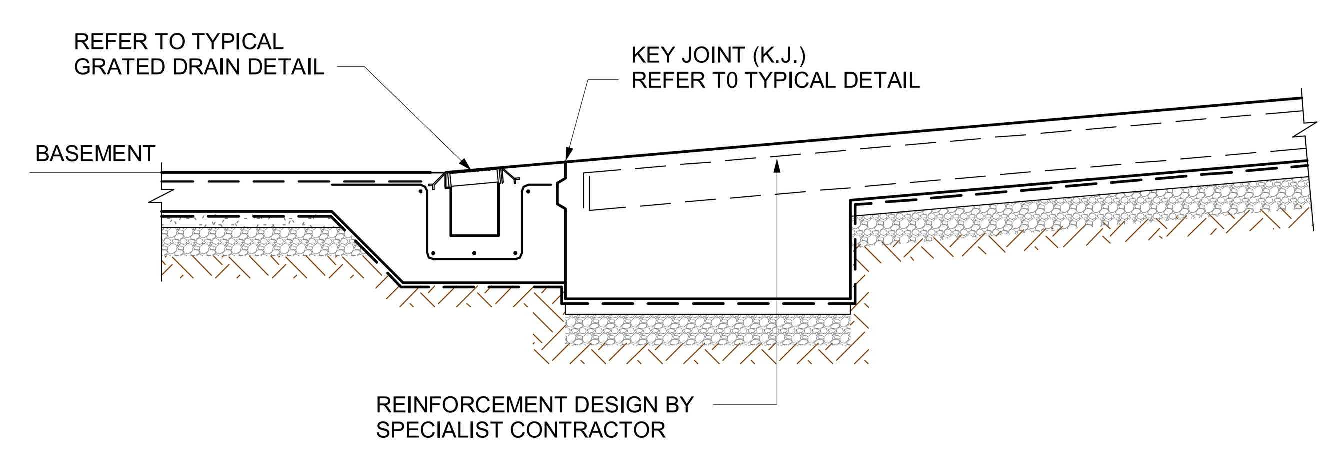
SPOON DRAIN DETAIL
SCALE 1:20



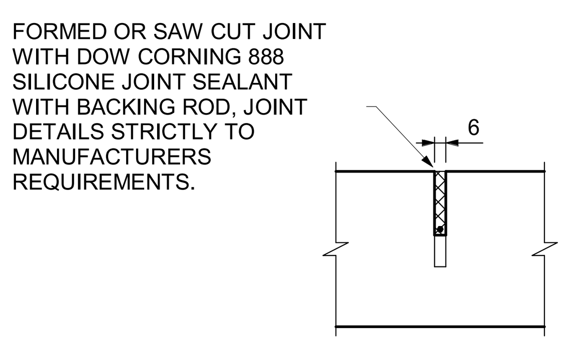
TYPICAL SLAB EDGE THICKENING (ET1)
SCALE 1:10

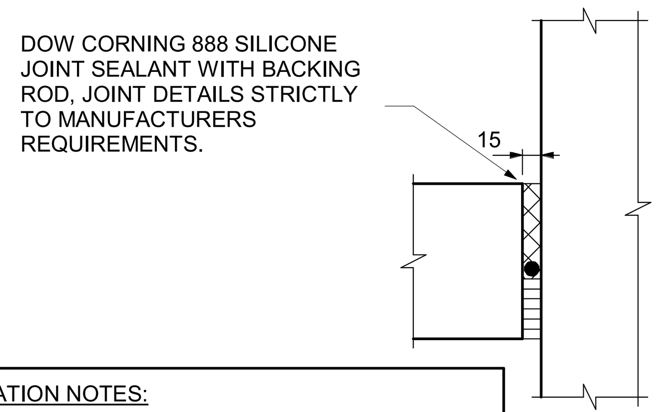


TYPICAL SLAB ON GRADE STEP DETAIL
SCALE 1:20



RAMP KEY JOINT ON GRADE GRATED DRAIN DETAIL



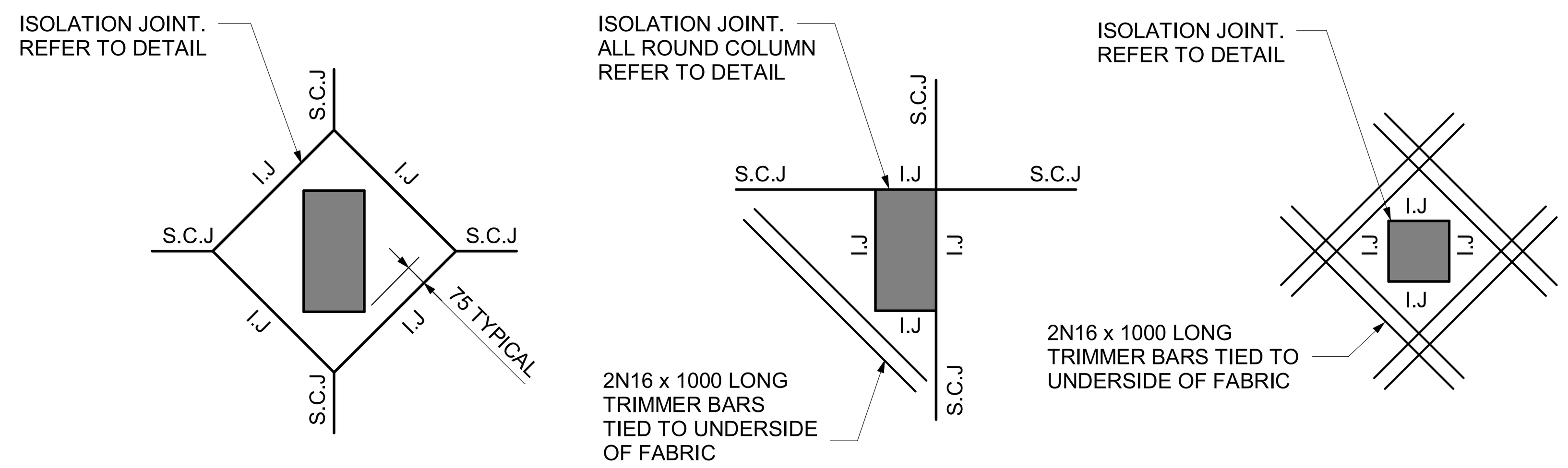


SEALANT INSTALLATION NOTES:

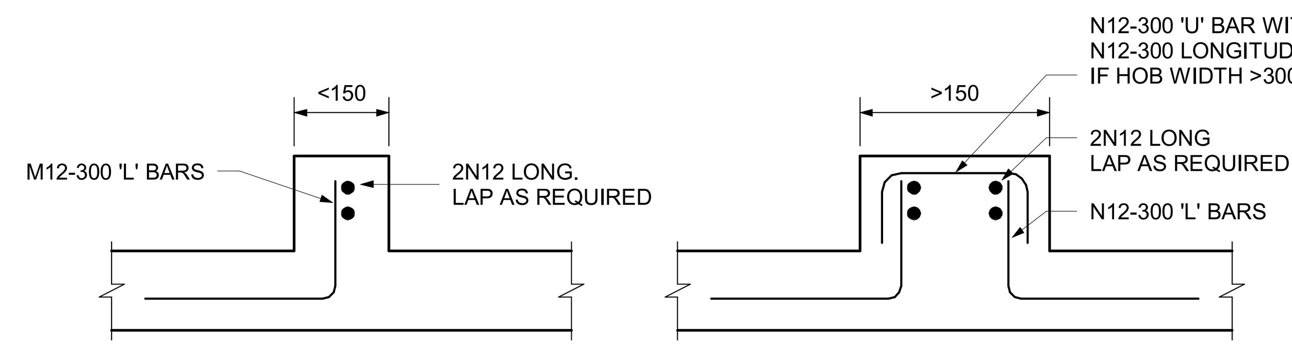
1. SEALANT TO OVERFILL JOINT WHEN APPLIED.
2. SEALANT TO BE CUT FLUSH WITH CONCRETE ONCE CURED.

DETAIL A
SCALE = 1:20

DETAIL B
SCALE = 1:20

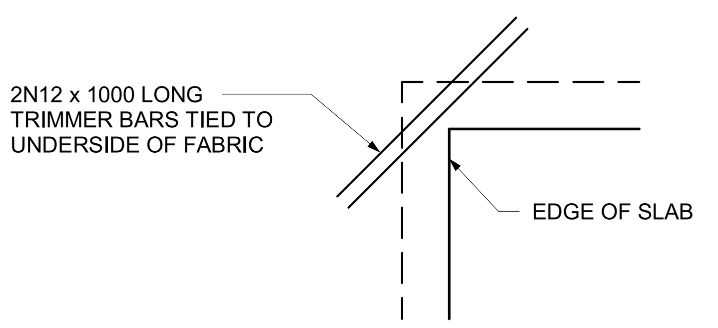


TYPICAL PLAN AT JOINT JUNCTION
SCALE 1:20

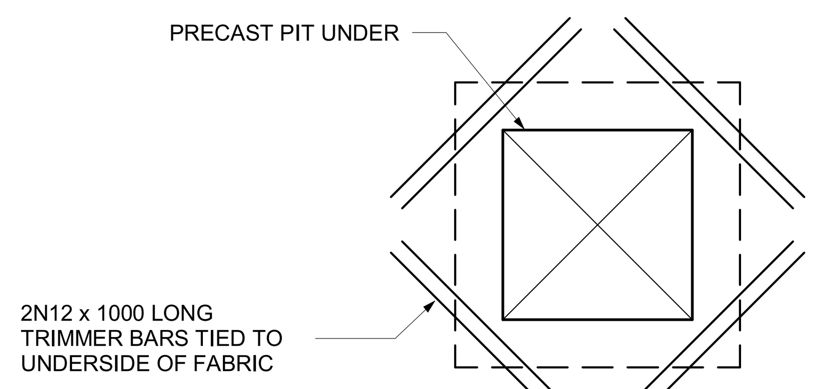


NOTE:
- REFER ARCHITECTS DRAWINGS FOR HOB LOCATIONS.
- JOINTS IN HOBS TO CORRESPOND WITH SLAB JOINT LOCATIONS.
- ALL HOBS TO BE POURED INTEGRAL WITH PRIMARY STRUCTURAL SLAB.

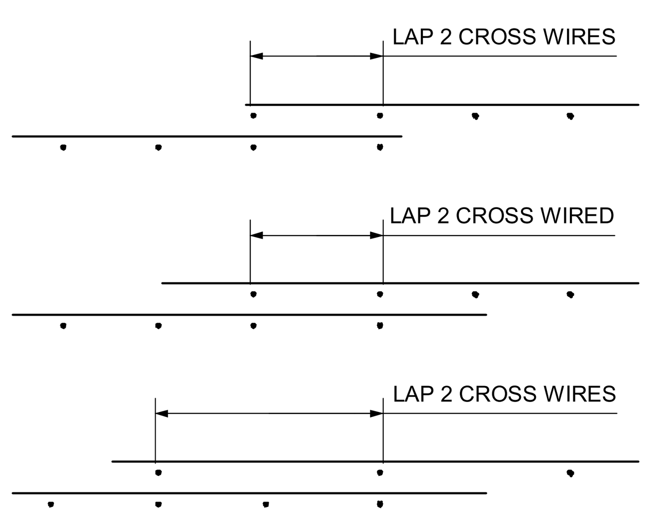
TYPICAL HOB DETAILS
SCALE 1:20



TYPICAL RE-ENTRANT CORNER DETAIL
SCALE 1:20



TYPICAL PRECAST PIT PLAN DETAIL
SCALE 1:20



MESH REINFORCEMENT LAP DETAILS
SCALE 1:20

NOTE:
ALL SLAB ON GRADE REQUIRES DETAILED GROUND PREPARATION TO MITIGATE SHRINK-SWELL MOVEMENTS OF HIGHLY REACTIVE CLAYS. REFER TO GEOTECH REPORT FOR DETAILS

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL SLAB ON GRADE DETAILS

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER ST-099-31
REV. B

27/10/2021 5:05:31 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

27/10/2021 5:05:37 PM

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

GROUND FLOOR GENERAL ARRANGEMENT

SCALE AT A1: 1 : 200
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

PRELIMINARY

GROUND FLOOR - GENERAL ARRANGEMENT

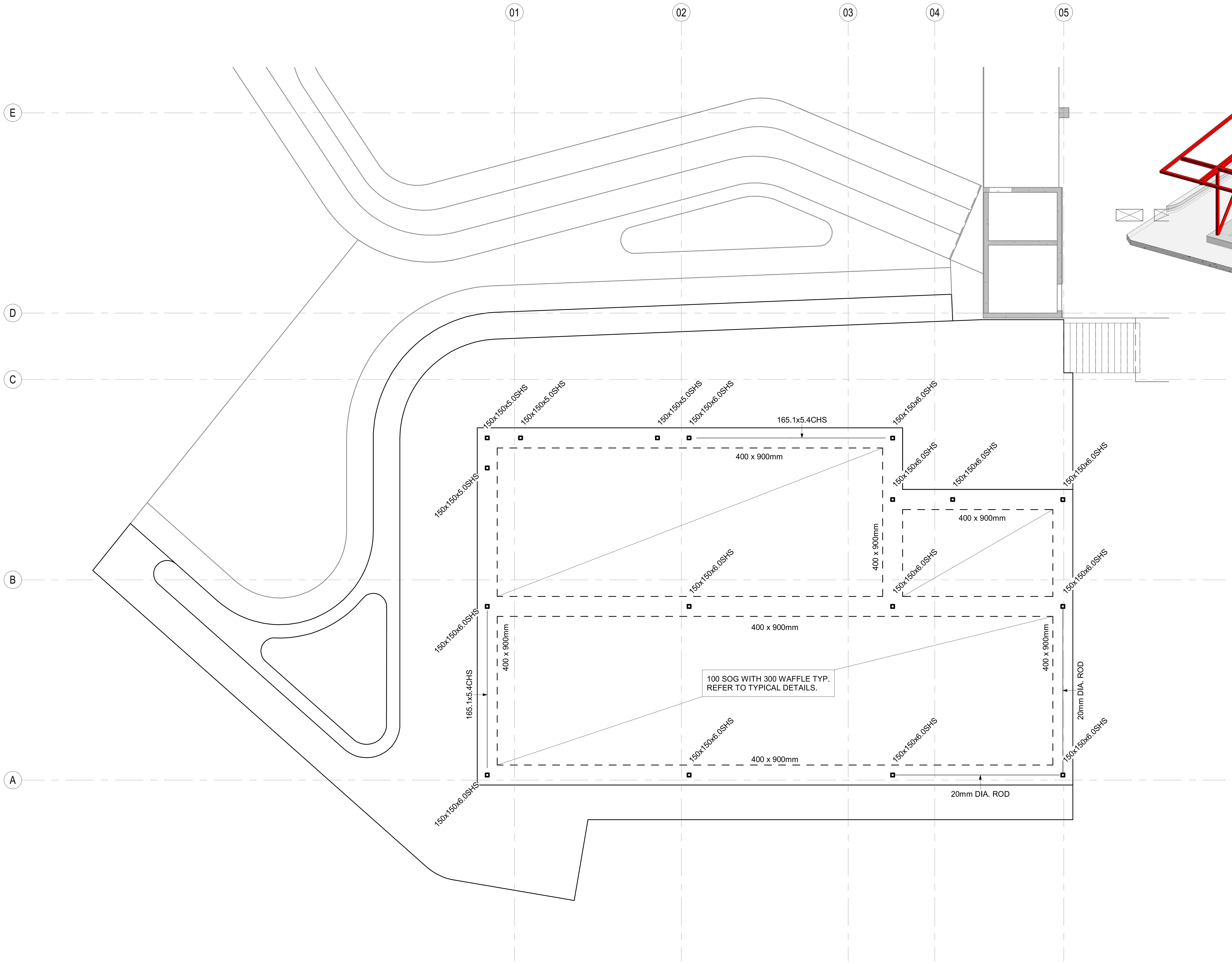
SCALE: 1 : 200

DRAWING NUMBER: ST-100-00

REV.: B

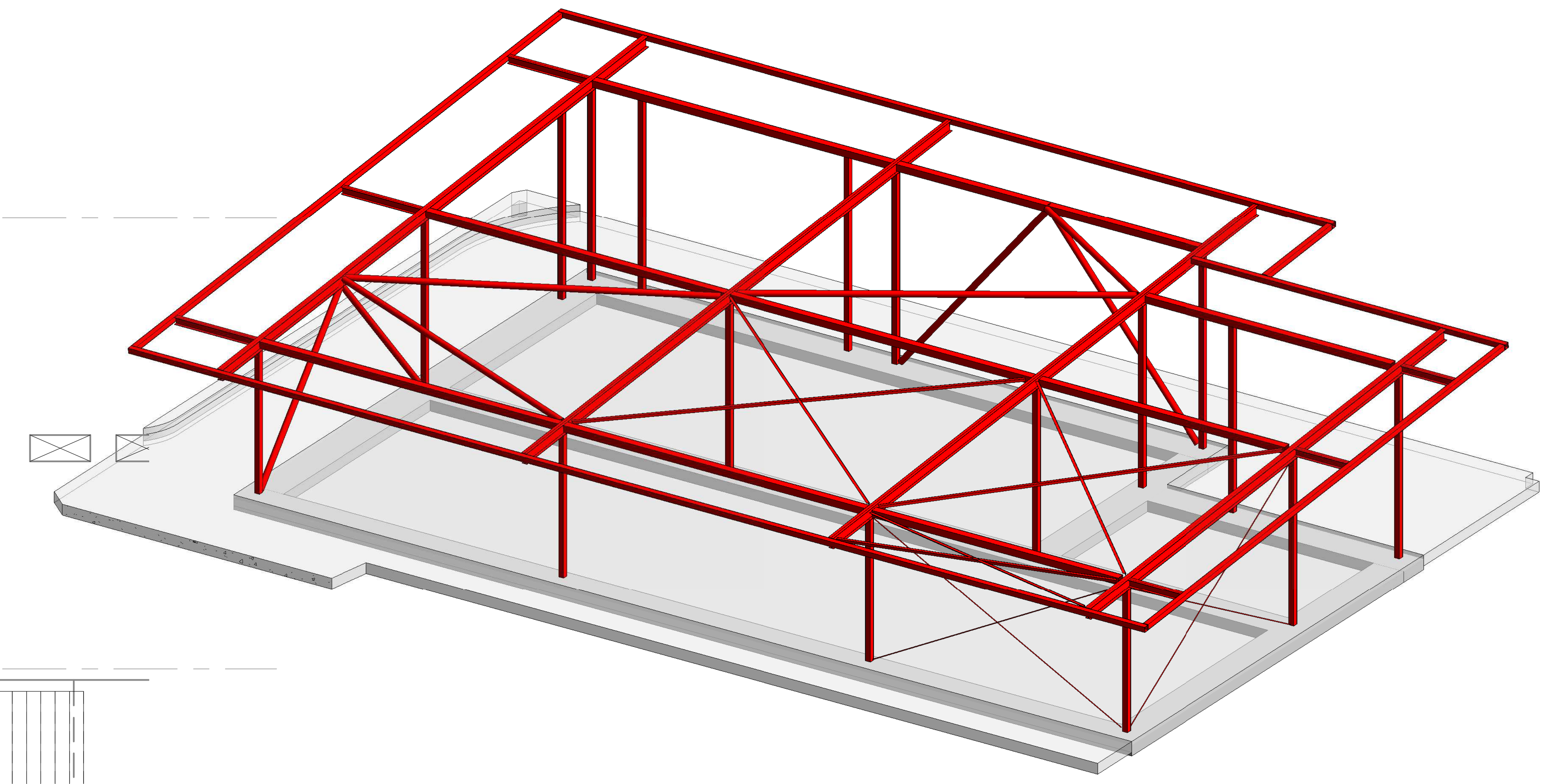
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



PERFORMANCE HALL - GROUND FLOOR - GENERAL ARRANGEMENT

SCALE: 1 : 100



PERFORMANCE HALL ISOMETRIC

SCALE:

NOTES:
- DESIGN UNDER DEVELOPMENT WITH ARCHITECT.
- SUSPENDED SCREEN FROM ROOF EDGES BY FACADE CONTRACTOR. LOADS TO BE PROVIDED TO ENSTRUCT FOR REVIEW. ANY SECONDARY STEEL REQUIREMENTS TO BE DEVELOPED FURTHER WITH ARCHITECT.
- NO FALL ARREST LOADS INCLUDED
- NO ALLOWANCE FOR SOLAR PANELS
GUTTER SUPPORT TO FUTURE DETAILING.
- NO FIRE RATING OF ROOF MEMBERS AS PER BCA CONSULTANT ADVICE. REFER TO BCA REPORT FOR LATEST REQUIREMENTS.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
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PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

PERFORMANCE HALL - GROUND FLOOR GENERAL ARRANGEMENT

SCALE AT A1: 1 : 100
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

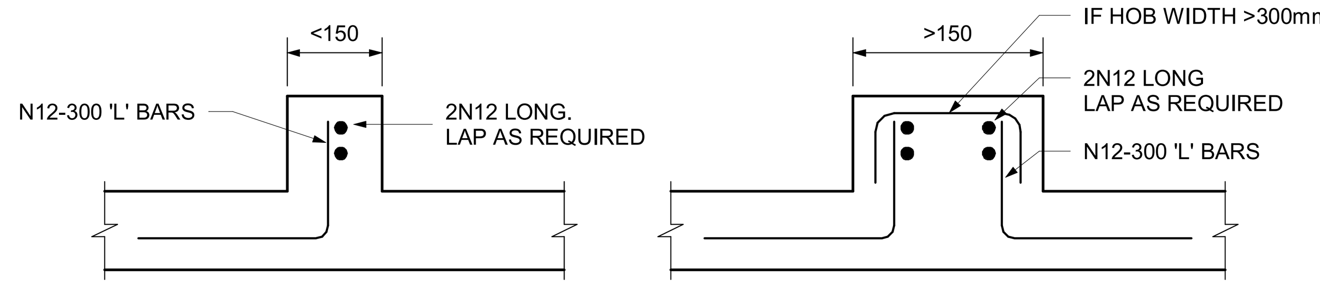
FOR INFORMATION

DRAWING NUMBER: ST-100-01
REV.: B

27/10/2021 5:05:43 PM

A1

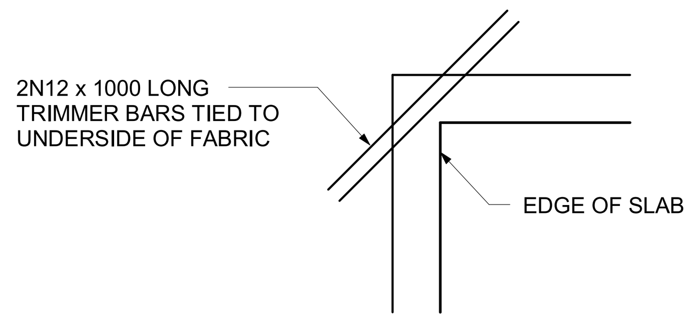
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



NOTE:
- REFER ARCHITECTS DRAWINGS FOR HOB LOCATIONS.
- JOINTS IN HOBS TO CORRESPOND WITH SLAB JOINT LOCATIONS.
- ALL HOBS TO BE POURED INTEGRAL WITH PRIMARY STRUCTURAL SLAB.

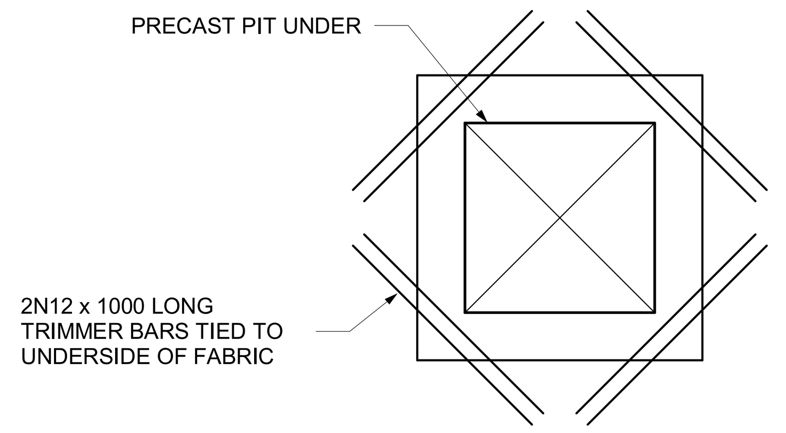
TYPICAL HOB DETAILS

SCALE 1:20



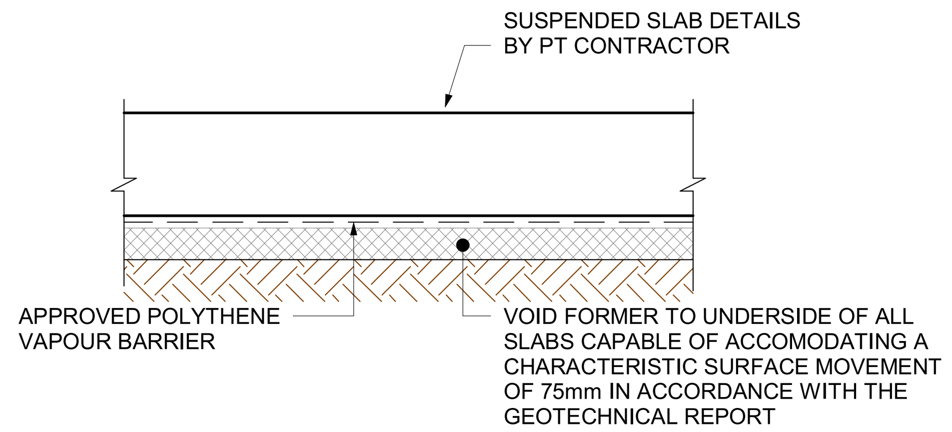
TYPICAL RE-ENTRANT CORNER DETAIL U.N.O. ON PLAN

SCALE 1:20



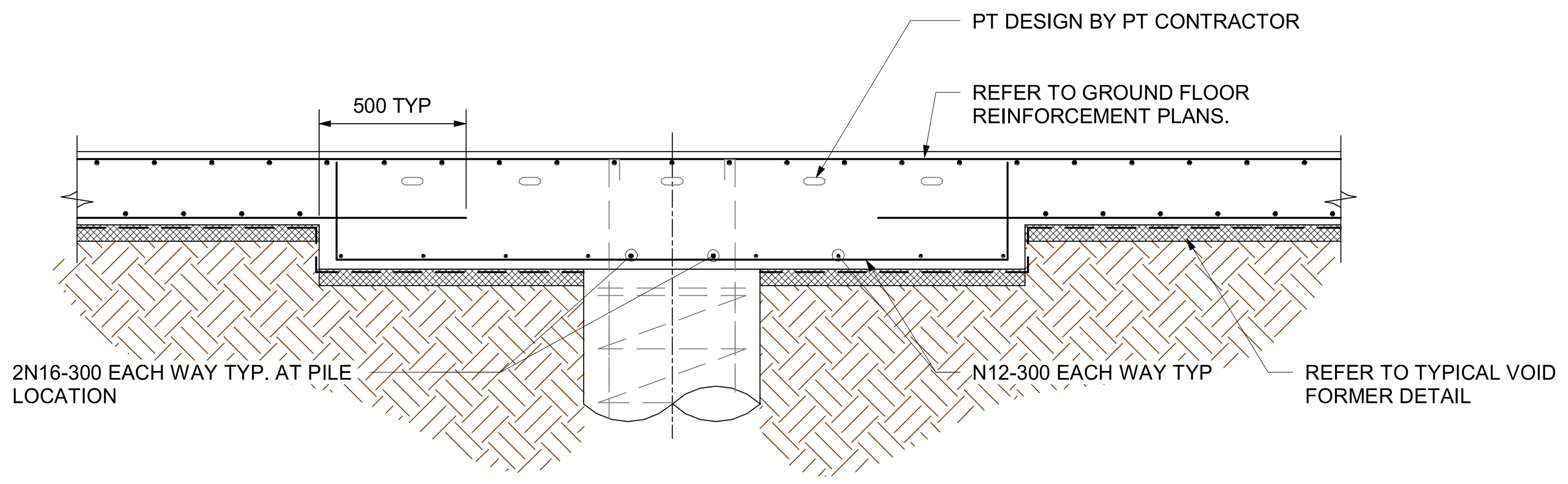
TYPICAL PIT PLAN DETAIL

SCALE 1:20



TYPICAL SUSPENDED GROUND SLAB SECTION

SCALE 1:20



TYPICAL SUSPENDED BAND BEAM DETAIL OVER PILE

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

GROUND FLOOR SECTIONS AND DETAILS - SHEET 1

SCALE AT A1: 1 : 20
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

FOR INFORMATION

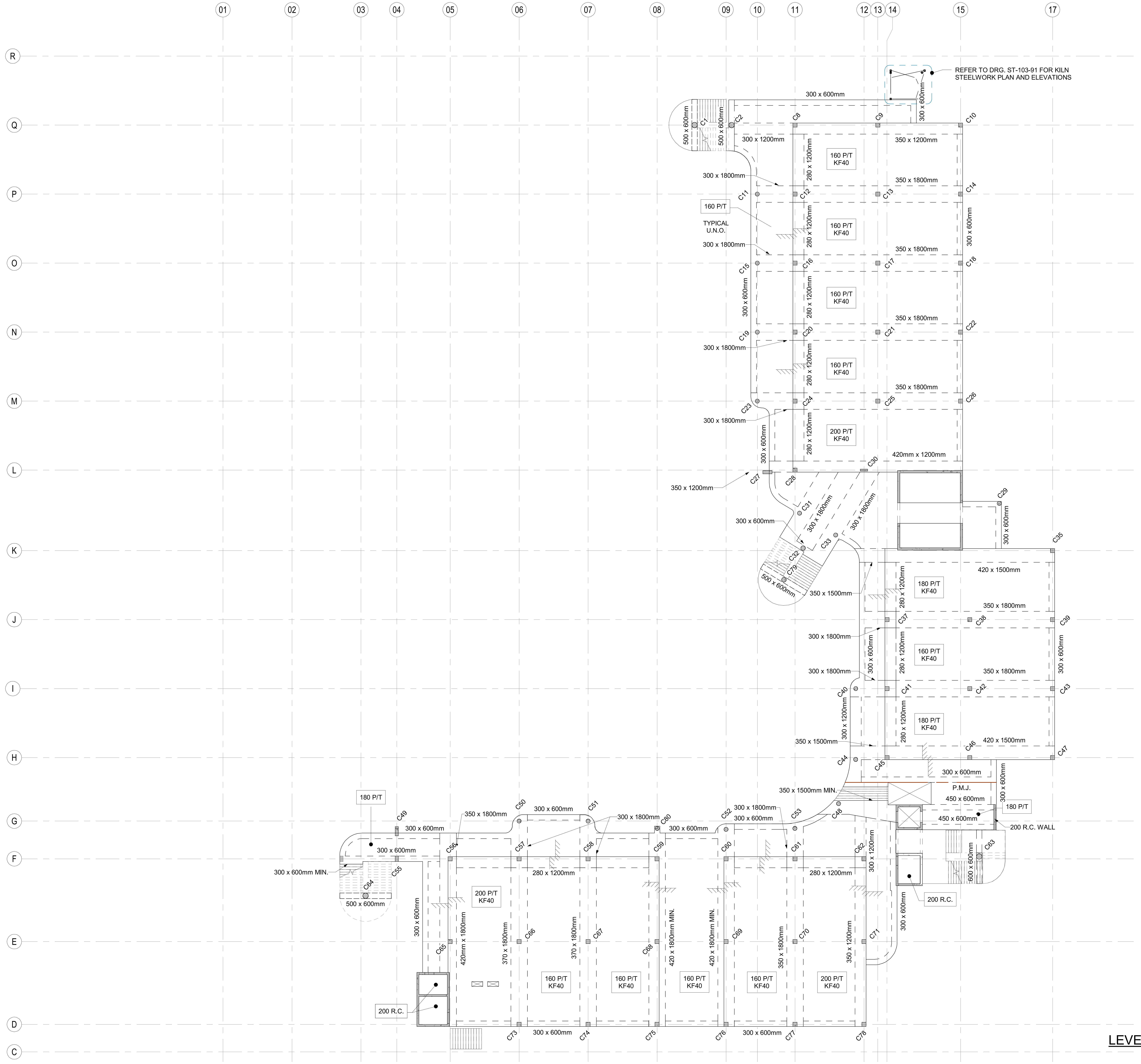
DRAWING NUMBER ST-100-51

REV. B

27/10/2021 5:05:51 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



NOTES:
- POST TENSIONED CONCRETE WORKS REFER TO SPECIALIST P/T CONTRACTORS DOCUMENTATION FOR DETAILS.
- PT FLOOR TO BE DESIGNED WITH 3 LEVELS OF BACK PROPPING.
- SLABS TO BE 180 THICK PT MINIMUM TYPICAL U.N.O.
- ALL BEAMS TO BE PT U.N.O.
- ALL SLAB FOLDS TO BE 900mm WIDE U.N.O.
- NOMINATED DEPTHS ARE MINIMUM DEPTHS.
- KF40 REFERS TO EITHER DECKFORM Z350 OR Z450 REFER TO DESIGN LIFE STATEMENT FROM FIELDERS
- FLOOR STRUCTURE EXPOSED TO THE WEATHER TO HAVE A MINIMUM P/A OF 1.5 MPA.

- SETOUT, FALLS AND LEVELS TO ARCHITECTS DETAILS.
- TOP OF SLAB TO BE LAID TO FALLS AT EXTERNAL AREAS. DRAINAGE OUTLETS ARE TO AVOID BEAMS.
- NON-STRUCTURAL FLOOR BUILD UP AND TOPPINGS NOT SHOWN FOR CLARITY REFER ARCHITECTURAL DRAWINGS.
- ALL FACADE AND BALUSTRADE DETAILS AND FIXINGS TO BE COORDINATED WITH THE PT CONTRACTORS DOCUMENTATION.
- CAST IN CONDUITS TO BE INSTALLED IN ACCORDANCE WITH ST-012-31.

- SLAB THICKENING UNDER BLOCKWALLS NOT SHOWN FOR CLARITY. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS.
- HOBS, SETDOWNS AND NON STRUCTURAL WALLS NOT SHOWN FOR CLARITY REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND DETAILS.
- PENETRATIONS LESS THAN 150 DIAMETER NOT SHOWN FOR CLARITY. PENETRATIONS TO BE APPROVED BY PT CONTRACTOR AND ENSTRUCT PRIOR TO CONSTRUCTION.
- REFER TO ARCHITECTS DRAWINGS FOR STRIP DRAINS AND PERMANENT MOVEMENT JOINTS AND SETDOWNS.

- TMJD REFERS TO TEMPORARY MOVEMENT JOINT DIAPHRAGM CONNECTIONS.
REFER TO ST-01231 FOR DETAILS. THESE DOWELS ARE FOR LATERAL DIAPHRAGM LOADS ONLY. ADDITIONAL CONNECTORS ARE REQUIRED FOR VERTICAL LOADS WHICH ARE BY THE PT CONTRACTOR.

- REFER TO DRAWING ST-012-31 FOR TYPICAL SUSPENDED SLAB DETAILS.
- REFER TO DRAWING ST-005-60 FOR CORE WALLS
- REFER TO DRAWING ST-005-01 FOR COLUMN SIZES TYPICALLY U.N.O.

KF40 IS 0.75 BMT
CORROSION PROTECTION AND TREATMENT OF KF40 IN ACCORDANCE WITH FIELDERS SPECIFICATION

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B	27.10.21	95% SCHEMATIC DESIGN
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PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
LEVEL 01 - GENERAL ARRANGEMENT

SCALE AT A1: 1 : 200
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

LEVEL 01 - GENERAL ARRANGEMENT

SCALE: 1 : 200

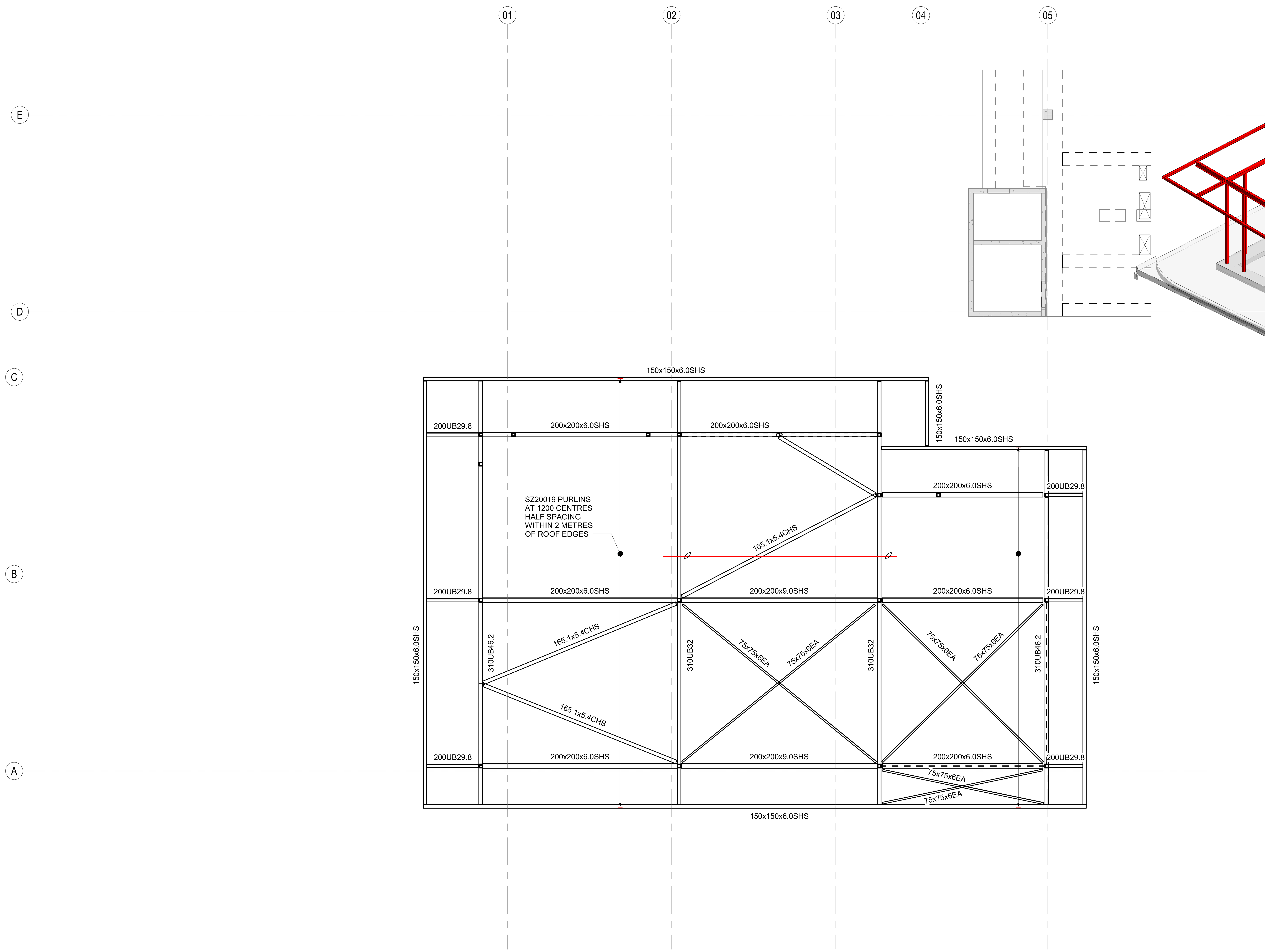
DRAWING NUMBER
ST-101-00

REV.
B

27/10/2021 5:05:57 PM

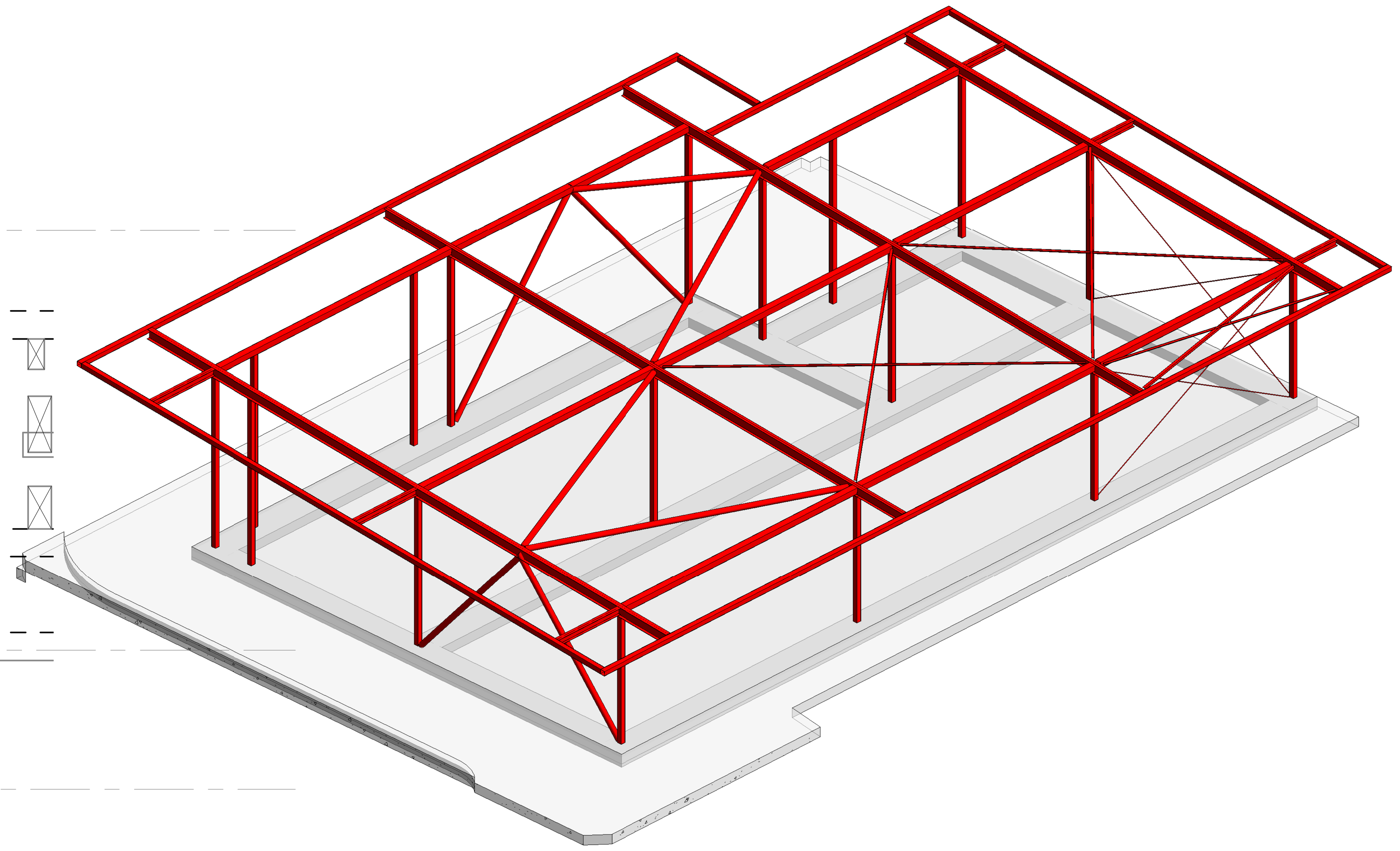
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



PERFORMANCE HALL - ROOF - GENERAL ARRANGEMENT

SCALE: 1 : 100



PERFORMANCE HALL ISOMETRIC 2

SCALE:

NOTES:
- DESIGN UNDER DEVELOPMENT WITH ARCHITECT.
- SUSPENDED SCREEN FROM ROOF EDGES BY FACADE CONTRACTOR. LOADS TO BE PROVIDED TO ENSTRUCT FOR REVIEW. ANY SECONDARY STEEL REQUIREMENTS TO BE DEVELOPED FURTHER WITH ARCHITECT.
- NO FALL ARREST LOADS INCLUDED
- NO ALLOWANCE FOR SOLAR PANELS
GUTTER SUPPORT TO FUTURE DETAILING.
- NO FIRE RATING OF ROOF MEMBERS AS PER BCA CONSULTANT ADVICE. REFER TO BCA REPORT FOR LATEST REQUIREMENTS.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	11.10.21	50% SCHEMATIC

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PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
PERFORMANCE HALL - ROOF LEVEL GENERAL ARRANGEMENT

SCALE AT A1: 1 : 100
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
FOR INFORMATION

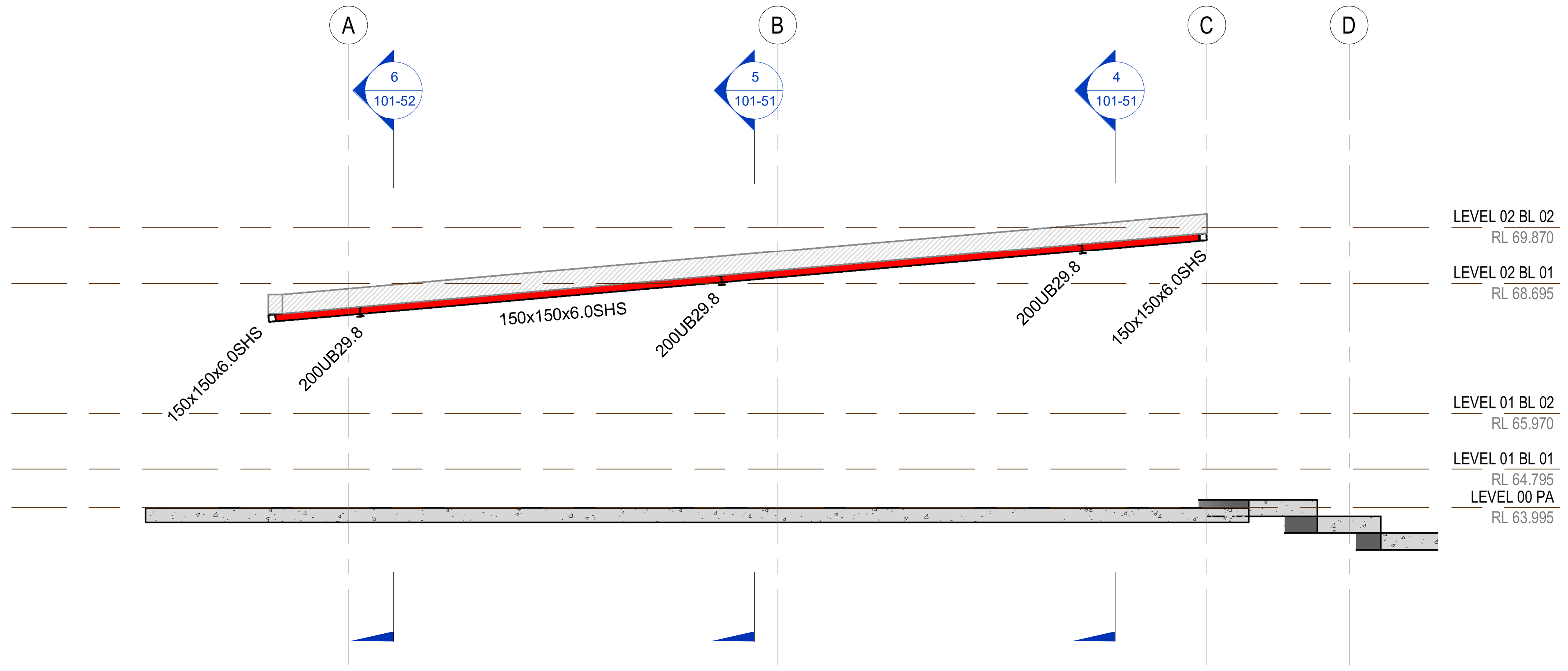
DRAWING NUMBER
ST-101-01

REV.
B

27/10/2021 5:06:03 PM

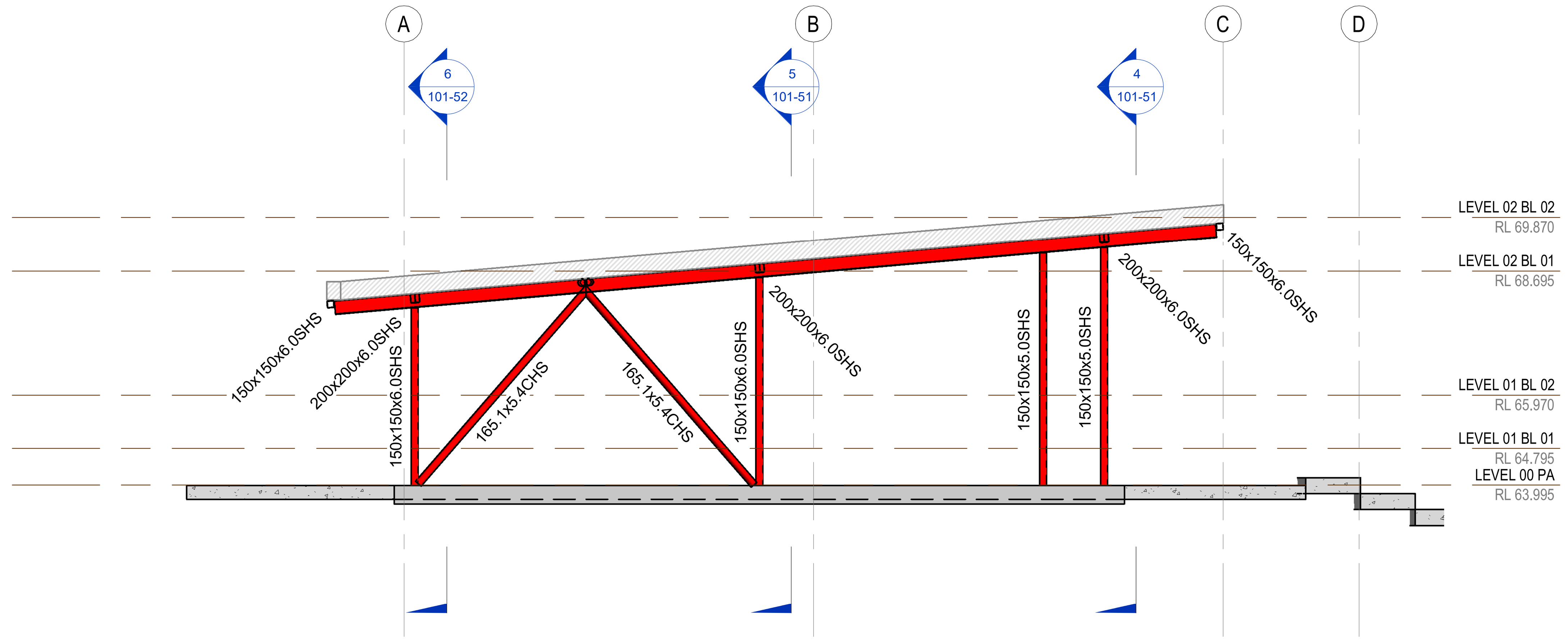
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



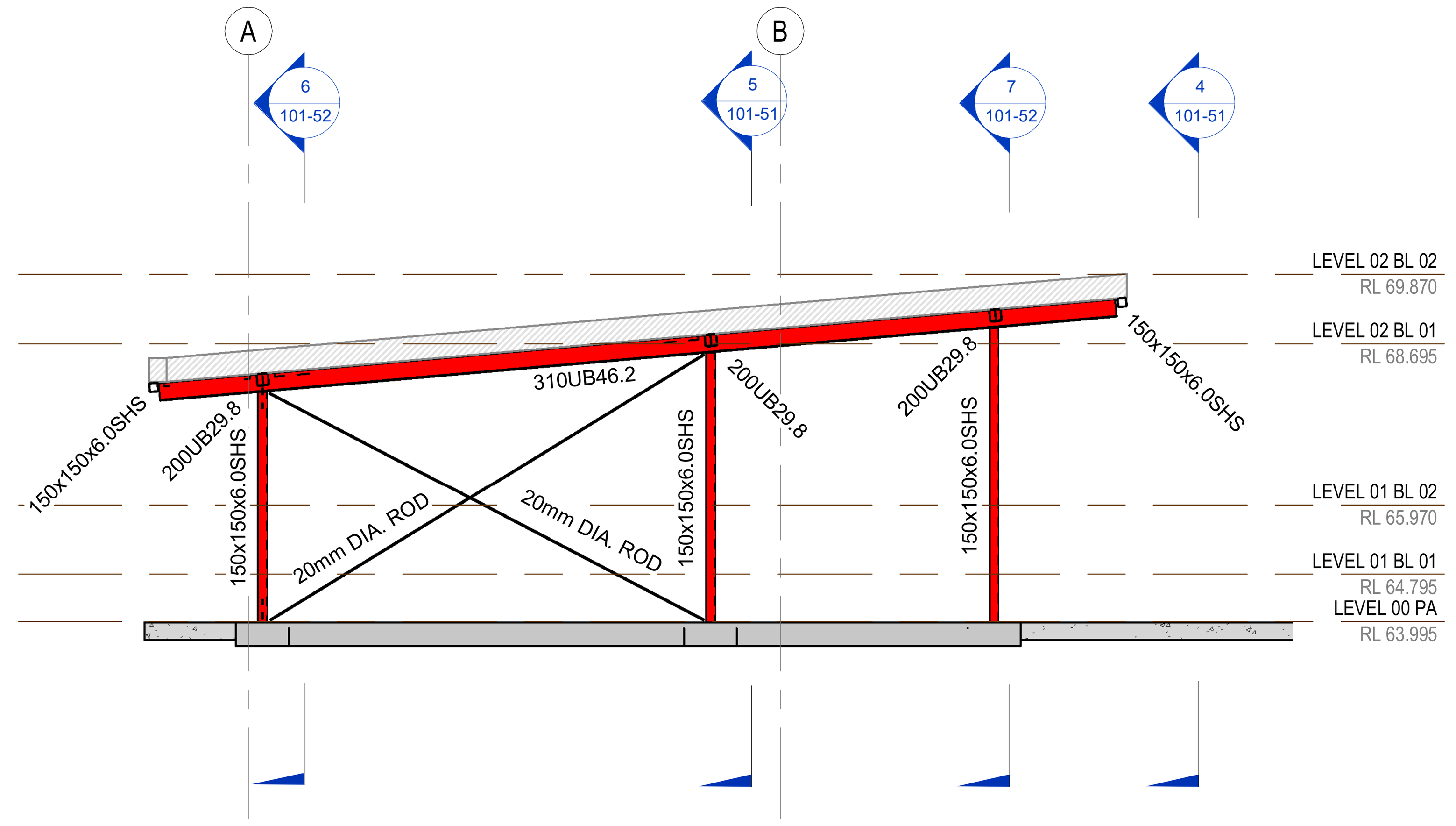
PERFORMANCE HALL - ELEVATION 1

SCALE: 1 : 100



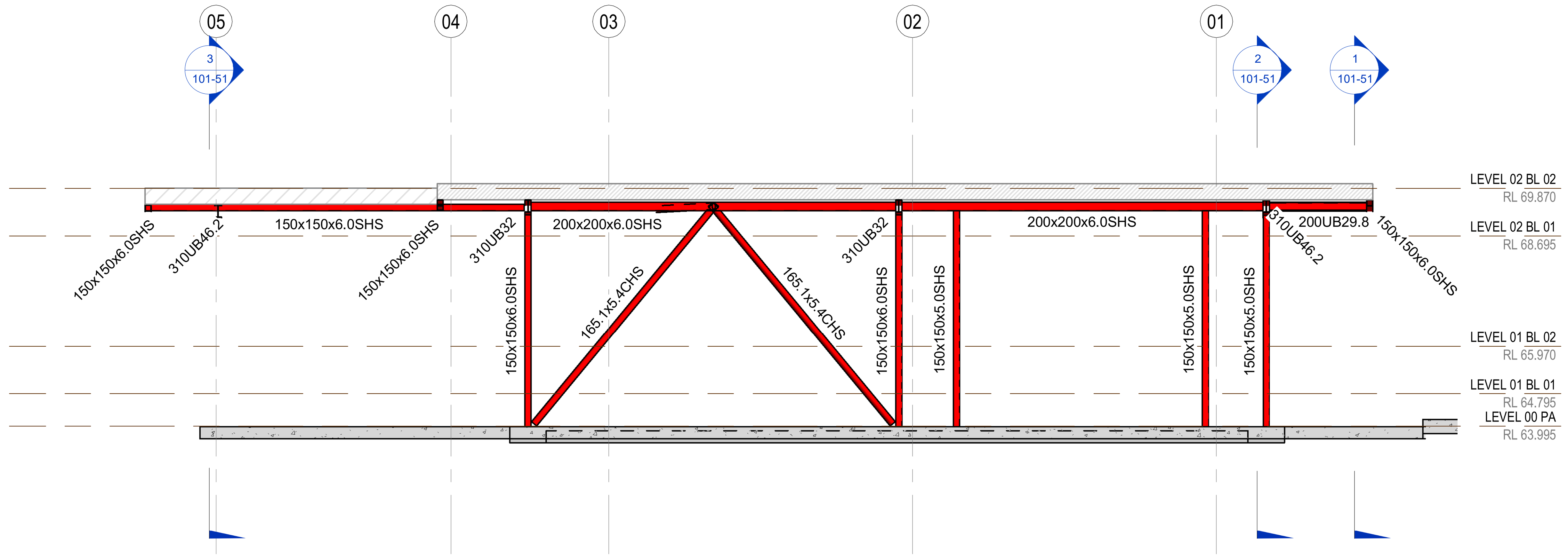
PERFORMANCE HALL - ELEVATION 2

SCALE: 1 : 100



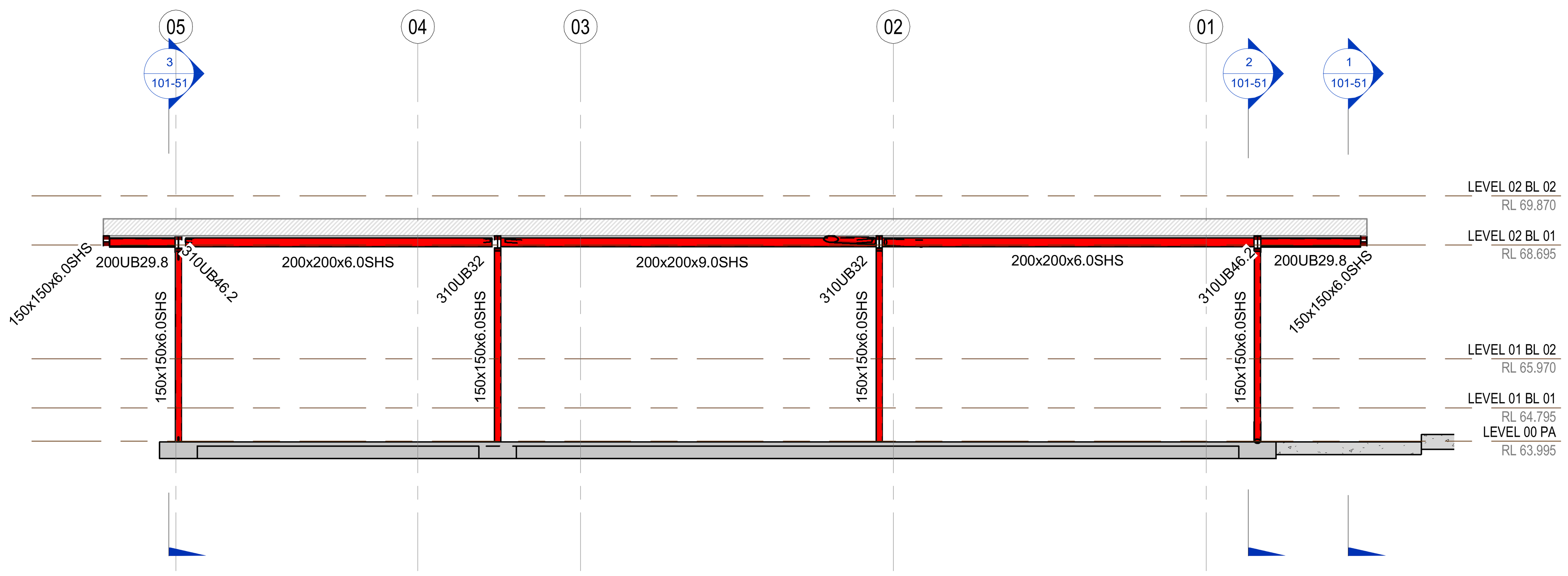
PERFORMANCE HALL - ELEVATION 3

SCALE: 1 : 100



PERFORMANCE HALL - ELEVATION 4

SCALE: 1 : 100



PERFORMANCE HALL - ELEVATION 5

SCALE: 1 : 100

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	11.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

PERFORMANCE HALL - ROOF ELEVATIONS - SHEET 1

SCALE AT A1: 1 : 100
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

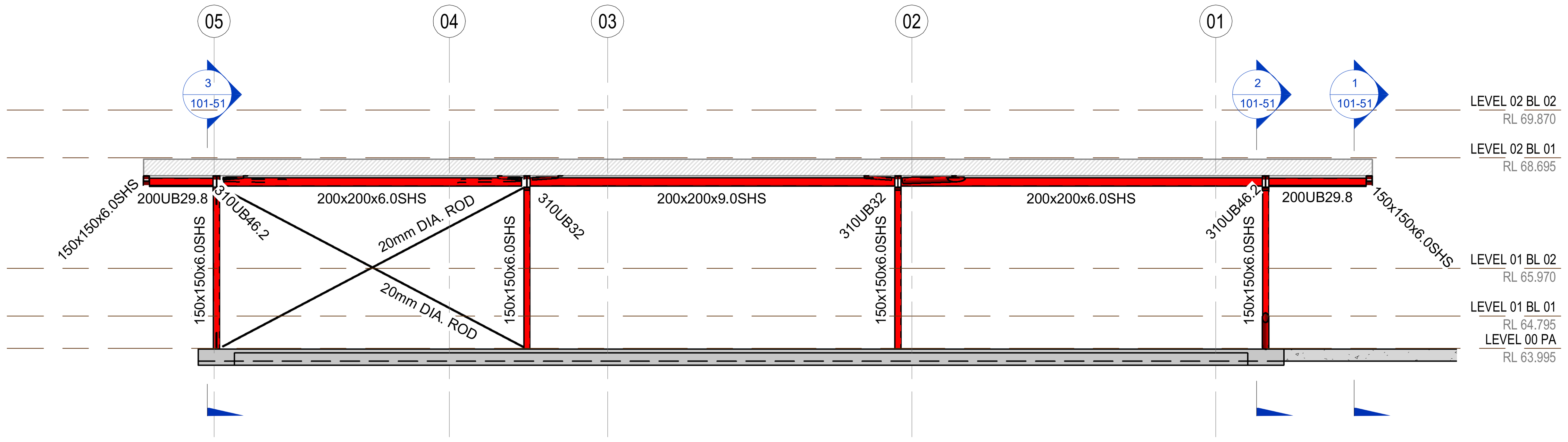
FOR INFORMATION

DRAWING NUMBER: ST-101-51

REV.: B

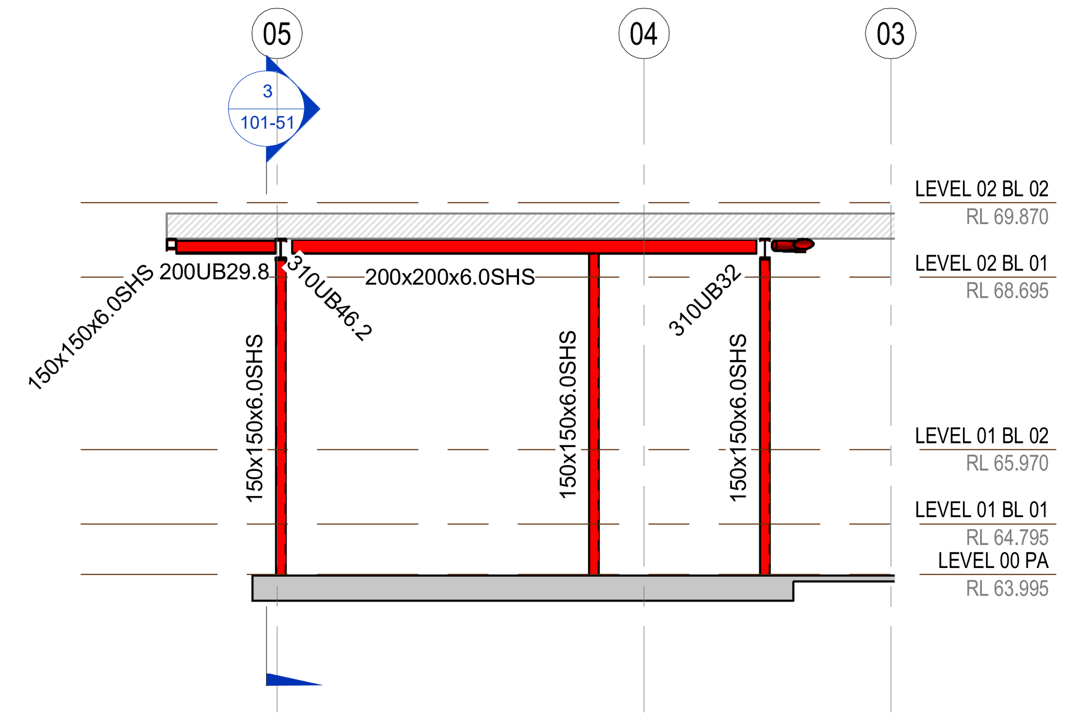
27/10/2021 5:06:15 PM

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



PERFORMANCE HALL - ELEVATION 6

SCALE: 1 : 100



PERFORMANCE HALL - ELEVATION 7

SCALE: 1 : 100

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	11.10.21	50% SCHEMATIC

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PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

PERFORMANCE HALL - ROOF ELEVATIONS - SHEET 2

SCALE AT A1: 1 : 100
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

FOR INFORMATION

DRAWING NUMBER: ST-101-52
REV.: B

27/10/2021 5:06:25 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

NOTES:
- POST TENSIONED CONCRETE WORKS REFER TO SPECIALIST P/T CONTRACTORS DOCUMENTATION FOR DETAILS.
- PT FLOOR TO BE DESIGNED WITH 3 LEVELS OF BACK PROPPING.
- SLABS TO BE 180 THICK PT MINIMUM TYPICAL U.N.O.
- ALL BEAMS TO BE PT U.N.O.
- ALL SLAB FOLDS TO BE 900mm WIDE U.N.O.
- NOMINATED DEPTHS ARE MINIMUM DEPTHS.
- KF40 REFERS TO EITHER DECKFORM Z350 OR Z450 REFER TO DESIGN LIFE STATEMENT FROM FIELDERS
- FLOOR STRUCTURE EXPOSED TO THE WEATHER TO HAVE A MINIMUM P/A OF 1.5 MPA.

- SETOUT, FALLS AND LEVELS TO ARCHITECTS DETAILS.
- TOP OF SLAB TO BE LAID TO FALLS AT EXTERNAL AREAS. DRAINAGE OUTLETS ARE TO AVOID BEAMS.
- NON-STRUCTURAL FLOOR BUILD UP AND TOPPINGS NOT SHOWN FOR CLARITY REFER ARCHITECTURAL DRAWINGS.
- ALL FACADE AND BALUSTRADE DETAILS AND FIXINGS TO BE COORDINATED WITH THE PT CONTRACTORS DOCUMENTATION.
- CAST IN CONDUITS TO BE INSTALLED IN ACCORDANCE WITH ST-012-31.

- SLAB THICKENING UNDER BLOCKWALLS NOT SHOWN FOR CLARITY. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS.
- HOBS, SETDOWNS AND NON STRUCTURAL WALLS NOT SHOWN FOR CLARITY REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND DETAILS.
- PENETRATIONS LESS THAN 150 DIAMETER NOT SHOWN FOR CLARITY. PENETRATIONS TO BE APPROVED BY PT CONTRACTOR AND ENSTRUCT PRIOR TO CONSTRUCTION.
- REFER TO ARCHITECTS DRAWINGS FOR STRIP DRAINS AND PERMANENT MOVEMENT JOINTS AND SETDOWNS.

- TMJD REFERS TO TEMPORARY MOVEMENT JOINT DIAPHRAGM CONNECTIONS.
REFER TO ST-01231 FOR DETAILS. THESE DOWELS ARE FOR LATERAL DIAPHRAGM LOADS ONLY.
ADDITIONAL CONNECTORS ARE REQUIRED FOR VERTICAL LOADS WHICH ARE BY THE PT CONTRACTOR.

- REFER TO DRAWING ST-012-31 FOR TYPICAL SUSPENDED SLAB DETAILS.
- REFER TO DRAWING ST-005-60 FOR CORE WALLS
- REFER TO DRAWING ST-005-01 FOR COLUMN SIZES TYPICALLY U.N.O.

KF40 IS 0.75 BMT
CORROSION PROTECTION AND TREATMENT OF KF40 IN ACCORDANCE WITH FIELDERS SPECIFICATION

LEVEL 02 - GENERAL ARRANGEMENT
SCALE: 1 : 200

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
LEVEL 02 - GENERAL ARRANGEMENT

SCALE AT A1: 1 : 200
DRAWN BY: Author
CHECKED BY: Checker

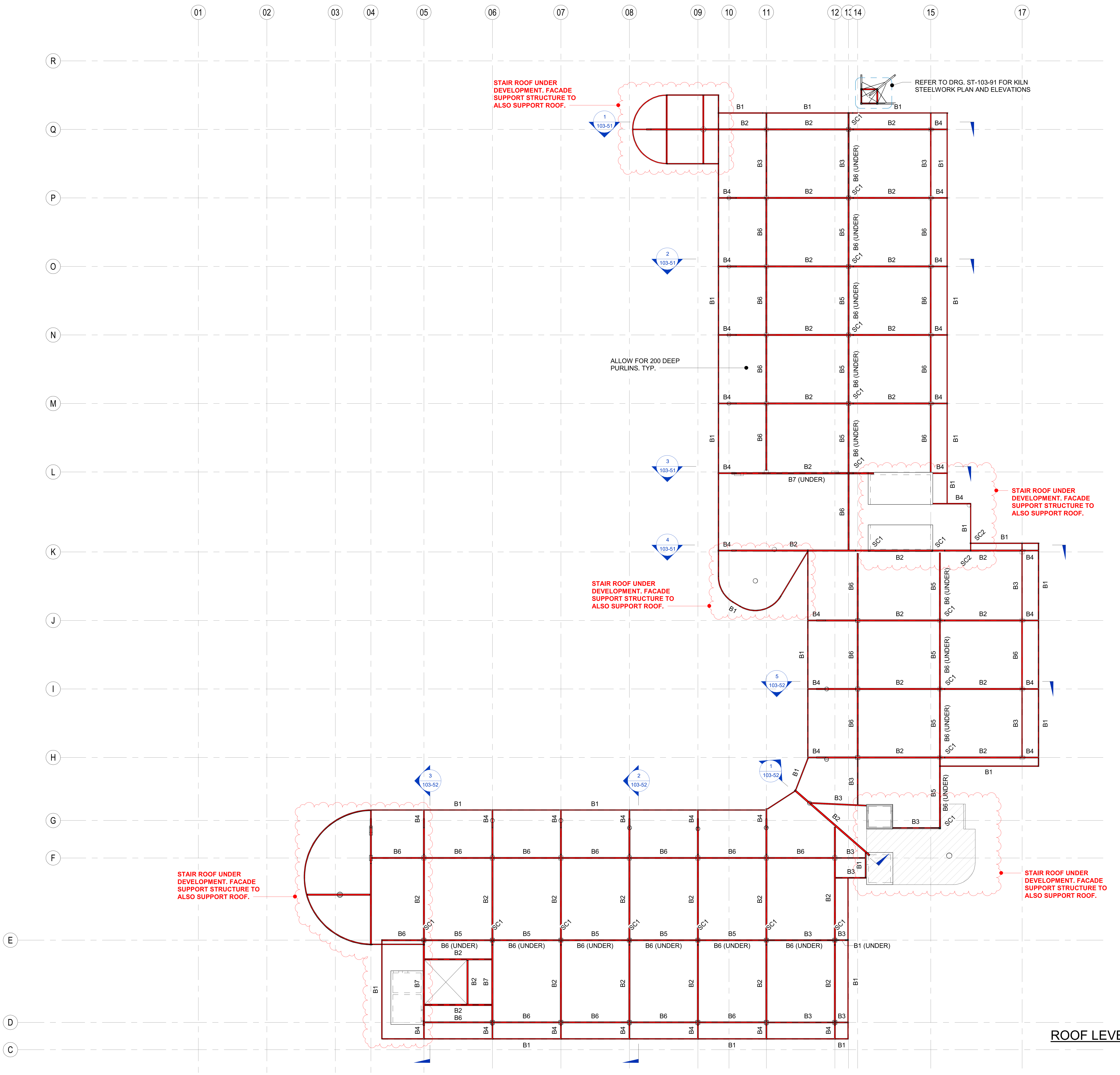
DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-102-00

REV.
B

27/10/2021 5:06:35 PM

A1



REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

STRUCTURAL STEEL FRAMING SCHEDULE

TYPE MARK	TYPE	COMMENTS
B1	200x100x6.0 RHS	
B2	360UB44.7	
B3	200UB25.4	
B4	200UB29.8	
B5	150x150x6.0SHS	
B6	250x150x6.0 RHS	
B7	460UB67.1	

STRUCTURAL STEEL COLUMN SCHEDULE

TYPE MARK	TYPE	COMMENTS
SC1	150x150x9.0SHS	
SC2	100x100x6.0SHS	

NOTE:

- CONCRETE LIDS AND DRAINAGE OF PLANT AREAS TO FUTURE DETAILS.
- ALLOW FOR PARAPETS AROUND GUTTERS TO FUTURE DETAILS.
- SUPPORT FOR ROOF ACCESS PATH TO FUTURE DETAILS.
- DESIGN FOR FALL ARREST LOADING TO BE CO-ORDINATED WITH SAFE ACCESS CONTRACTOR
- ACOUSTIC PANELS NOT INCLUDED IN DESIGN. IF ACOUSTIC PANELS REQUIRED MAKE ALLOWANCE FOR SLIGHT INCREASE IN STEEL TONNAGE
- SOLAR PANELS ASSUMED TO BE FLAT ON ROOF. ASSUMED SELF WEIGHT = 0.1kPa.
- PURLINS AT HALF SPACING FOR CANTILEVERED SECTIONS OF ROOF, TYP.

STEEL ROOF LAYOUT AND DESIGN UNDER DEVELOPMENT WITH ARCHITECT. NOT ALL STEELWORK SHOWN, FOR COORDINATION PURPOSES ONLY.

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
ROOF LEVEL - GENERAL ARRANGEMENT

SCALE AT A1: 1 : 200
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER
ST-103-00

REV.
B

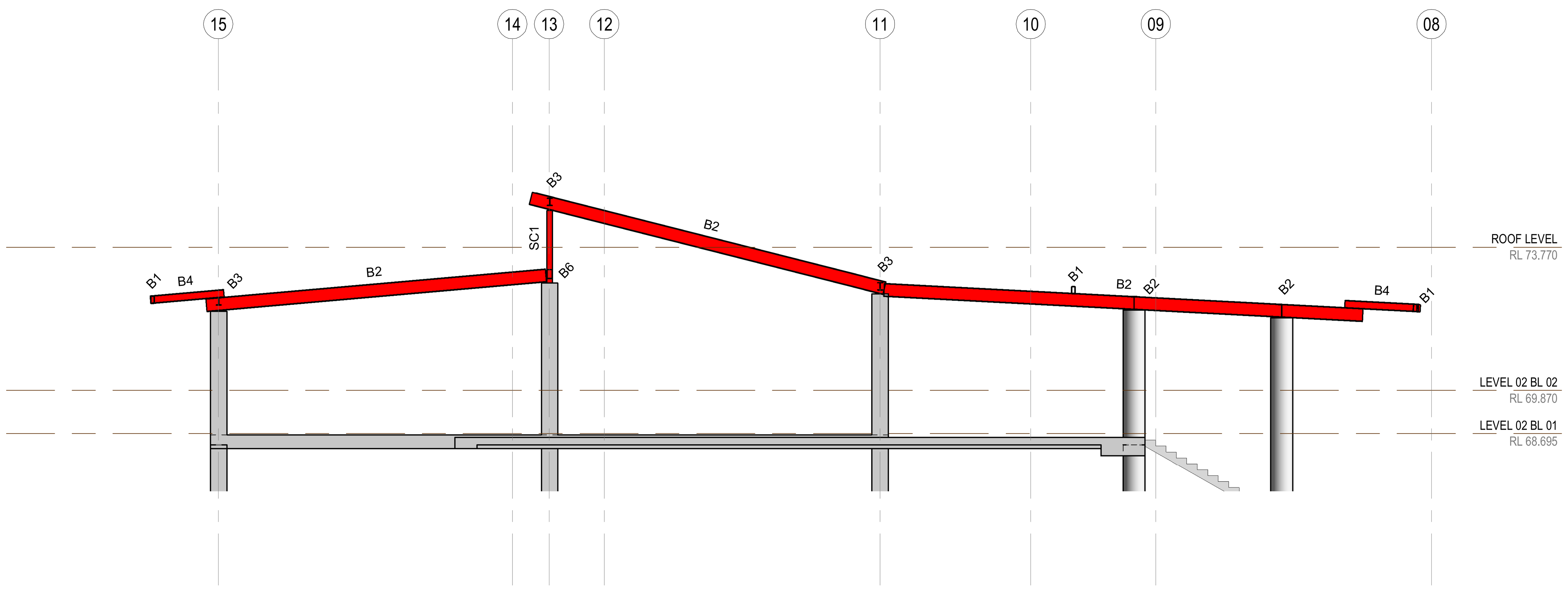
ROOF LEVEL - GENERAL ARRANGEMENT

SCALE: 1 : 200

27/10/2021 5:06:39 PM

A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

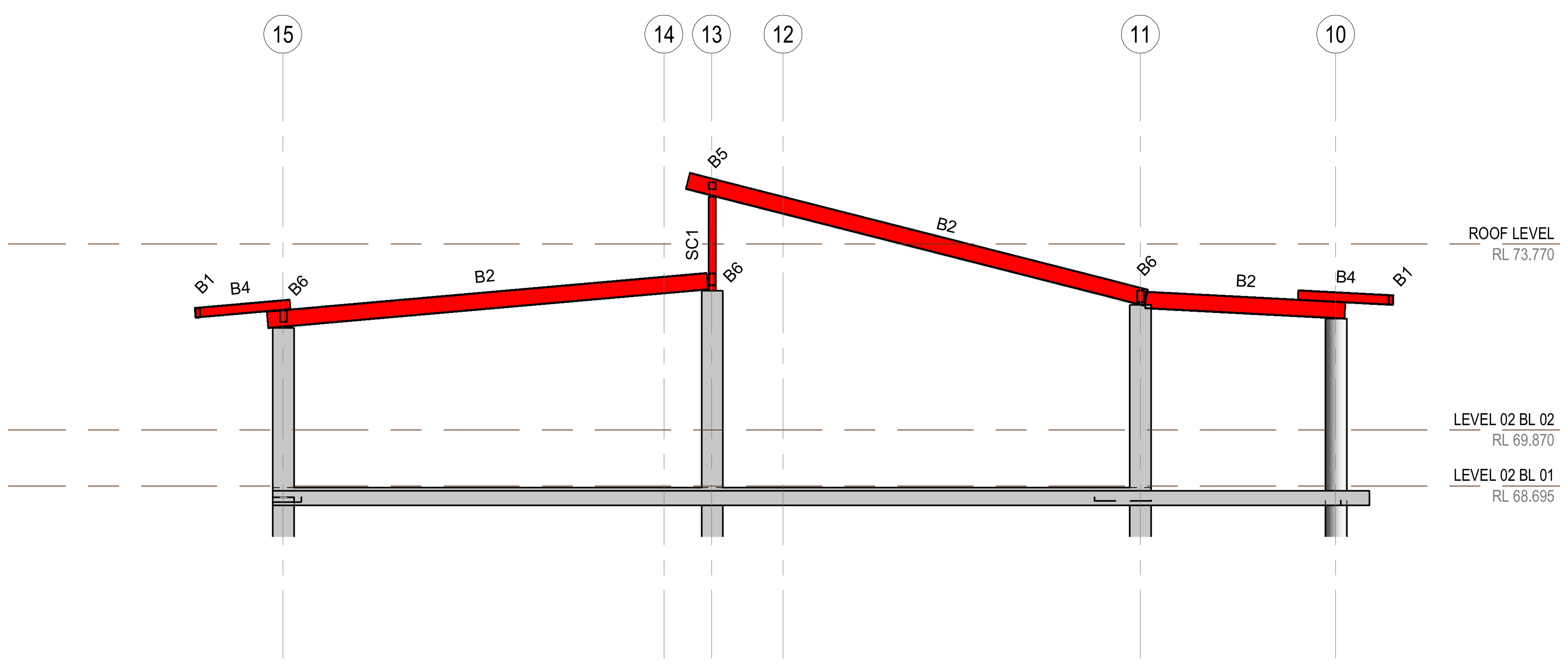


STEEL ROOF - ELEVATION 1

SCALE: 1 : 100

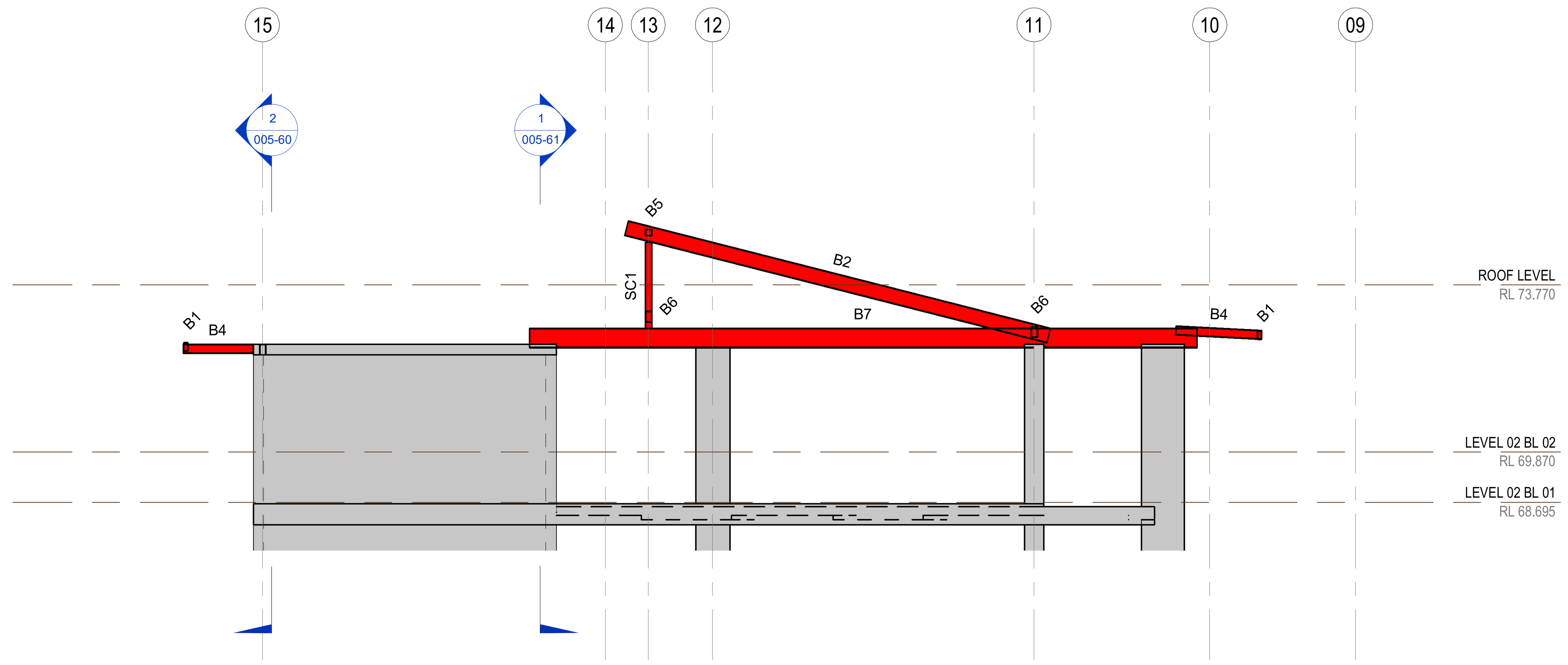
STRUCTURAL STEEL FRAMING SCHEDULE		
TYPE MARK	TYPE	COMMENTS
B1	200x100×6.0 RHS	
B2	360UB44.7	
B3	200UB25.4	
B4	200UB29.8	
B5	150x150x6.0SHS	
B6	250x150×6.0 RHS	
B7	460UB67.1	

STRUCTURAL STEEL COLUMN SCHEDULE		
TYPE MARK	TYPE	COMMENTS
SC1	150x150x9.0SHS	
SC2	100x100x6.0SHS	



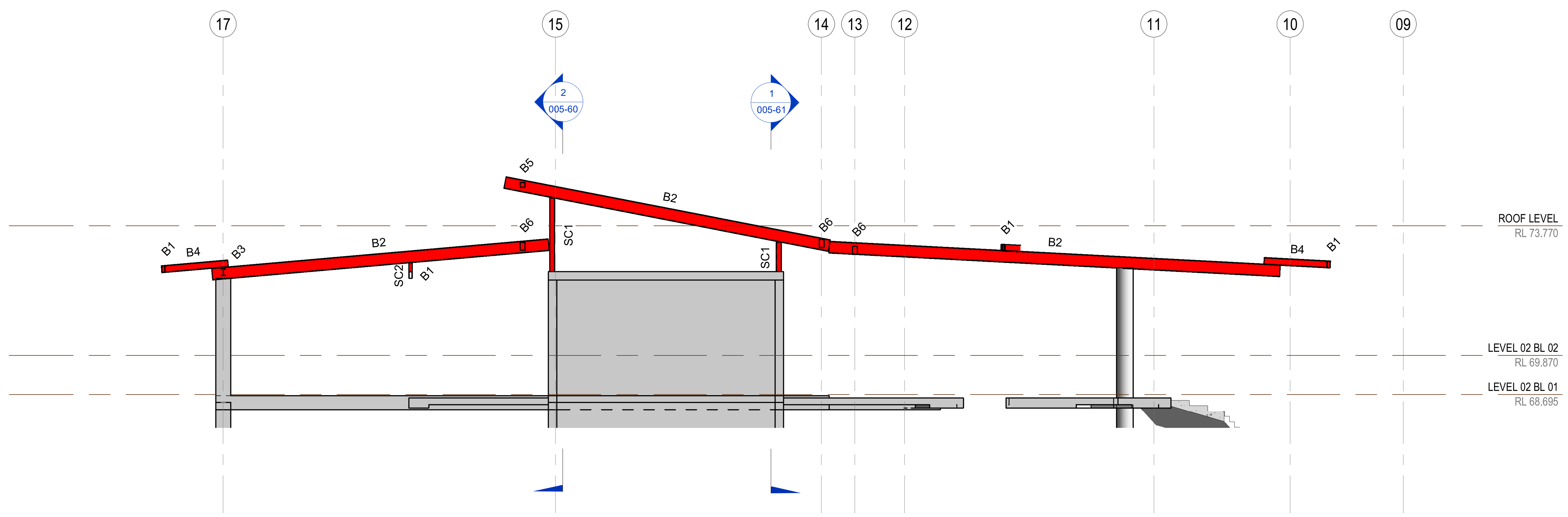
STEEL ROOF - ELEVATION 2

SCALE: 1 : 100



STEEL ROOF - ELEVATION 3

SCALE: 1 : 100



STEEL ROOF - ELEVATION 4

SCALE: 1 : 100

Rev.	Date	Description
A	27.10.21	95% SCHEMATIC DESIGN

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
ROOF LEVEL - SECTIONS - SHEET 1

SCALE AT A1: 1 : 100
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS
FOR INFORMATION

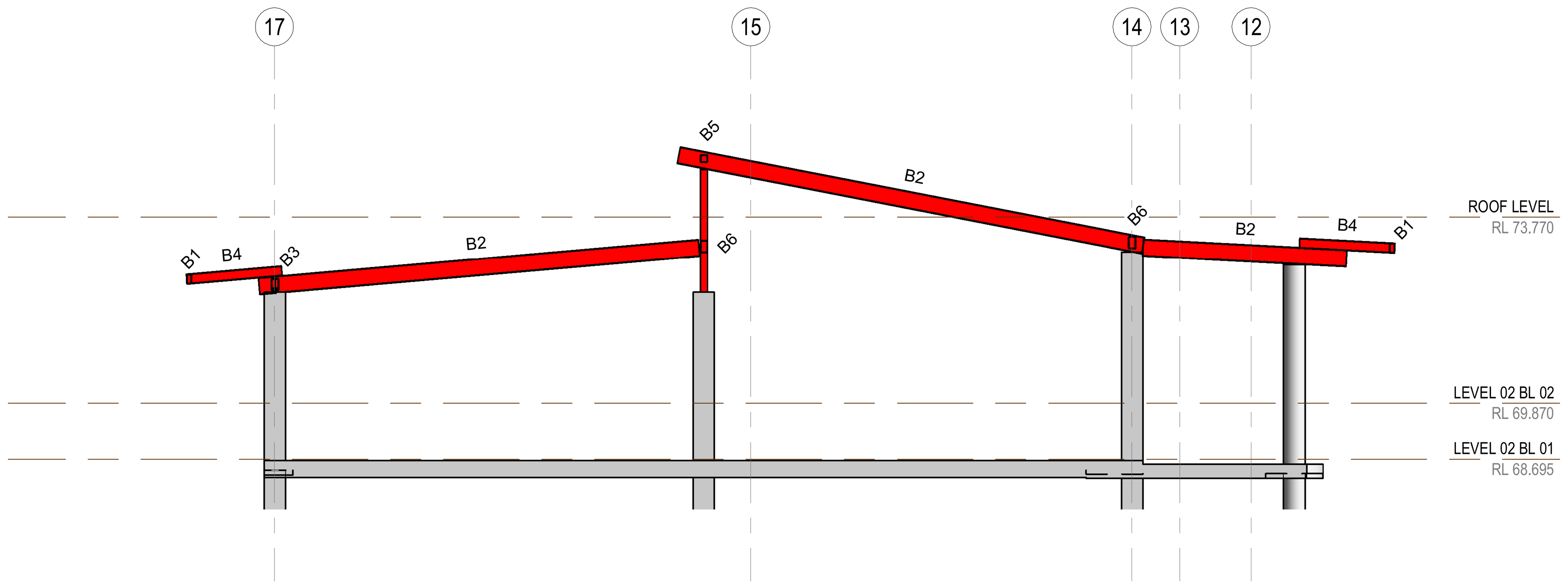
DRAWING NUMBER
ST-103-51

REV.
A

27/10/2021 5:06:46 PM

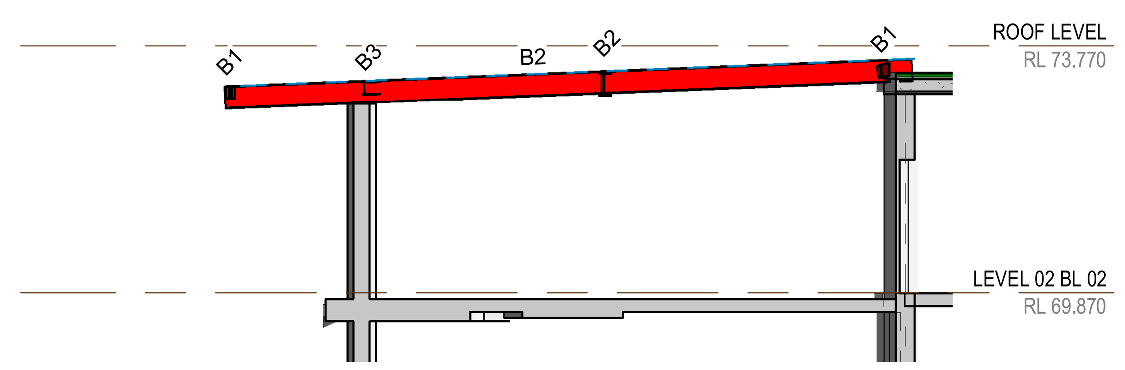
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



STEEL ROOF - ELEVATION 5

SCALE: 1 : 100



STEEL ROOF - ELEVATION 6

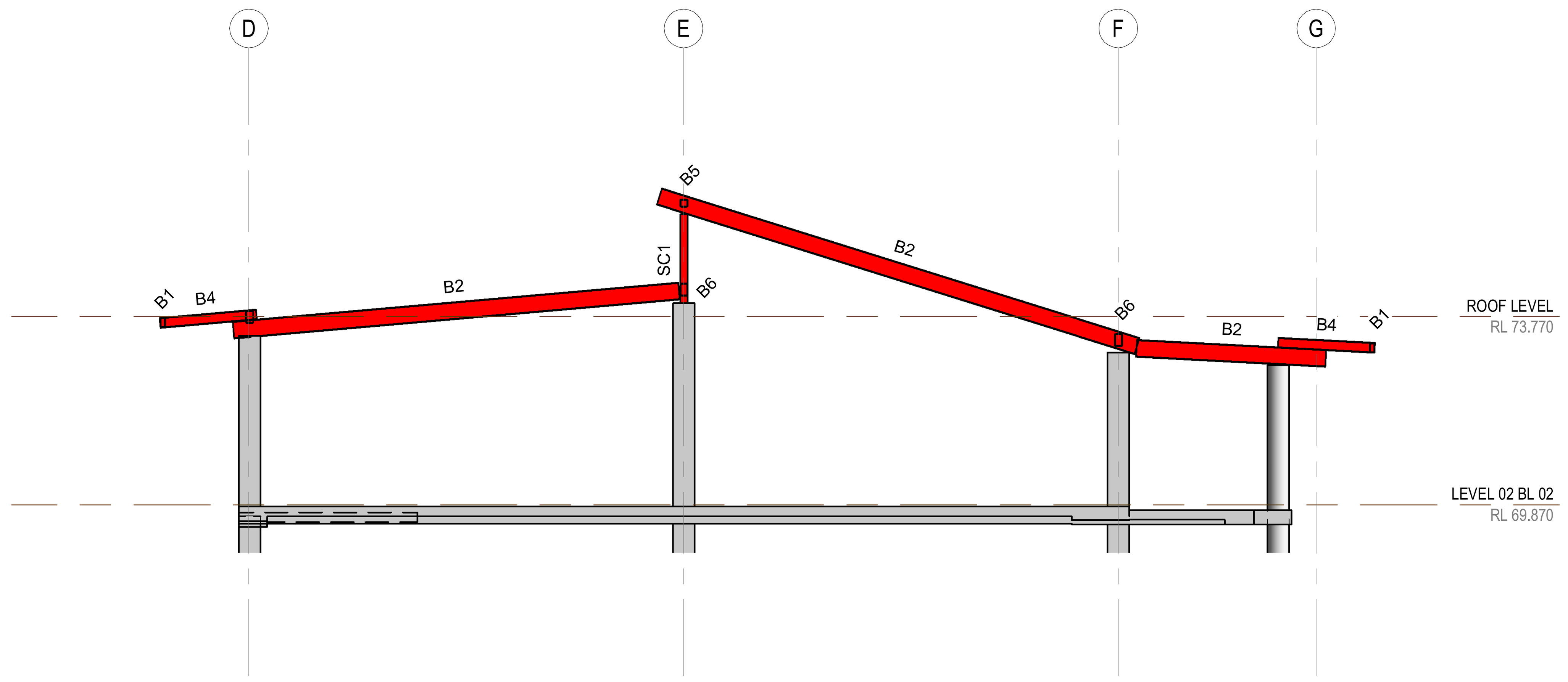
SCALE: 1 : 100

STRUCTURAL STEEL FRAMING SCHEDULE

TYPE MARK	TYPE	COMMENTS
B1	200x100×6.0 RHS	
B2	360UB44.7	
B3	200UB25.4	
B4	200UB29.8	
B5	150x150x6.0SHS	
B6	250x150×6.0 RHS	
B7	460UB67.1	

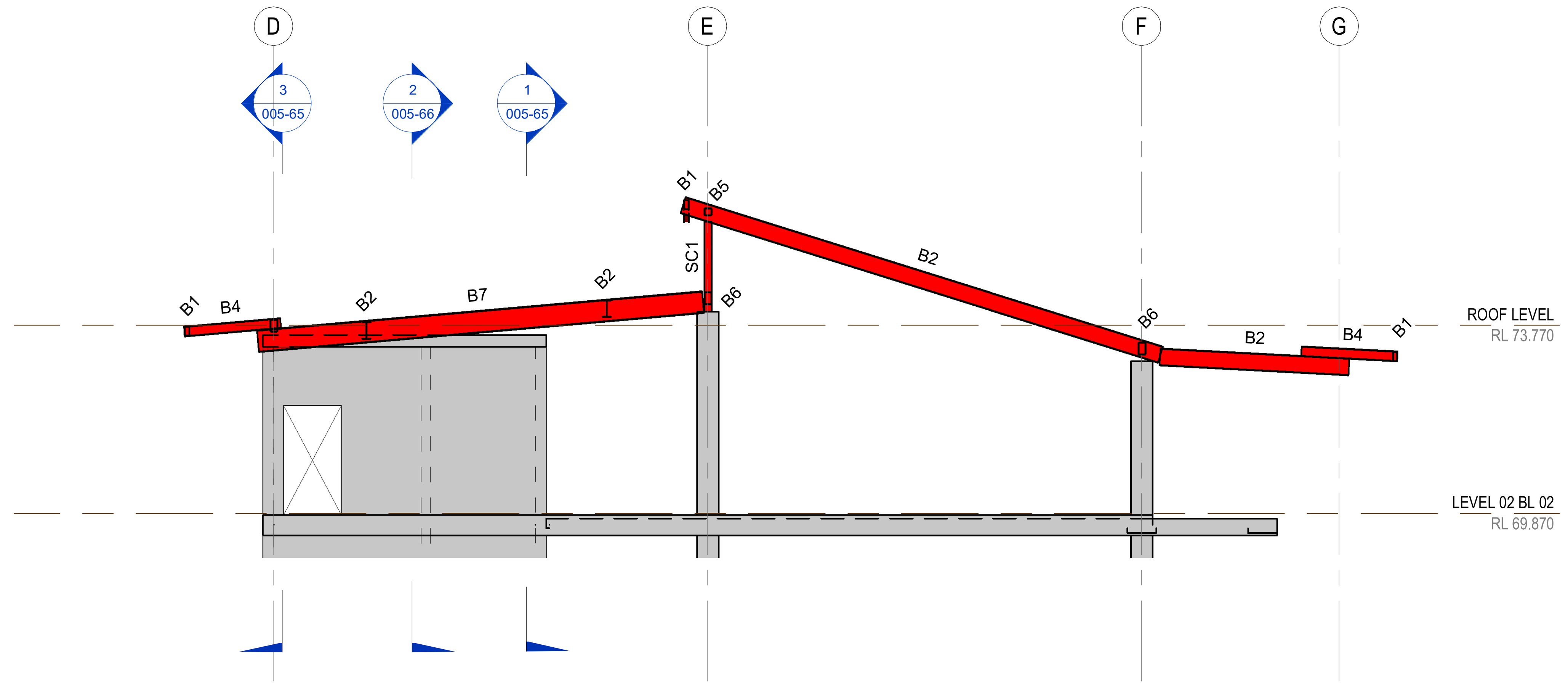
STRUCTURAL STEEL COLUMN SCHEDULE

TYPE MARK	TYPE	COMMENTS
SC1	150x150x9.0SHS	
SC2	100x100x6.0SHS	



STEEL ROOF - ELEVATION 7

SCALE: 1 : 100



STEEL ROOF - ELEVATION 8

SCALE: 1 : 100

A 27.10.21 95% SCHEMATIC DESIGN
Rev. Date Description

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

ROOF LEVEL - SECTIONS - SHEET 2

SCALE AT A1: 1 : 100
DRAWN BY: Author
CHECKED BY: Checker

DRAWING STATUS

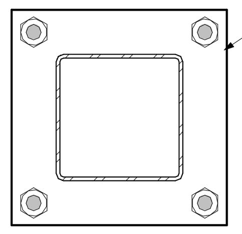
FOR INFORMATION

DRAWING NUMBER: ST-103-52
REV. A

27/10/2021 5:06:57 PM

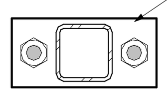
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



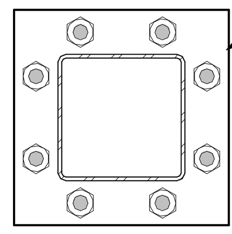
20mm BASE PLATE
6mm C.F.W. ALL AROUND
10mm GROUT
4 M20 4.6/S CAST IN THREADED ROD.
PROVIDE OVER LENGTH AND CUT DOWN AFTER
COMPLETE INSTALLATION.
ALLOW FOR POCKET IN SACRIFICAL ZONE AS REQUIRED.

TYPICAL SHS BASE PLATE DETAIL U.N.O.



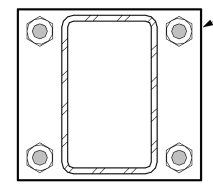
10mm BASE PLATE
6mm C.F.W. ALL AROUND
10mm GROUT
2 M16 4.6/S CAST IN THREADED ROD.
PROVIDE OVER LENGTH AND CUT DOWN AFTER
COMPLETE INSTALLATION.
ALLOW FOR POCKET IN SACRIFICAL ZONE AS REQUIRED.

TYPICAL 89x89 SHS BASE PLATE DETAIL



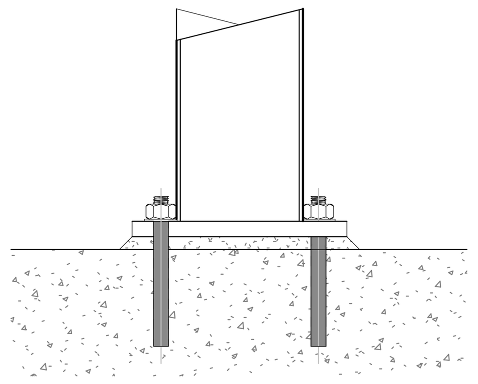
25mm BASE PLATE
8mm C.F.W. ALL AROUND
10mm GROUT
8 M20 4.6/S CAST IN THREADED ROD.
PROVIDE OVER LENGTH AND CUT DOWN AFTER
COMPLETE INSTALLATION.
ALLOW FOR POCKET IN SACRIFICAL ZONE AS REQUIRED.

TYPICAL 300x300 SHS BASE PLATE DETAIL U.N.O.

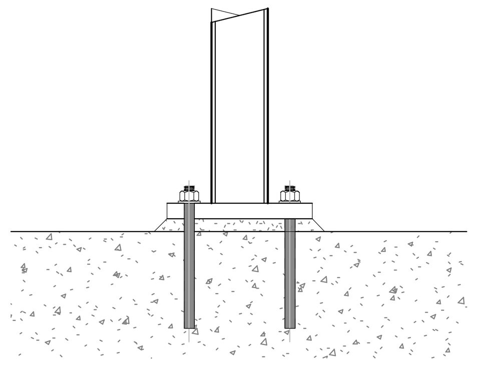


25mm BASE PLATE
6mm C.F.W. ALL AROUND
10mm GROUT
4 M20 4.6/S CAST IN THREADED ROD.
PROVIDE OVER LENGTH AND CUT DOWN AFTER
COMPLETE INSTALLATION.
ALLOW FOR POCKET IN SACRIFICAL ZONE AS REQUIRED.

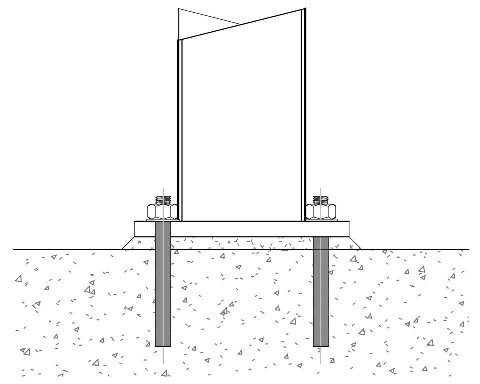
TYPICAL 250x150 RHS BASE PLATE DETAIL U.N.O.



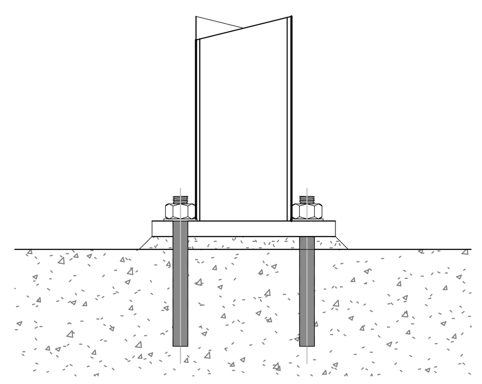
TYPICAL SHS BASE PLATE ELEVATION U.N.O.



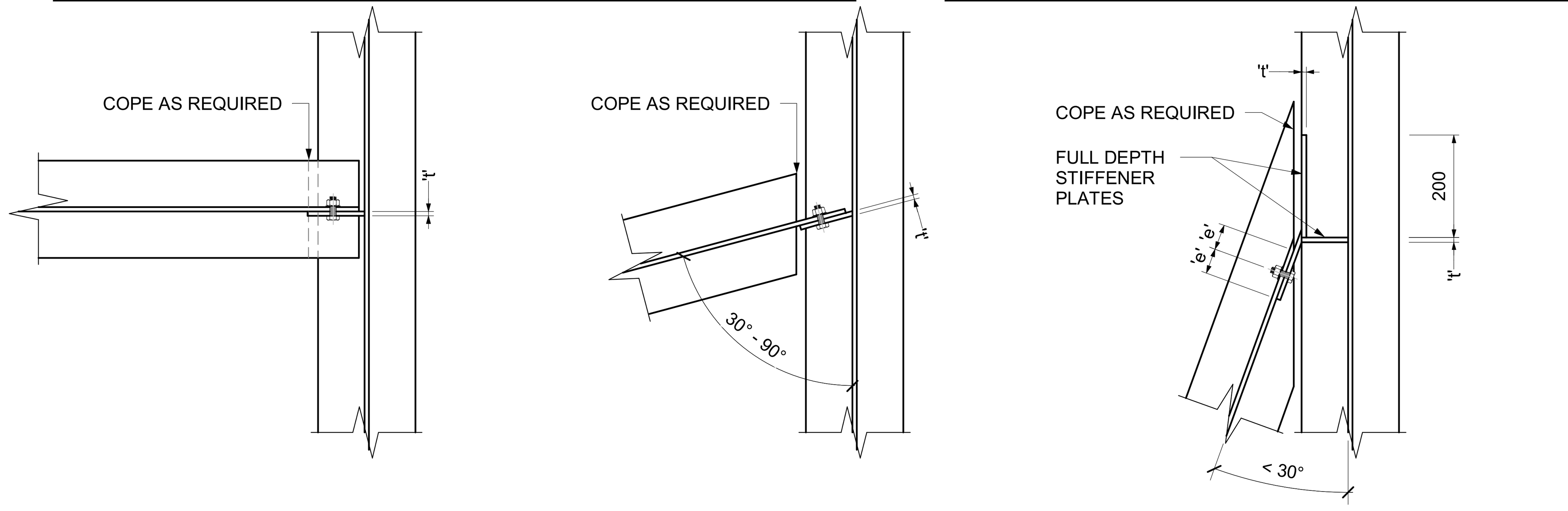
TYPICAL 89x89 SHS BASE PLATE ELEVATION



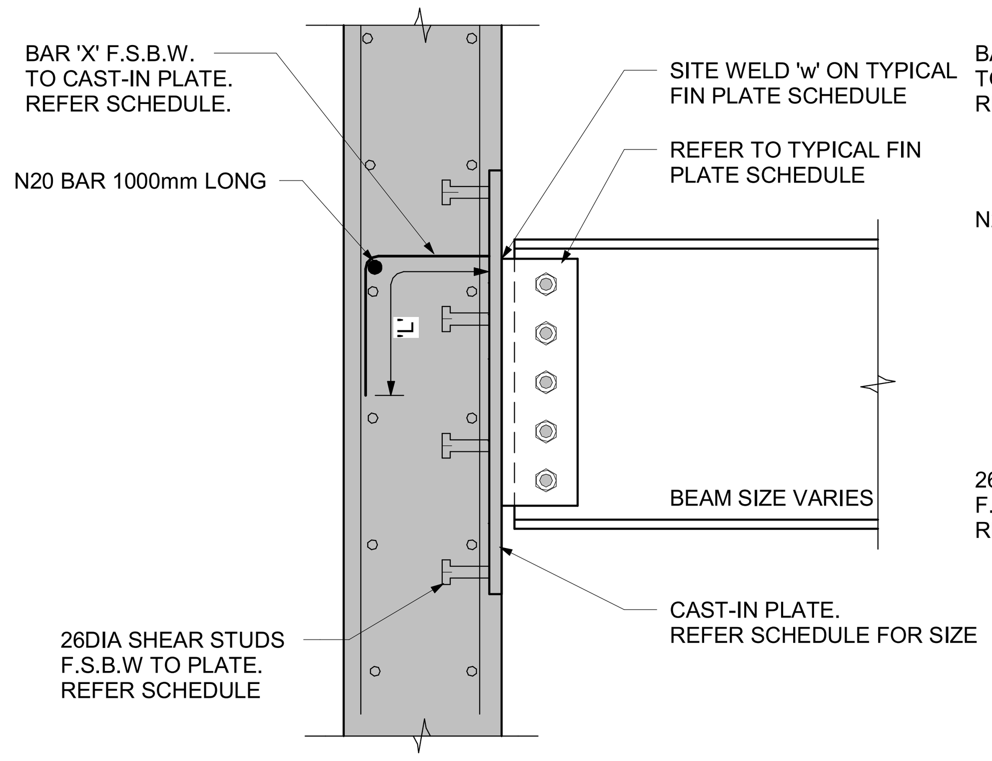
TYPICAL 300x300 SHS BASE PLATE ELEVATION U.N.O.

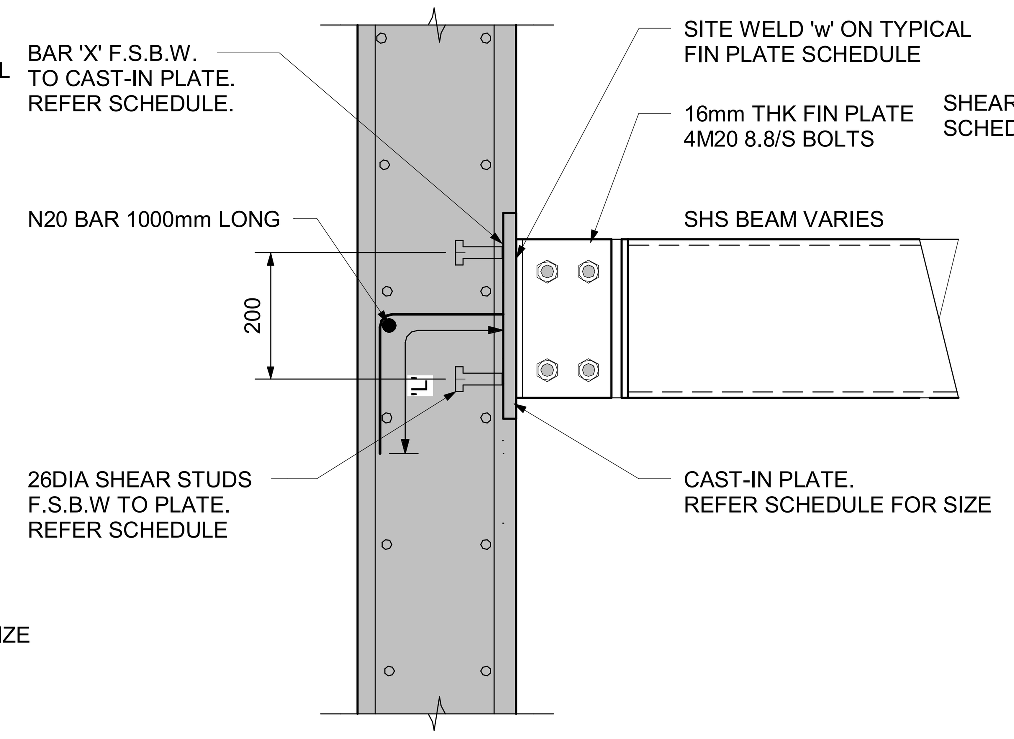


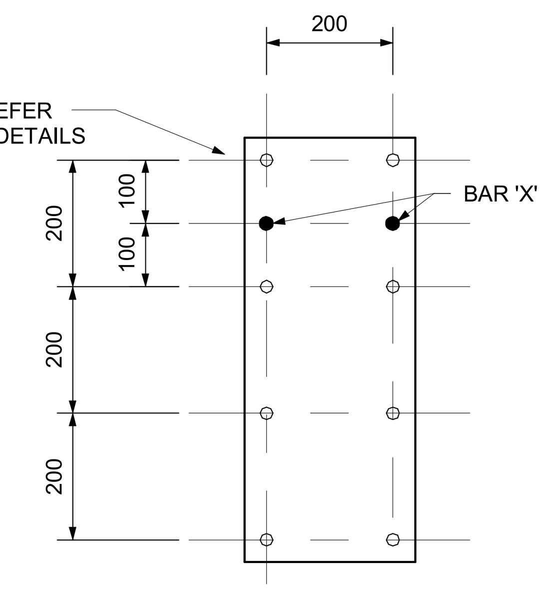
TYPICAL 250x150 RHS BASE PLATE ELEVATION U.N.O.



TYPICAL BEAM TO BEAM FIN PLATE CONNECTION DETAIL
SCALE 1:10





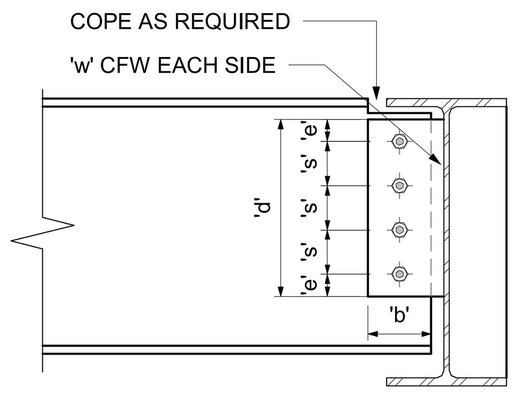


TYPICAL CAST-IN PLATE ELEVATION

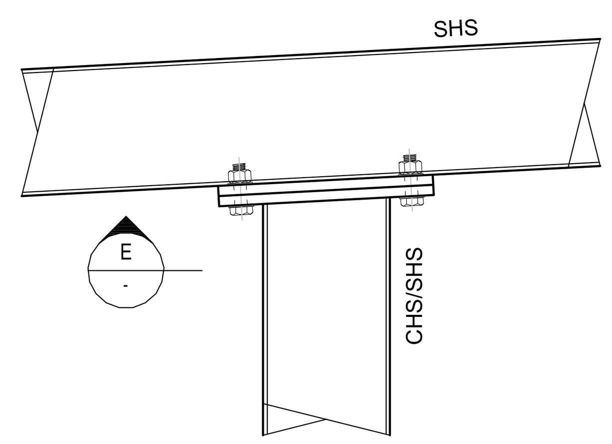
FIN PLATE							
BEAM SIZE	d (min.)	b (min.)	t	e	s	w	Grade 8.8/n,d
150 UB	110	100	10	30	50	6	2 M20
180 UB	130	100	10	35	60	6	2 M20
200 UB/PFC	140	100	10	35	70	6	2 M20
250 UB	140	100	10	35	70	6	2 M20
310 UB	210	100	10	35	70	6	3 M20
360 UB	210	100	10	35	70	6	3 M20
410 UB	280	100	12	35	70	6	4 M20
460 UB	350	100	12	35	70	6	5 M20

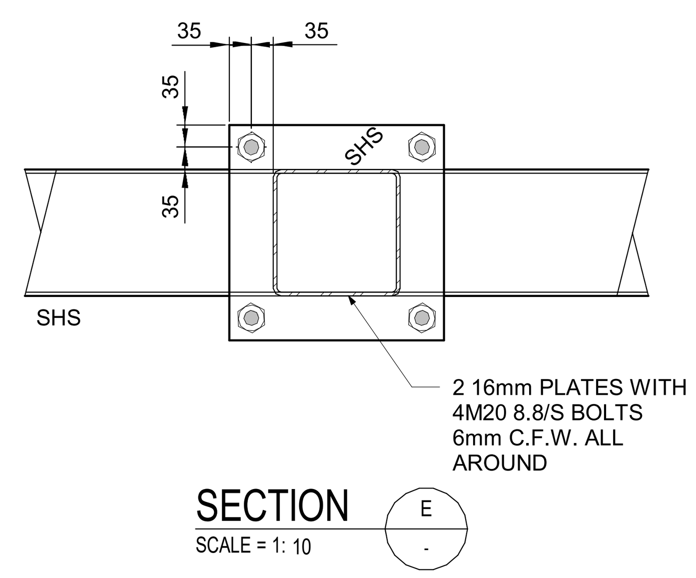
CAST-IN PLATE SCHEDULE					
BEAM SIZE	22DIA SHEAR STUDS	CAST-IN PLATE (20mm THK)		BAR 'X'	
		'B' (mm)	'D'	'L' (mm)	
200 UB/PFC	2x2 (4TOTAL)	270	280	2N12	350
250 UB	2x2 (4TOTAL)	270	330	2N12	350
310 UB	2x2 (4TOTAL)	270	390	2N12	350
360 UB	3x2 (6TOTAL)	270	470	2N12	350
410 UB	3x2 (6TOTAL)	270	490	2N12	350
460 UB	4x2 (8TOTAL)	270	670	2N12	350

CAST-IN PLATE SCHEDULE					
BEAM SIZE	22DIA SHEAR STUDS	CAST-IN PLATE (20mm THK)		BAR 'X'	
		'B' (mm)	'D'	'L' (mm)	
100SHS	2x2 (4TOTAL)	270	280	2N12	350
150SHS	2x2 (4TOTAL)	270	330	2N12	350
200SHS	2x2 (4TOTAL)	340	390	2N12	350
250SHS	3x2 (6TOTAL)	390	470	2N12	350
300SHS	3x2 (6TOTAL)	440	470	2N12	350



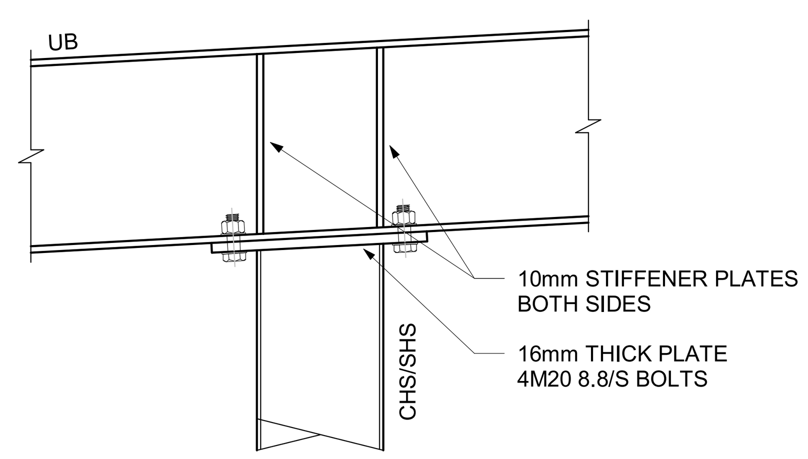
TYPICAL UB BEAM TO UB
PREFERED FIN PLATE
CONNECTION DETAIL





SECTION E
SCALE = 1: 10

TYPICAL SHS TO CHS/SHS/RHS
COLUMN DETAIL
SCALE = 1:10



TYPICAL UB TO CHS/SHS/RHS
COLUMN DETAIL
SCALE = 1:10

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
TYPICAL STEEL SECTIONS AND DETAILS SHEET 1

SCALE AT A1: 1 : 10
DRAWN BY: JWR
CHECKED BY: M.O.S

DRAWING STATUS
PRELIMINARY

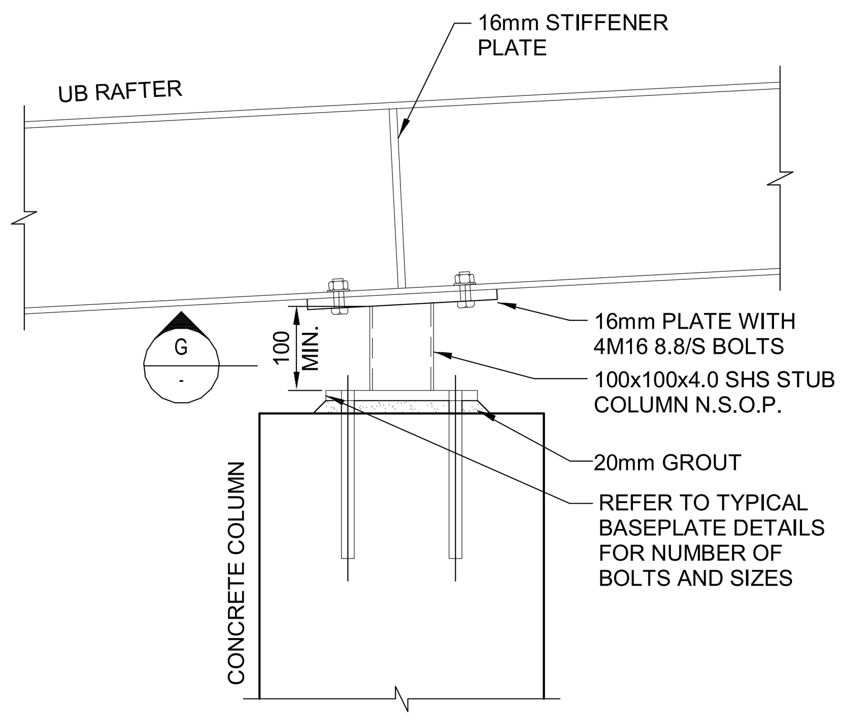
DRAWING NUMBER
ST-103-81

REV.
B

27/10/2021 5:07:06 PM

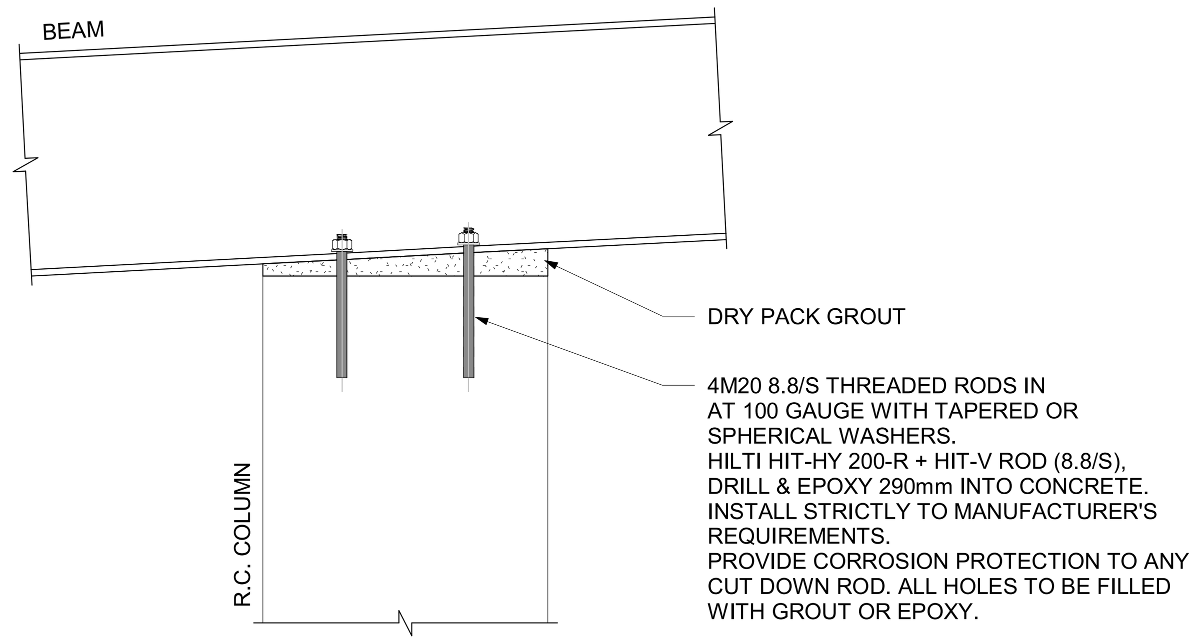
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

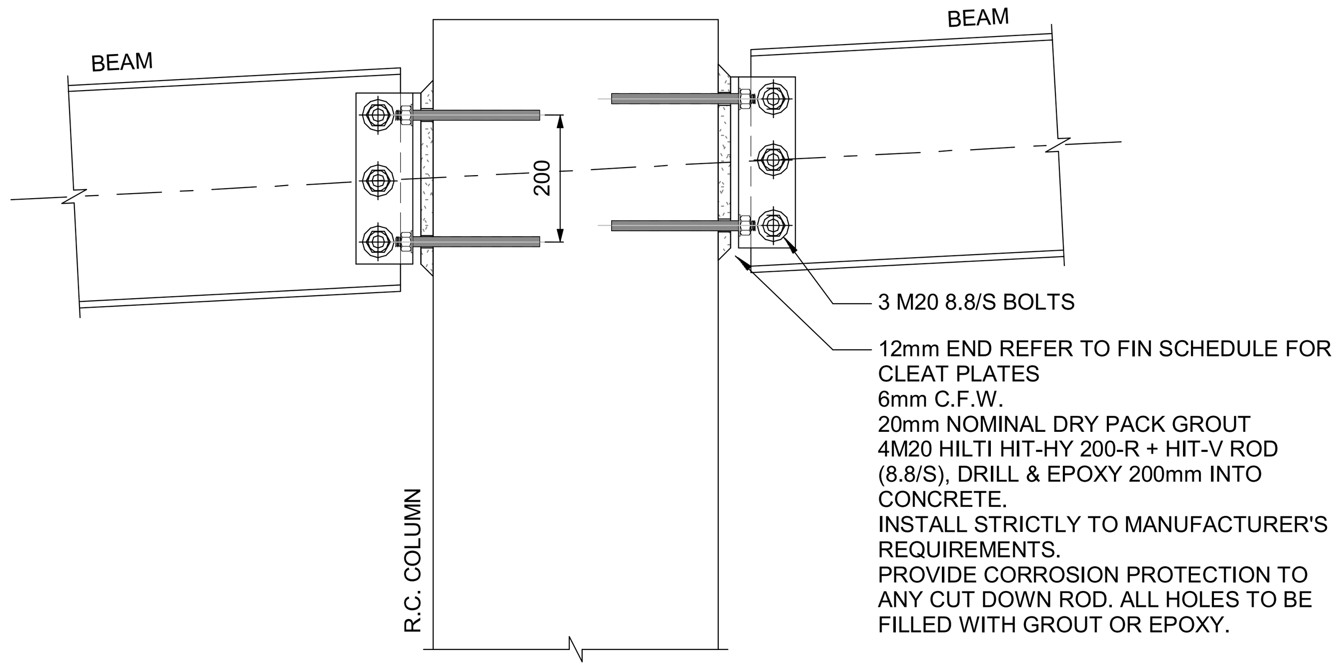


TYPICAL HEAD CONNECTION DETAIL TO UB RAFTERS

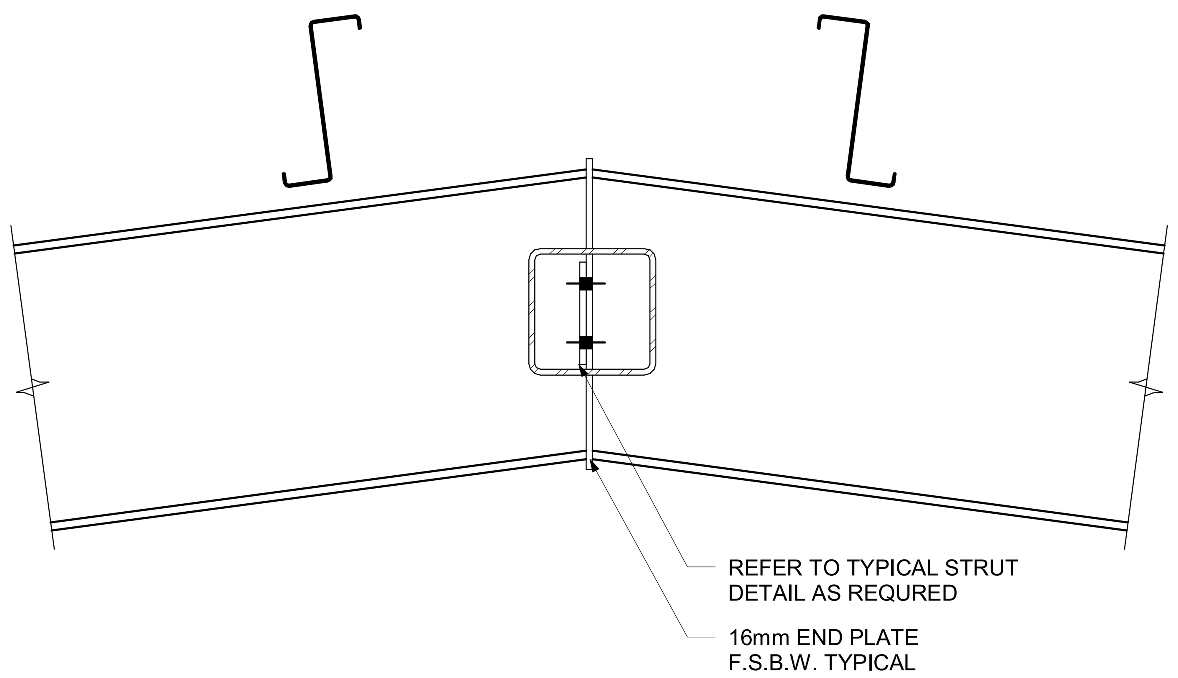
SCALE = 1:10



TYPICAL BEAM TO TOP OF CONCRETE COLUMN ELEVATION U.N.O.

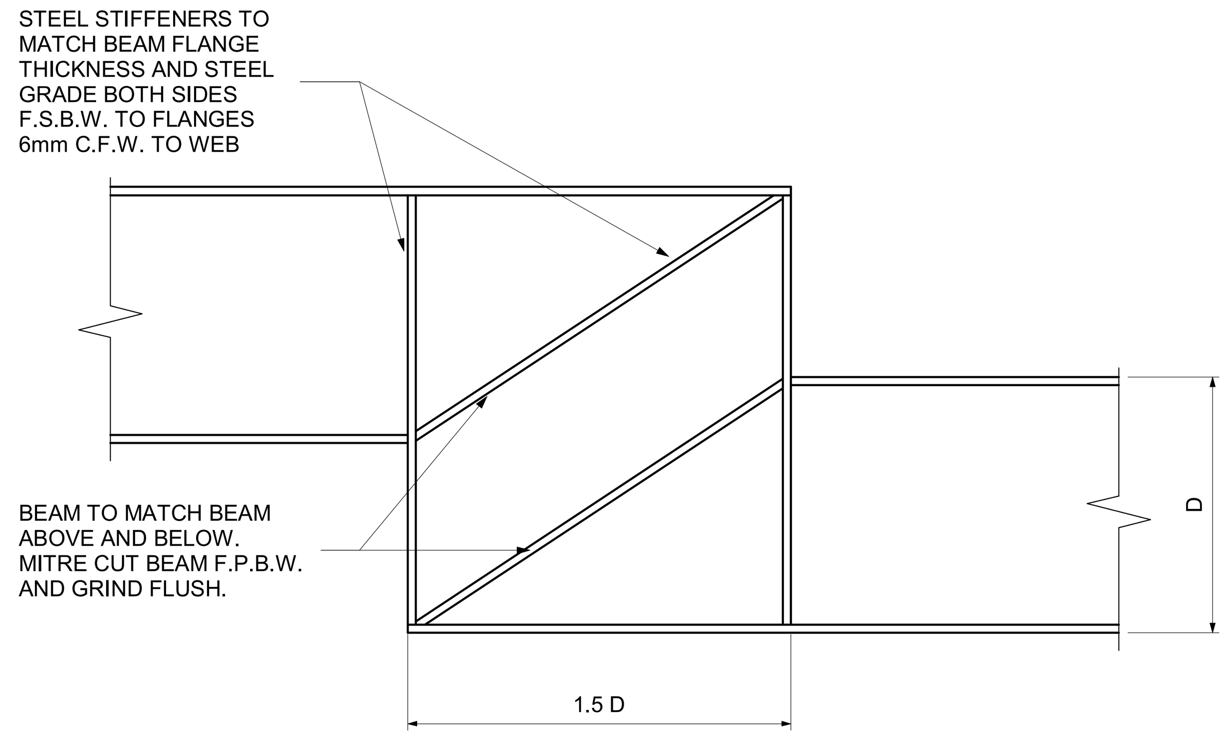


TYPICAL BEAM TO SIDE OF CONCRETE COLUMN ELEVATION U.N.O.



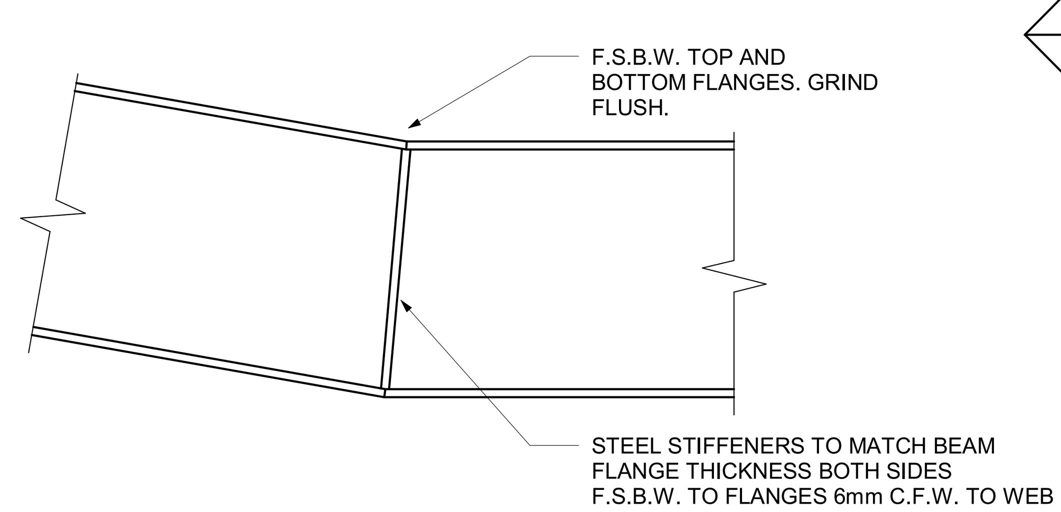
TYPICAL RIDGE CONNECTION DETAIL

SCALE 1:10



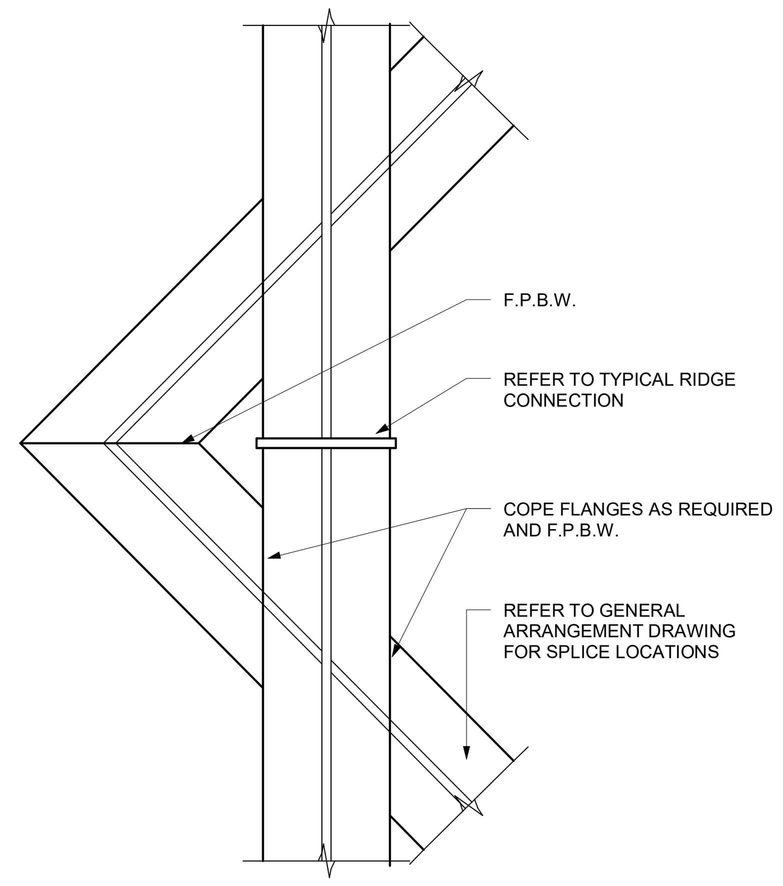
TYPICAL BEAM CRANK DETAIL

SCALE 1:10



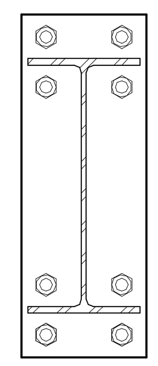
TYPICAL BEAM CRANK DETAIL

SCALE 1:10

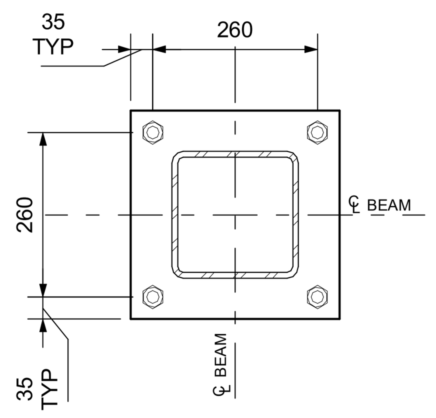


TYPICAL RIDGE TO HIP DETAIL

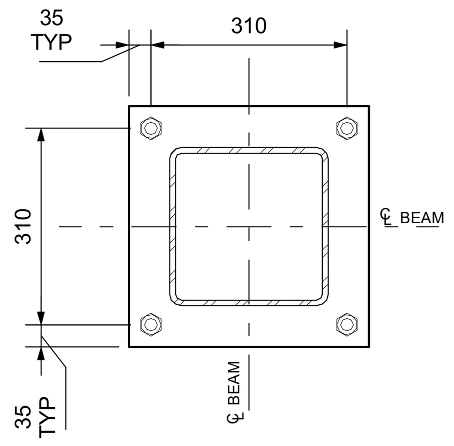
SCALE 1:10



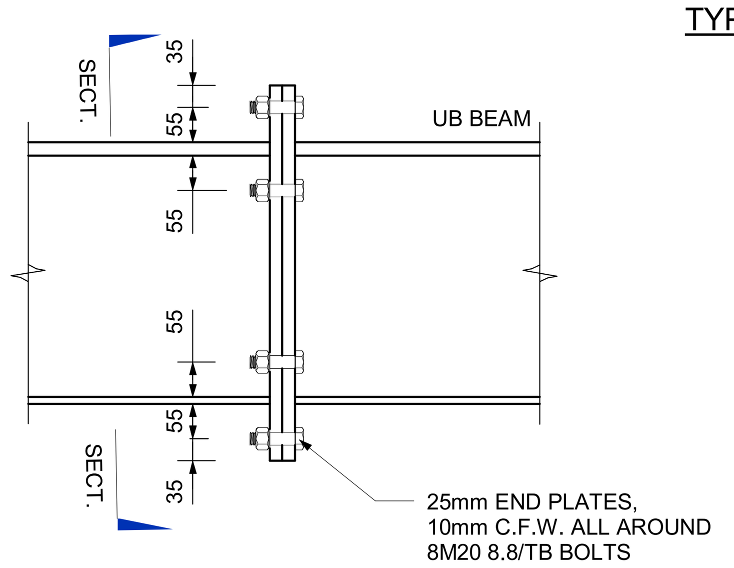
SECTION



SECTION TYPICAL 200SHS

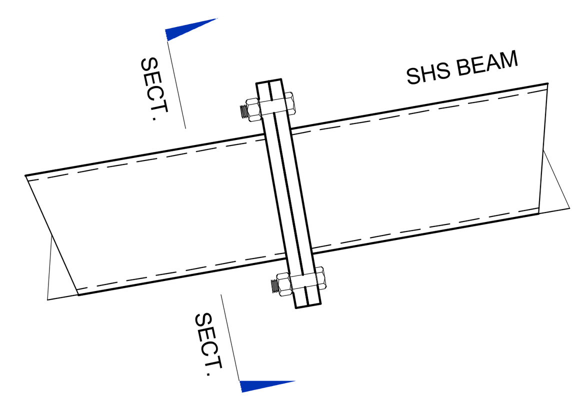


SECTION TYPICAL 250SHS



ELEVATION

UB BEAM SPLICE EXCLUDING 610UB



ELEVATION

SHS BEAM SPLICE

TYPICAL SPLICE CONNECTION DETAILS

SCALE 1:10

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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NSW GOVERNMENT Education School Infrastructure

BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

TYPICAL STEEL SECTIONS AND DETAILS SHEET 2

SCALE AT A1: 1 : 10
DRAWN BY: JWR
CHECKED BY: M.O.S

DRAWING STATUS

PRELIMINARY

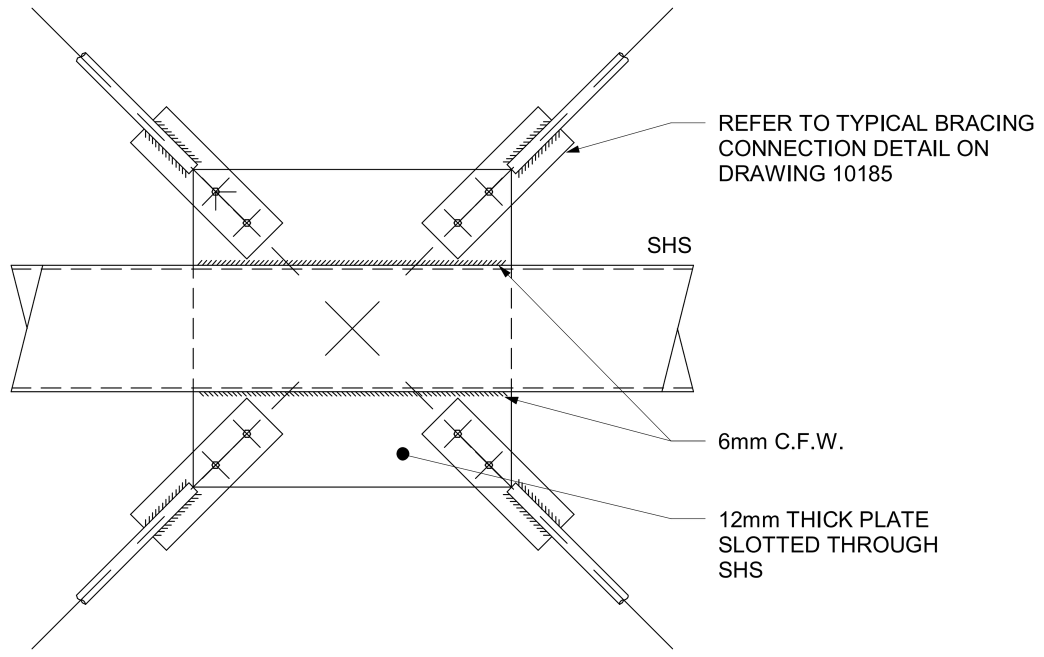
DRAWING NUMBER: ST-103-82

REV.: B

27/10/2021 5:07:10 PM

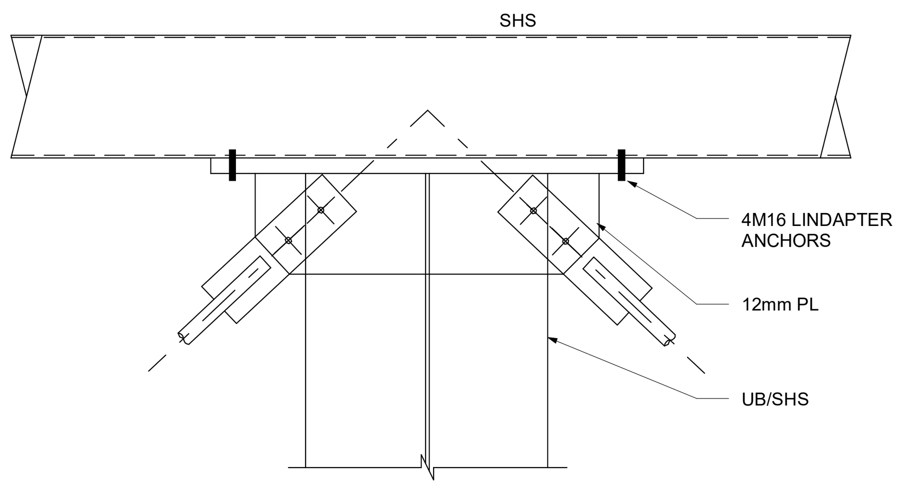
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES

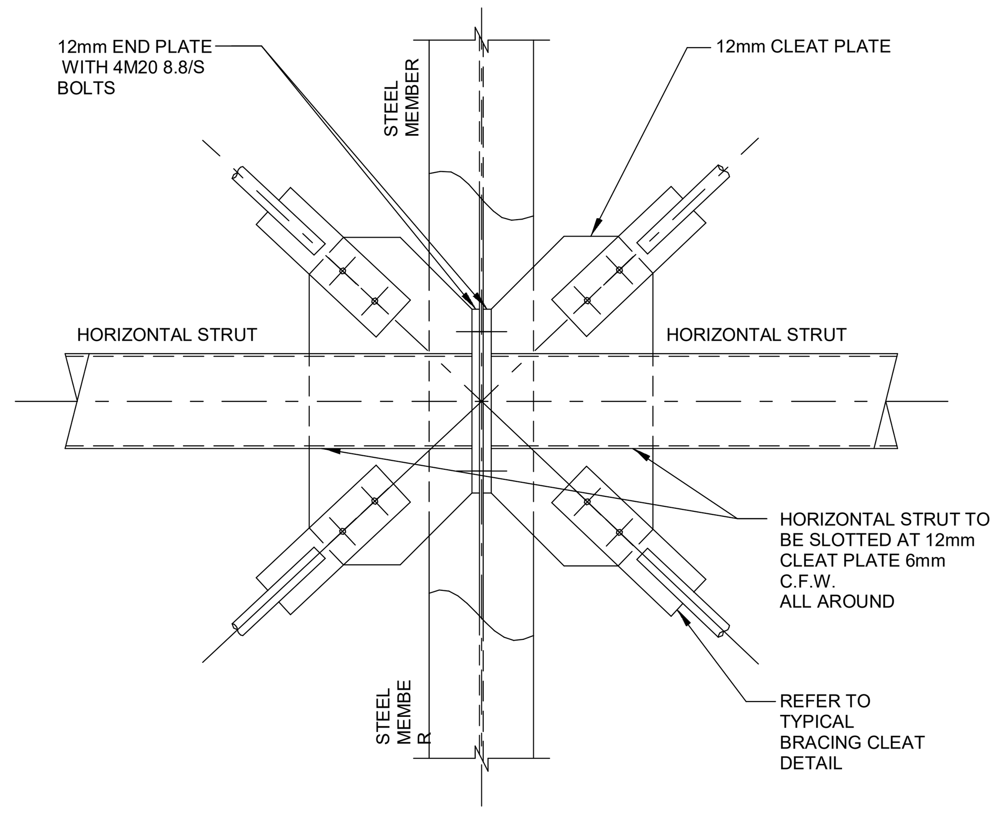


TYPICAL VERTICAL BRACING THROUGH SHS BEAM CONNECTION DETAIL

SCALE = 1:10

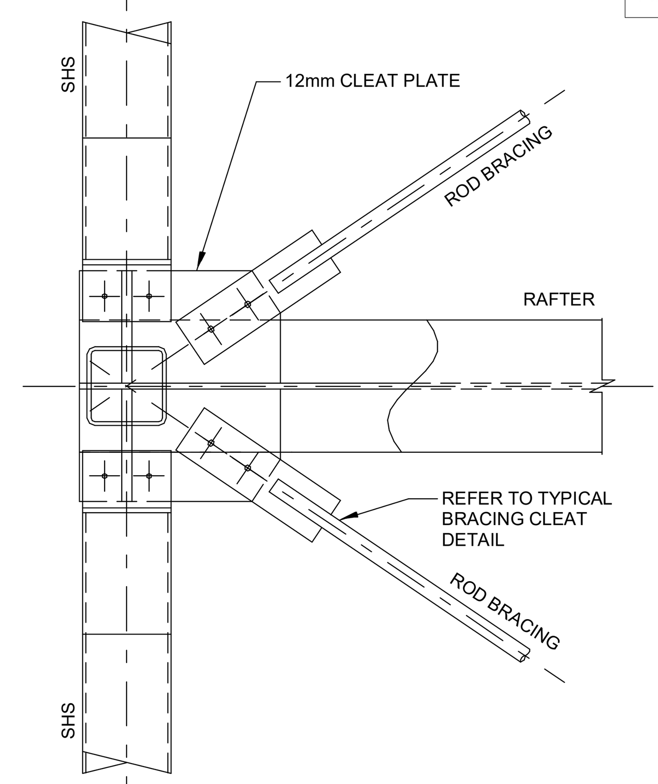


TYPICAL UB/SHS TO SHS WITH DOUBLE SIDED BRACING CONNECTION



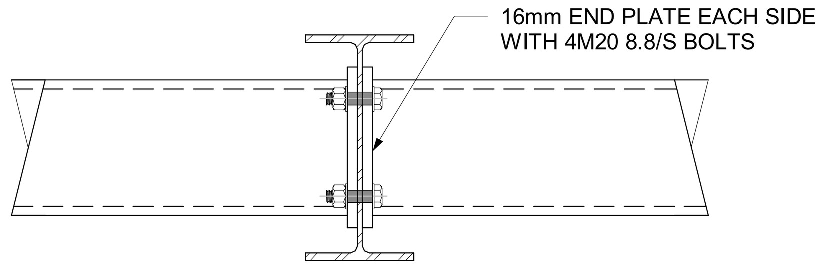
TYPICAL HORIZONTAL BRACING CONNECTION DETAILS FOR ROD MEMBERS

SCALE = 1:10



TYPICAL RAFTER/STRUT CONNECTION

SCALE = 1:10



TYPICAL SHS MEMBER TO UB RAFTER CONNECTION DETAIL

SCALE = 1:10

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

TYPICAL STEEL SECTIONS AND DETAILS SHEET 3

SCALE AT A1: 1 : 10
DRAWN BY: JWR
CHECKED BY: M.O.S

DRAWING STATUS

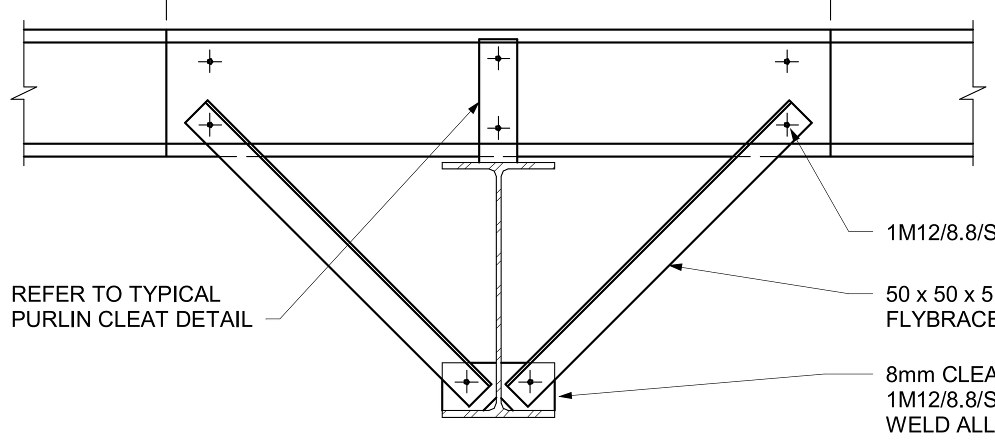
PRELIMINARY

DRAWING NUMBER: ST-103-83

REV.: B

27/10/2021 5:07:14 PM

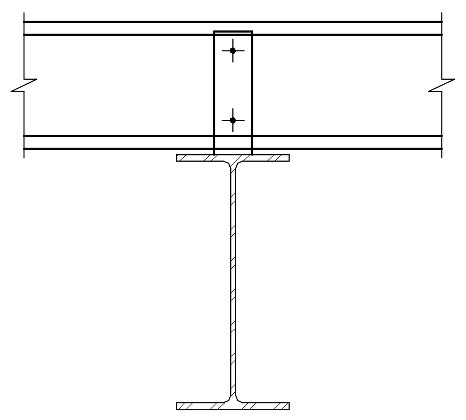
REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



TYPICAL FLY BRACE (FB) DETAIL

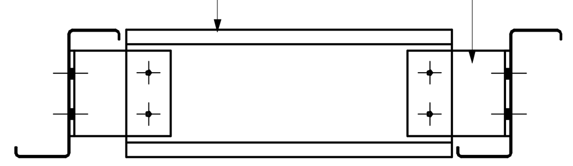
SCALE = 1:10

NOTE:
PURLIN LAP TO BE MINIMUM 15% OF THE GREATER ADJACENT PURLIN SPANS



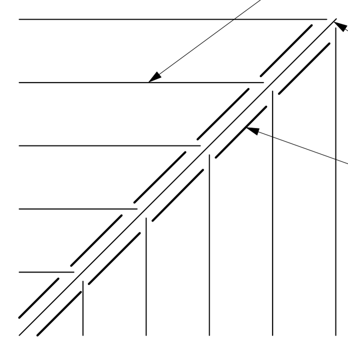
PURLIN CONNECTION DETAIL (TYPICAL)

SCALE = 1:10

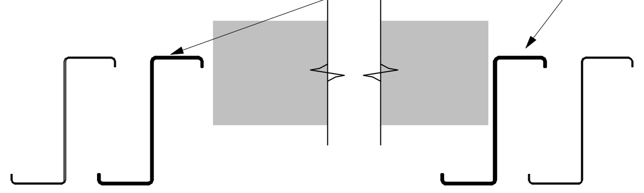


Z PURLIN PENETRATION TRIMMING DETAIL

SCALE = 1:10

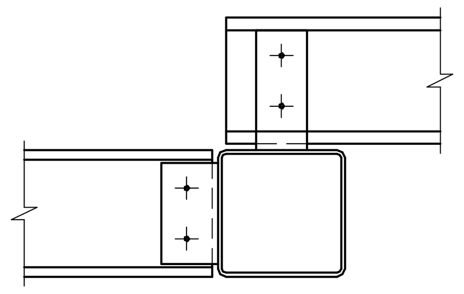


TYPICAL ROOF SHEETING TRIMMING DETAIL AT RIDGES AND VALLEYS



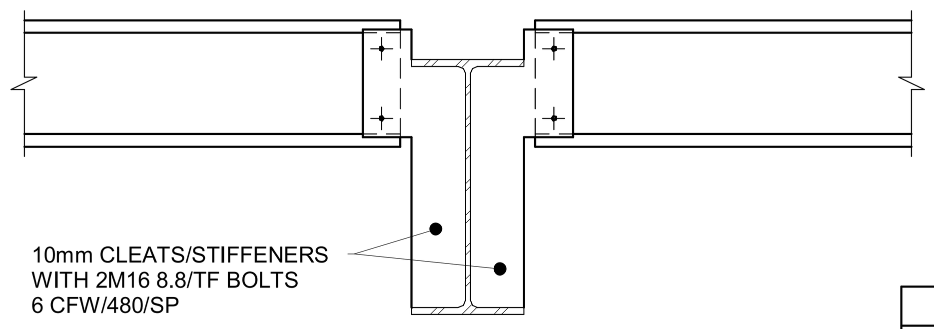
SKYLIGHT PURLIN TRIMMER DETAIL (SECTION)

SCALE = 1:10



TYPICAL GIRT TO COLUMN FIXING DETAIL

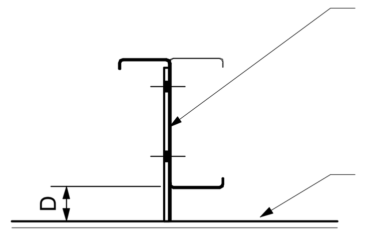
SCALE = 1:10



PURLIN CONNECTION DETAIL BETWEEN BEAMS (TYPICAL)

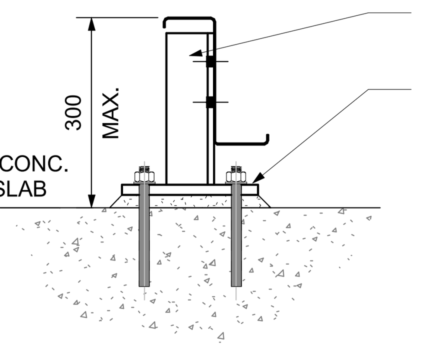
SCALE = 1:10

WHEN PURLINS ARE WITHIN DEPTH OF BEAMS



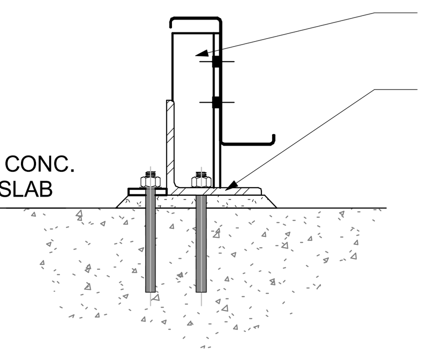
PURLINS SUPPORT SCHEDULE		
DISTANCE (D)	SUPPORT	BOLTS
LESS THAN 60	75 x 8 CLEAT PL 8 CFW	2M12 4.6/S
60 TO 100	75 x 10 CLEAT PL. 8 CFW	2M12 4.6/S
100 TO 150	75 x 12 CLEAT PL. 10 CFW	2M12 4.6/S
150 TO 300	75 x 75 x 8 EA. 8 CFW	2M12 4.6/S

TYPICAL PURLIN AND GIRT CLEAT DETAIL



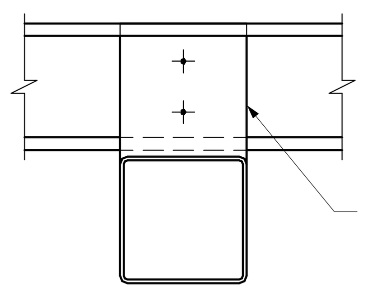
TYPICAL PURLIN CLEAT TO CONCRETE SLAB CONNECTION DETAIL

SCALE 1:10



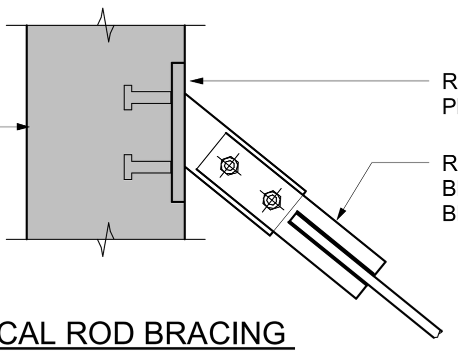
TYPICAL PURLIN CLEAT TO CONCRETE SLAB ALTERNATE CONNECTION DETAIL

SCALE 1:10

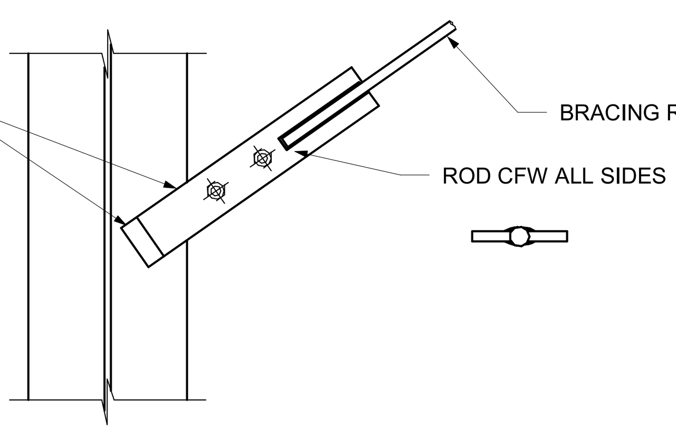


TYPICAL PURLIN CONNECTION DETAIL TO SHS/RHS SUPPORT MEMBER

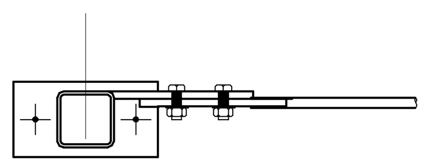
SCALE 1:10

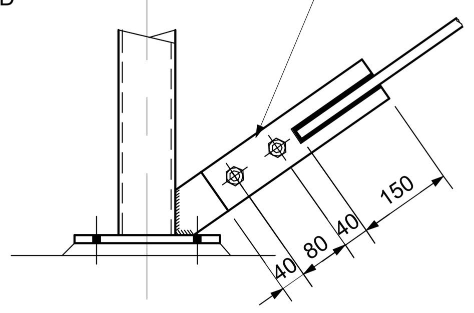


TYPICAL ROD BRACING INTO CONCRETE WALL

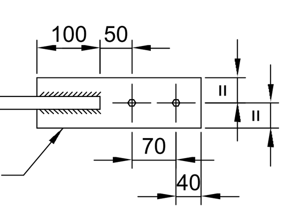


TYPICAL ROD BRACING CONNECTION DETAIL





TYPICAL VERTICAL BRACE TO COLUMN CONNECTION DETAIL



TYPICAL BRACING CLEAT DETAIL

SCALE = 1:10

CENTRELINE OF BRACING TO COINCIDE WITH CENTRELINES OF CONNECTED MEMBERS

27/10/2021 5:07:18 PM

Rev.	Date	Description
B	27.10.21	95% SCHEMATIC DESIGN
A	08.10.21	50% SCHEMATIC

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BUILDER

PROJECT NAME
Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE
PURLIN SECTIONS AND DETAILS

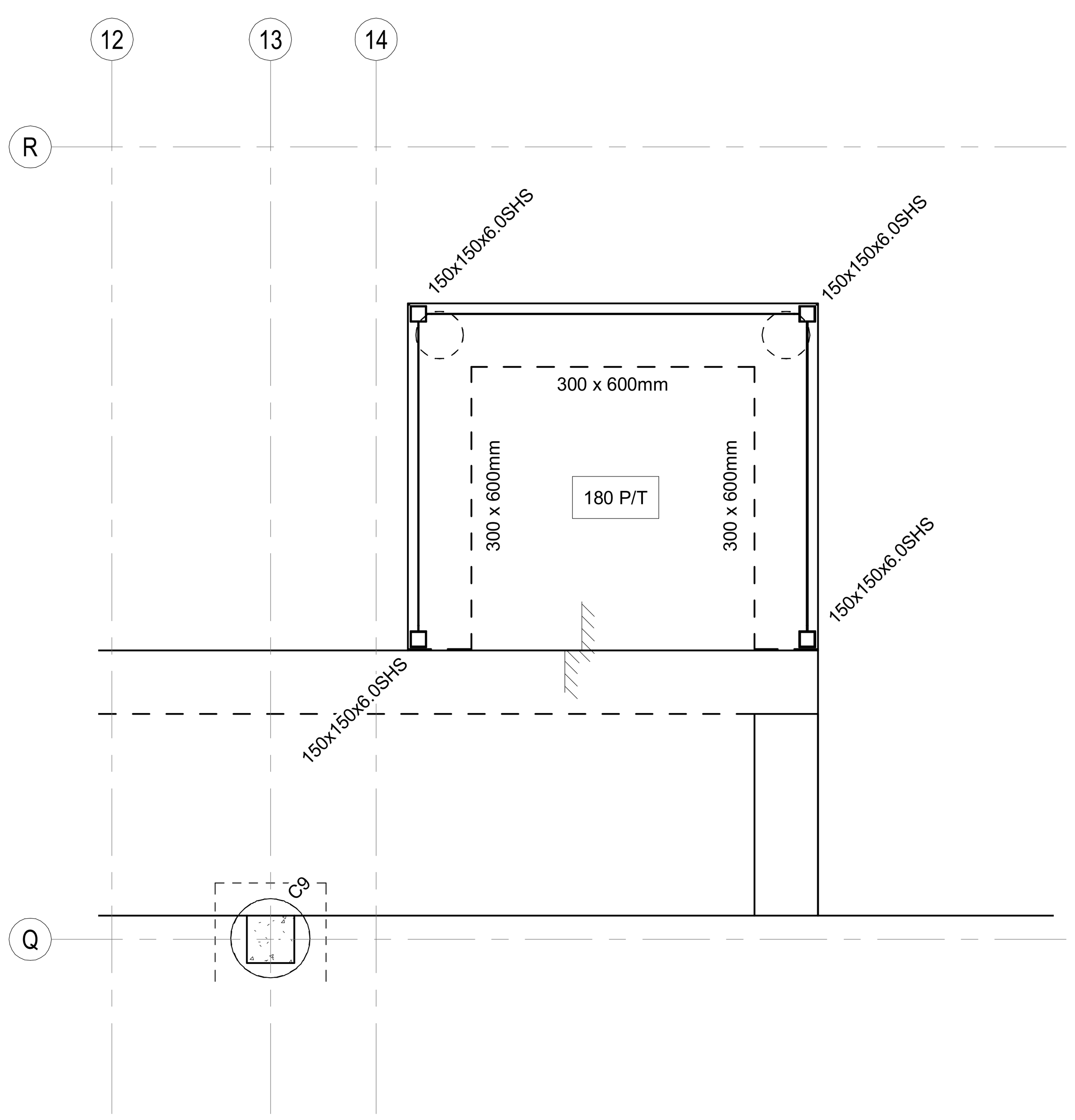
SCALE AT A1: 1 : 10
DRAWN BY: JWR
CHECKED BY: M.O.S

DRAWING STATUS
PRELIMINARY

DRAWING NUMBER: ST-103-85
REV. B

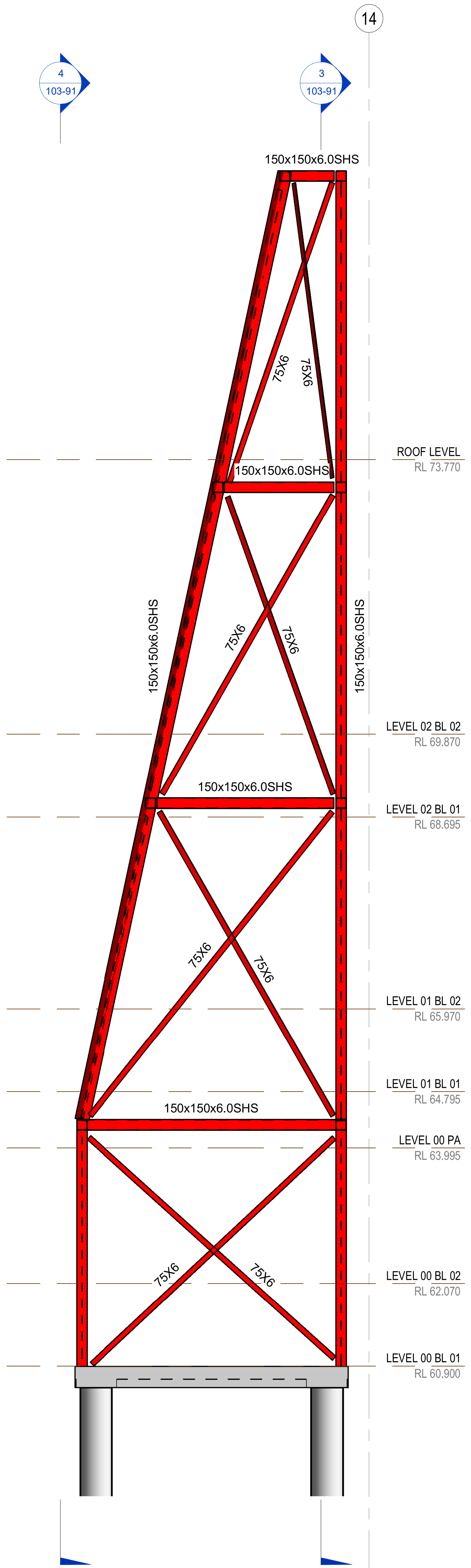
A1

REFER TO DRG. ST-001-01 & ST-001-02 FOR GENERAL NOTES



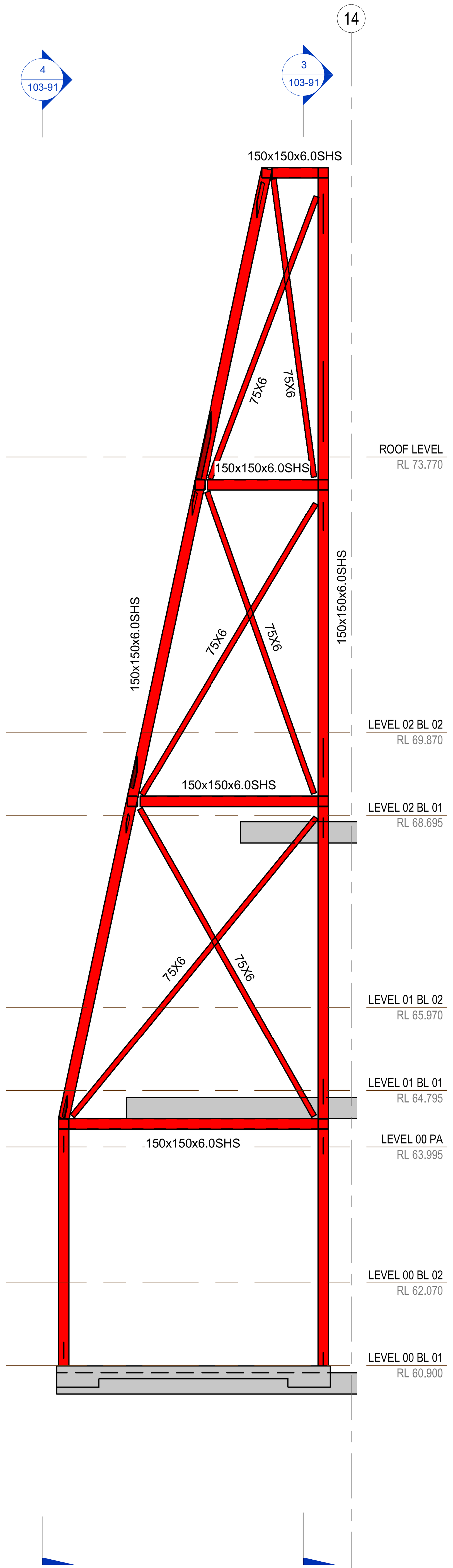
GROUND FLOOR - KILN STEELWORK GENERAL ARRANGEMENT

SCALE: 1 : 50



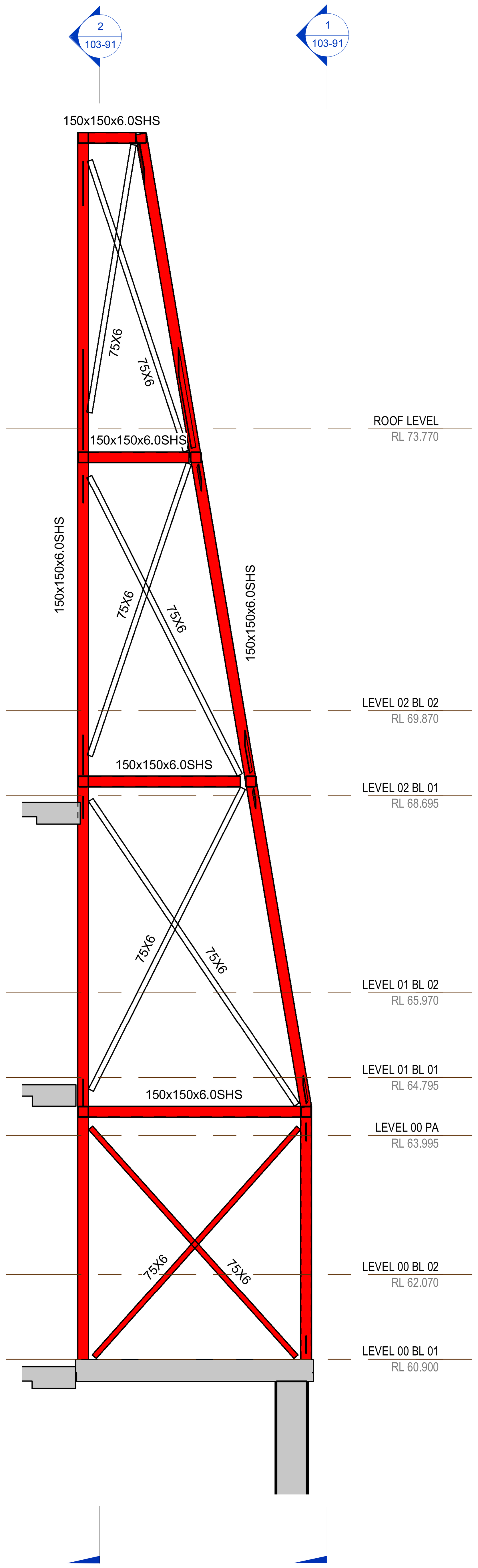
ELEVATION 1 (103-91)

1 : 50



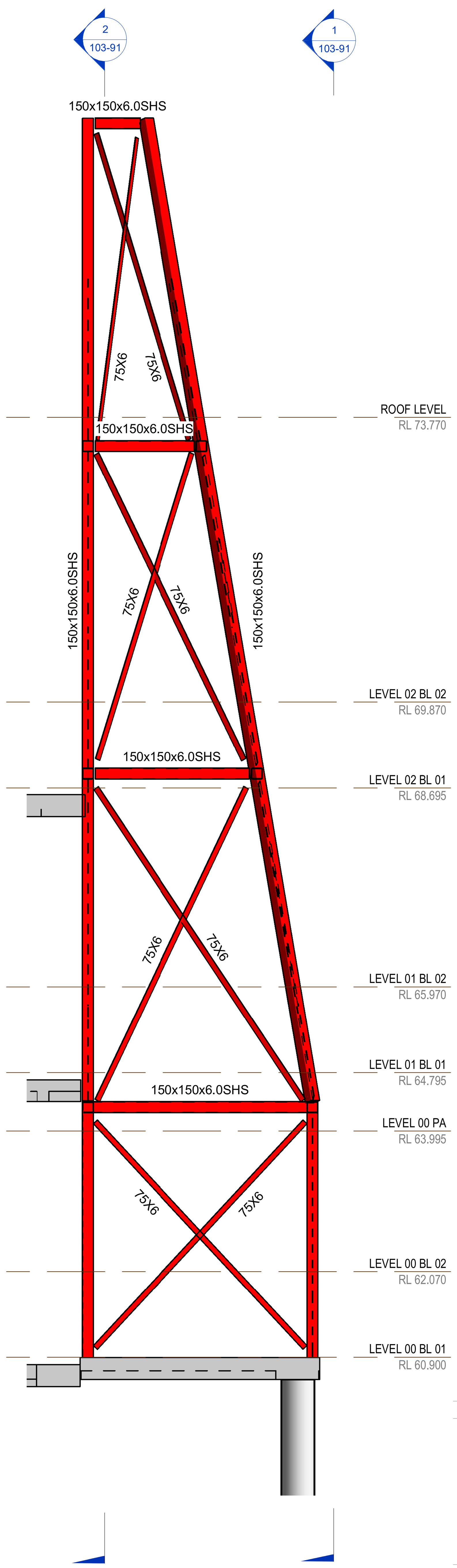
ELEVATION 2 (103-91)

1 : 50



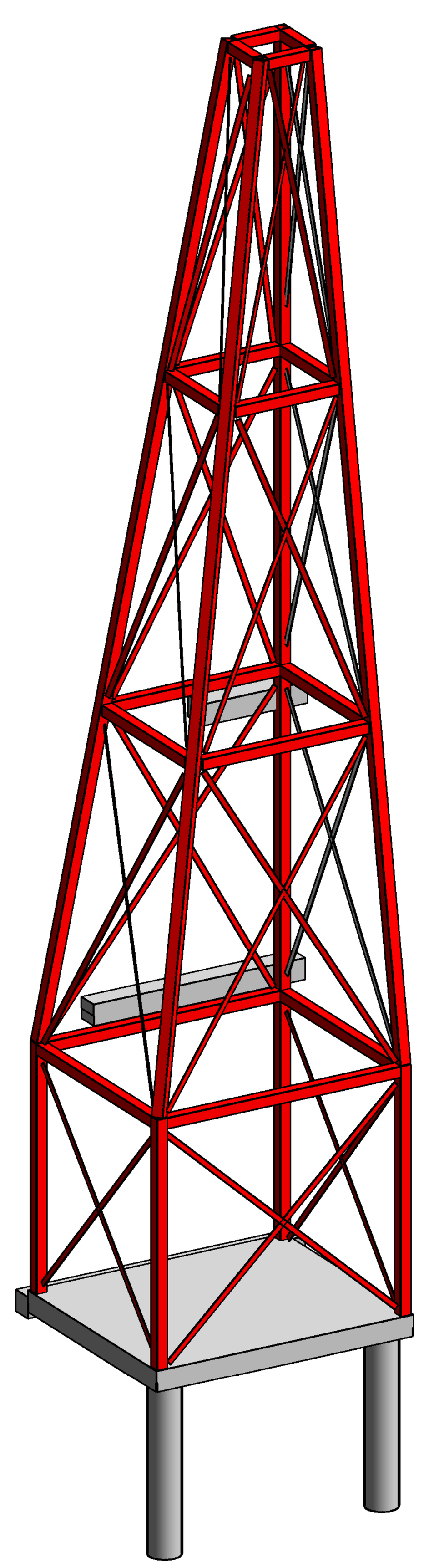
ELEVATION 3 (103-91)

1 : 50



ELEVATION 4 (103-91)

1 : 50



KILN STEELWORK ISOMETRIC

SCALE:

Rev.	Date	Description
A	27.10.21	95% SCHEMATIC DESIGN

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BUILDER

PROJECT NAME

Glenwood High School

PROJECT NUMBER: 6393

DRAWING TITLE

KILN STEELWORK - PLAN AND ELEVATIONS

SCALE AT A1: 1 : 50

DRAWN BY: Author

CHECKED BY: Checker

DRAWING STATUS

FOR INFORMATION

DRAWING NUMBER ST-103-91

REV. A

27/10/2021 5:07:25 PM