

ForestWood 2010

NMIT Visual Arts & Media Building

Presented by

Andrew Irving

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NMIT Arts & Media MAF Landmark Timber Design




NMIT Arts and Media Building
Timber Demonstration Building

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Timber Demonstration Project Completion Brief

- A building whose structural form uses and showcases its construction in timber
- A demonstration and education project; the structure should be visible in the completed building to allow it to be used as the demonstration and education model.
- A sustainable and environmentally sound building within the available budget



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Irving Smith Jack Architects Ltd
Timber Design



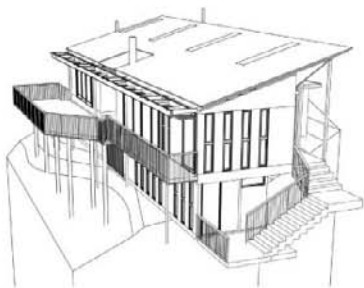
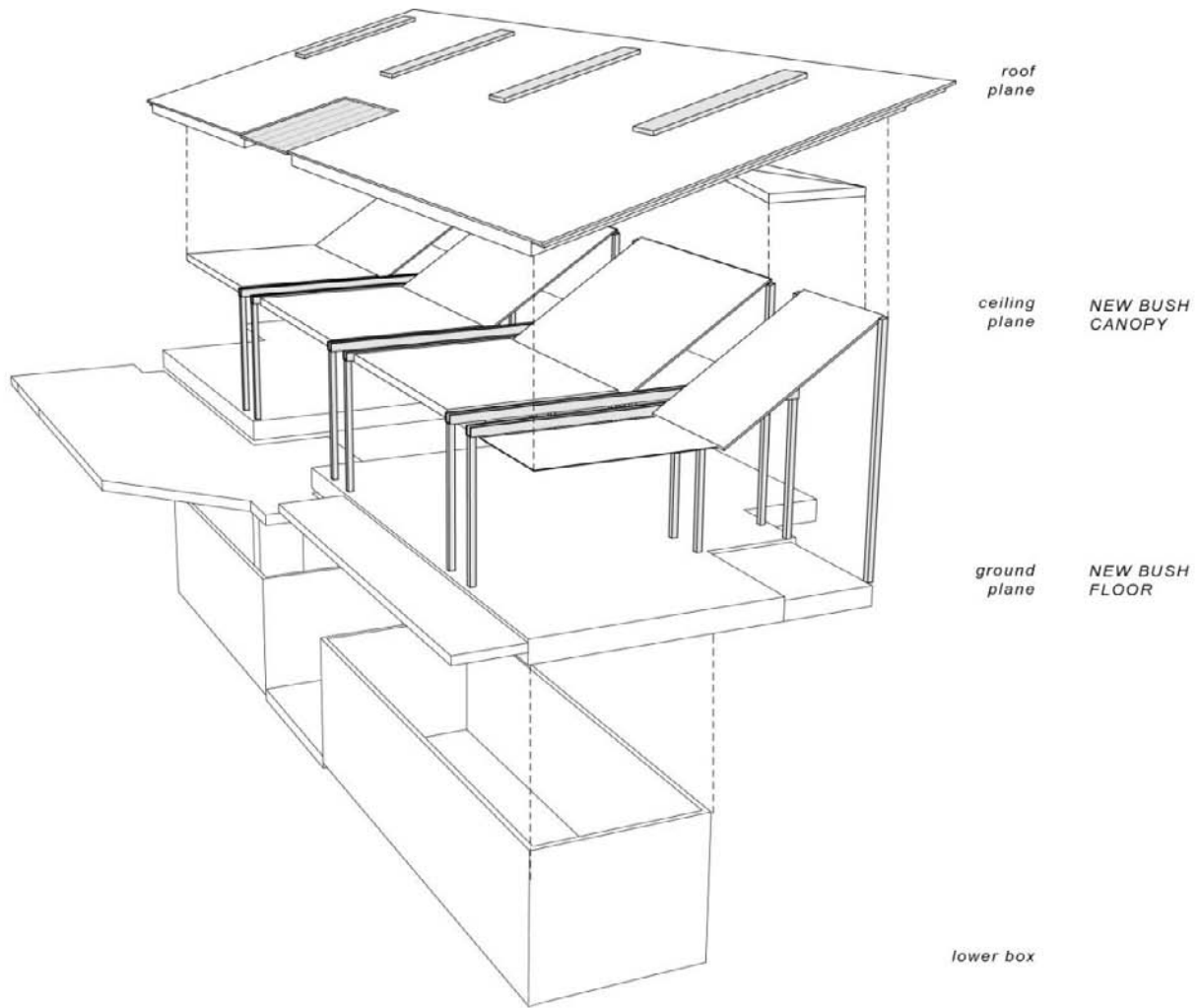
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NZ Wood Timber Design Awards 2008 - Residential
Architectural Excellence (Highly Commended)

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The Carter Holt Harvey Timber Design Awards 2007-
Supreme Award Winner

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Timber Demonstration Project Competition

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Supporting Nelson's forestry and timber manufacturing industries



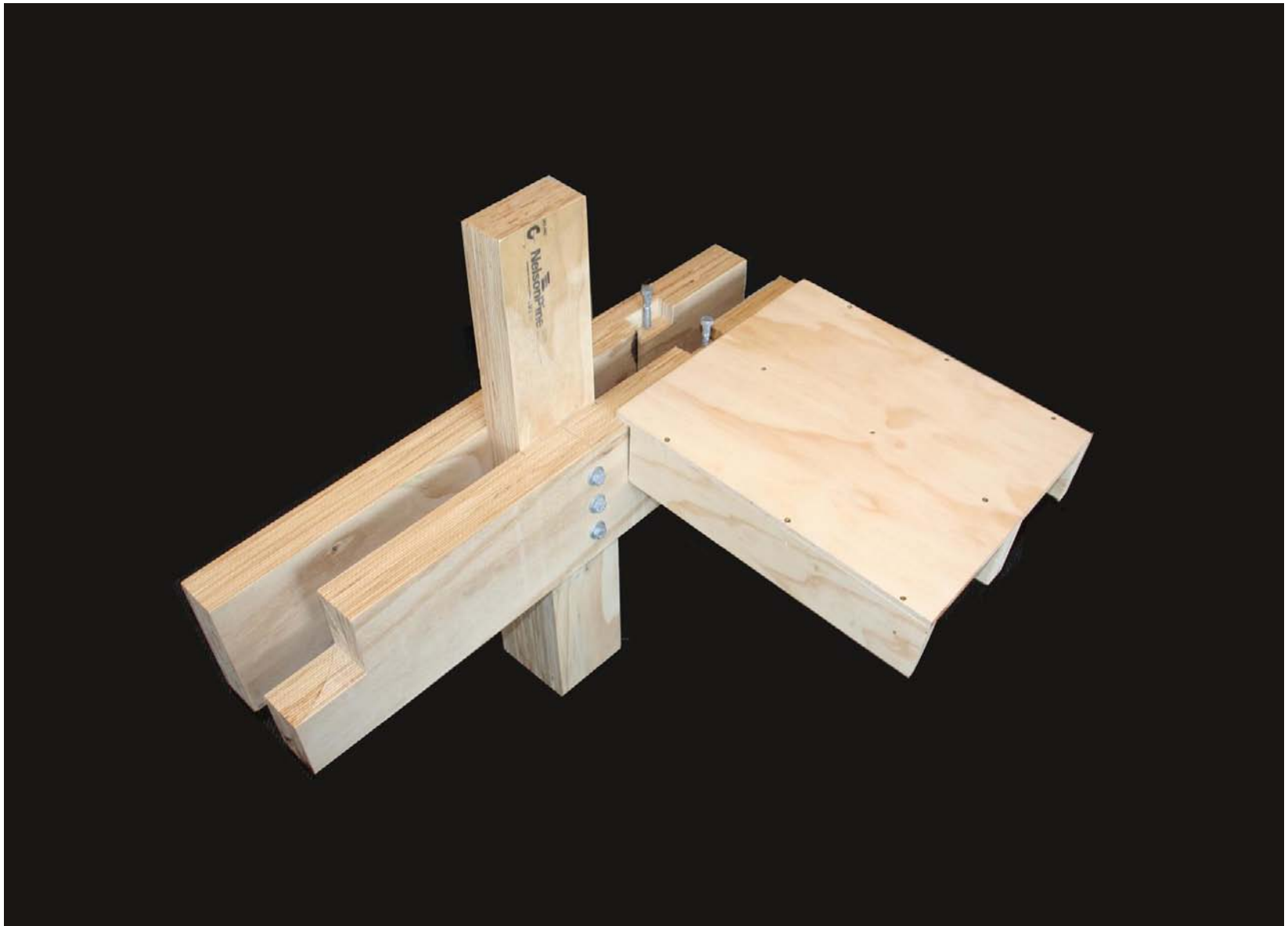
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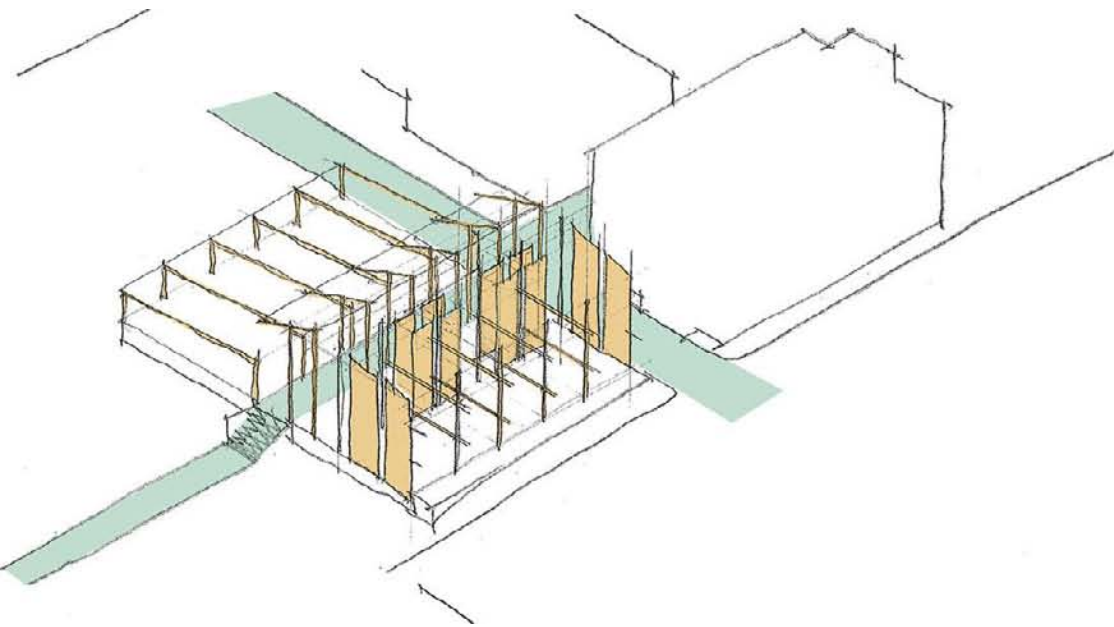


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LOOK INSIDE

*A BUILDING TO BE EXPERIENCED FROM INSIDE
AND OUTSIDE, SHOWING ITS BONES AND
CELEBRATING THE INNOVATION OF STRUCTURE IN
WOOD*

Design Concept

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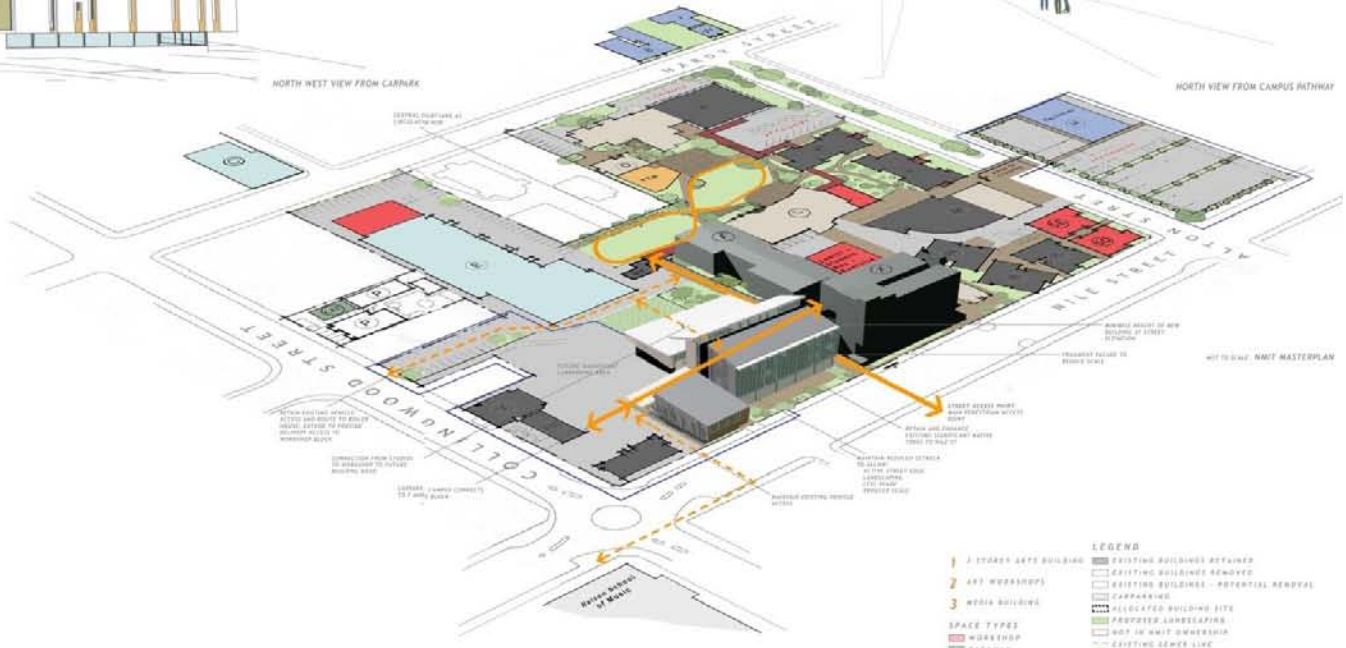
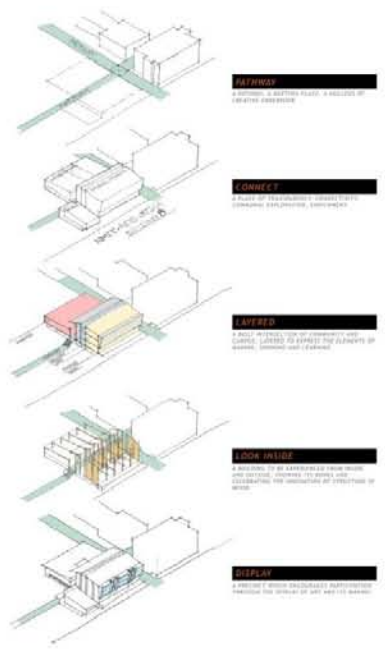
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NORTH WEST VIEW FROM CARNARVON



NORTH VIEW FROM CAMPUS PATHWAY



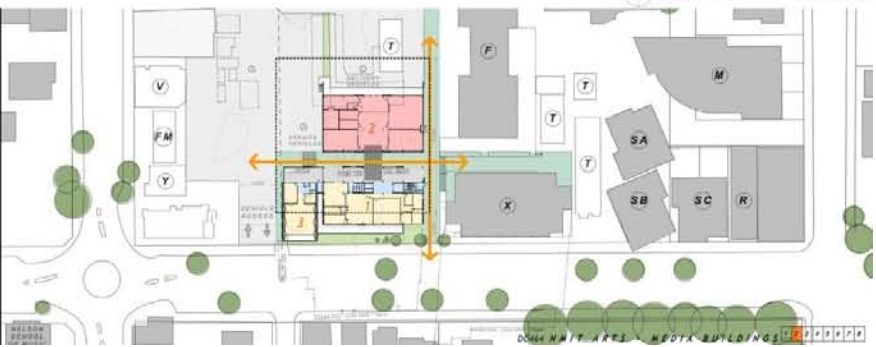
- LEGEND**
- INNER CITY ZONE
 - INNER CITY PRIME CORNER
 - RESIDENTIAL ZONE
 - ALLOCATED SITE
 - EXTENT OF NMIT CAMPUS

- LEGEND**
- 1 2 STOREY ARTS BUILDING
 - 2 ART WORKSHOPS
 - 3 MEDIA BUILDINGS
- SPACE TYPES**
- WORKSHOP
 - GALLERY
 - OFFICE
 - MULTI-USE
- LEGEND**
- EXISTING BUILDINGS RETAINED
 - EXISTING BUILDINGS - POTENTIAL REDEVELOP
 - CARPARKING
 - ALLOCATED BUILDING SITE
 - POTENTIAL LAYERLAPPING
 - NOT IN NMIT POSSESSION
 - EXISTING SEWER LINE
 - RETAIN EXISTING TREES
 - CAMPUS PATHWAY
 - POTENTIAL SIGNIFICANT CARPARKING
 - ACCESS TO BASEMENT LEVEL PLANT & SERVICES
 - DELIVERY ACCESS FOR WORKSHOPS/TECHNICAL LEVEL



CONCEPT

PATHWAY



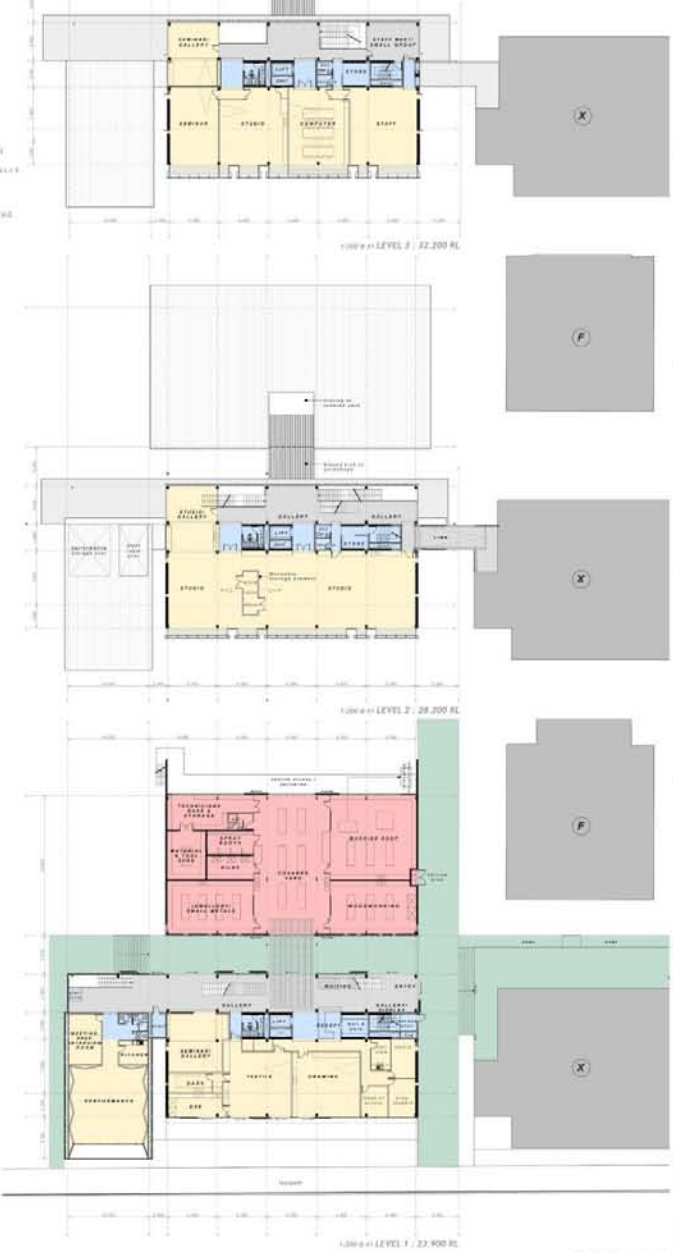
DATE: 10/11/11

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LEGEND

- WELL TYPES**
- FACTORY
 - LVL FLOORS & BEAMS
 - LVL BRICK WALLS
 - CONCRETE WALLS TO ADJACENT SERVICE SPACE
- PERMANENT**
- LIFT & STAIR WALLS
 - WATER/SEWER WALLS
 - WORKSHOP ACOUSTIC SEPARATIONS
 - ALARM ROOM/STAIR DUCT WALLS
 - ACOUSTIC PERFORMANCE SPACE WALLS
- TEMPORARY**
- STUDIO PARTITIONING
 - CLASSROOM PARTITIONING
 - OFFICE / STAFFROOM / PARTITIONING
- SPACE TYPES**
- WORKSHOP
 - PATHWAY
 - GALLERY
 - LOBBY
 - MULTI-USE
 - OFFICE
 - PROJECTION



LEGEND

- 1 SOLID STEEL ROOFING
- 2 VERTICAL SLAM-METAL CLADDING
- 3 PRECAST CONCRETE ELEMENTS
- 4 RUFFY CLADDING
- 5 INSULATED GLAZING TO STUDIO
- 6 CURTAIN WALL GLAZING
- 7 BLOWN-GLENING GLAZING
- 8 FIRED GLAZING
- 9 TIMBER SLIDING GATES
- 10 LIFTED GATES TO SERVICE SPACES
- 11 UP/DOWN/DOWNHIRE
- 12 LANSCEDED FIN
- 13 TIMBER SLAM CLADDING
- 14 TIMBER SLIDING BEYOND
- 15 STRENGTHENED STAIR
- 16 STRENGTHENED DEVELOPMENT
- 17 RIGID LINK TO ADJACENT BLOCK
- 18 GLAZED LINK
- 19 RAMPED STAIRWAY



CONNECT

LAYERED

DC464 NMIT ARTS + MEDIA BUILDINGS

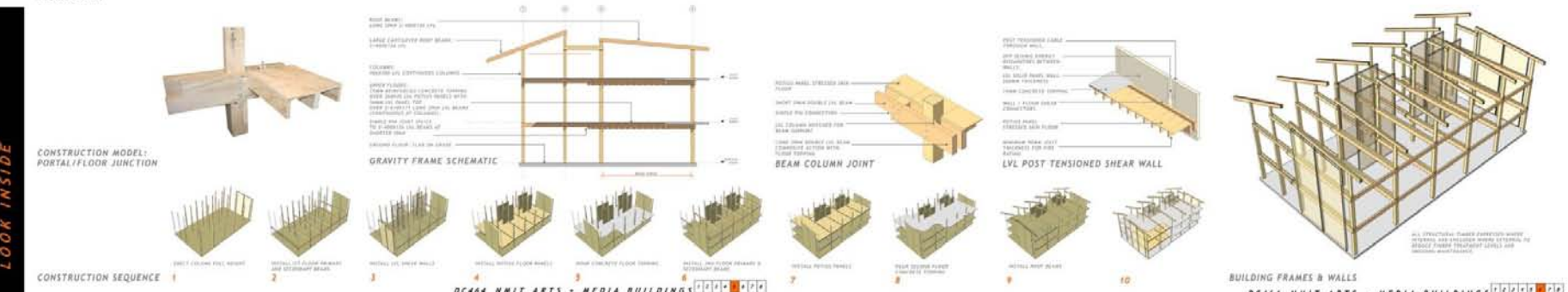
DC464 NMIT ARTS + MEDIA BUILDINGS

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CONCEPTUAL X SECTION LOOKING EAST



DC464 NMIT ARTS - MEDIA BUILDINGS



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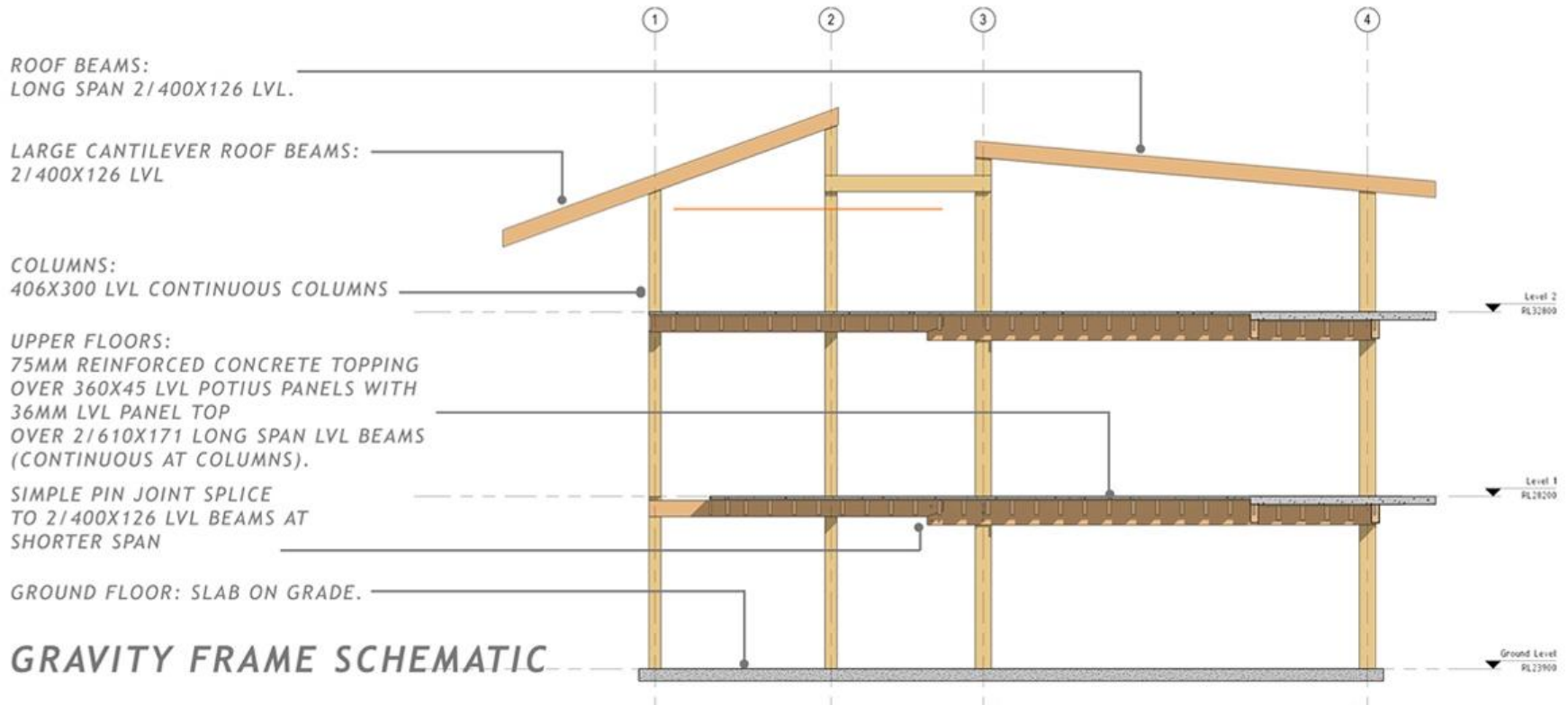
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Structural Concept

Structural Concept

Gravity Frames

- LVL pre-fabricated components
- 6.0m frame spacing
- 9.6m main beam span
- LVL columns
- LVL composite floor beams
- LVL roof rafters

Structural Concept







Structural Concept

POTIUS PANEL STRESSED SKIN FLOOR

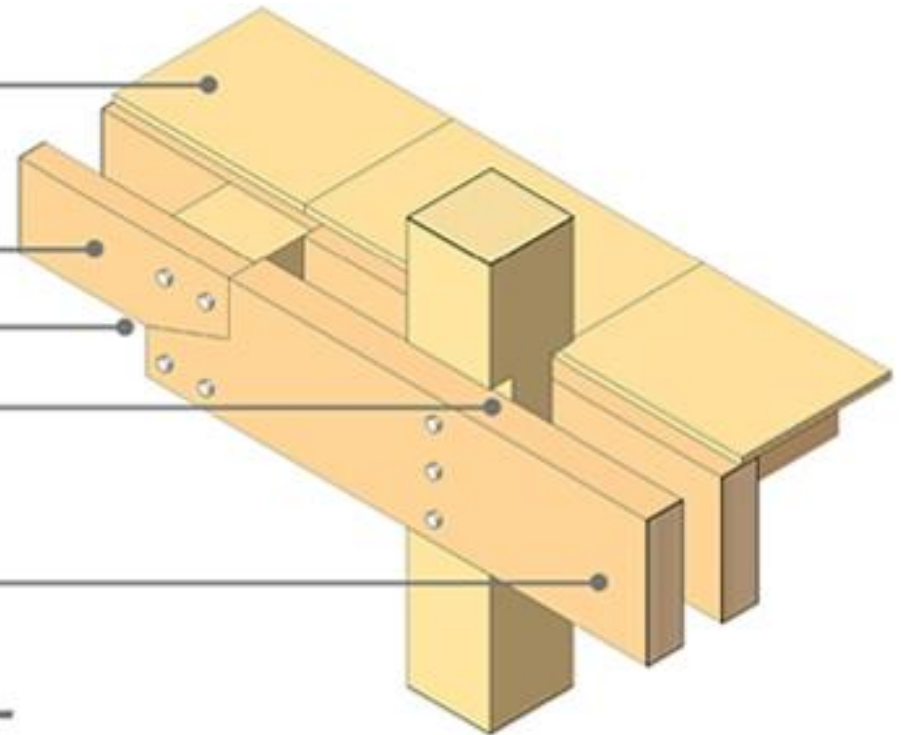
SHORT SPAN DOUBLE LVL BEAM

SIMPLE PIN CONNECTION

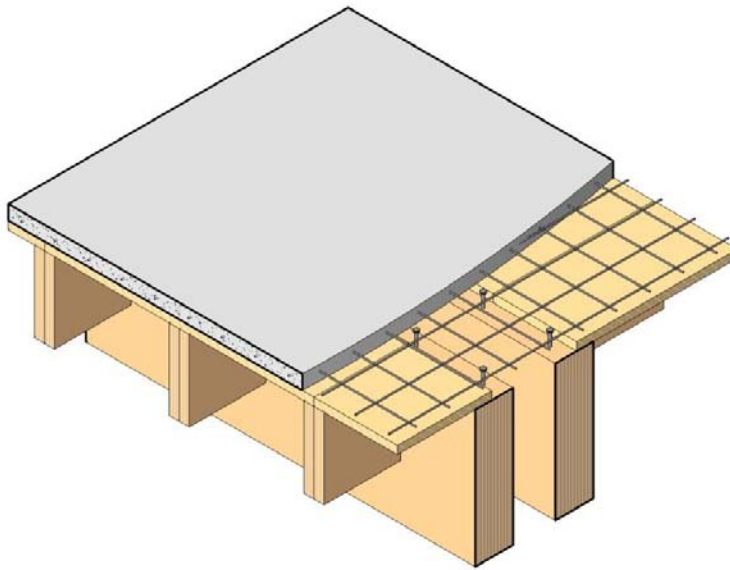
LVL COLUMN NOTCHED FOR BEAM SUPPORT

LONG SPAN DOUBLE LVL BEAM
COMPOSITE ACTION WITH
FLOOR TOPPING

BEAM COLUMN JOINT



Structural Concept



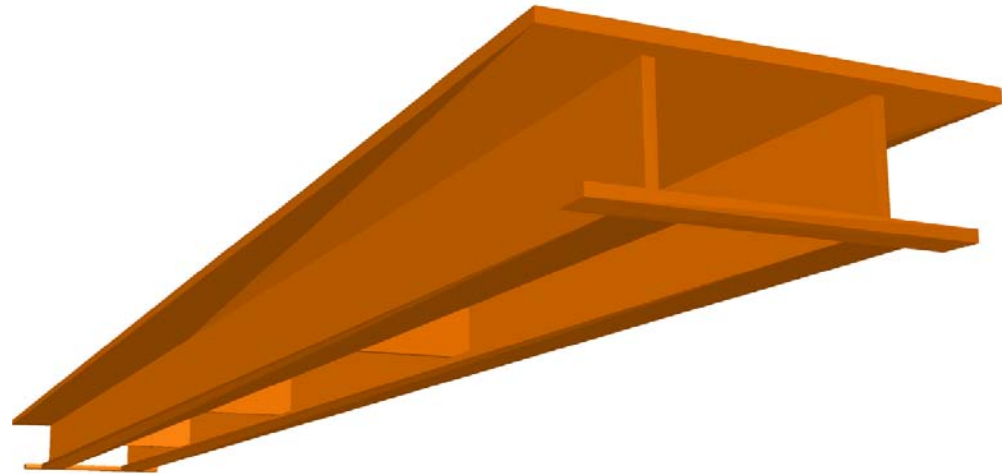
- 75 Concrete Topping
- Coachscrew Connection
- Composite Action limits Deflection

Timber / Concrete Composite Floor Beam

Structural Concept

Stressed Skin Floor Panels

- 6.0m floor span
- 36mm LVL top sheet + 300x90 joist
- Effectively forms a timber double tee
- Lightweight, quick installation
- Local Nelson fabricator





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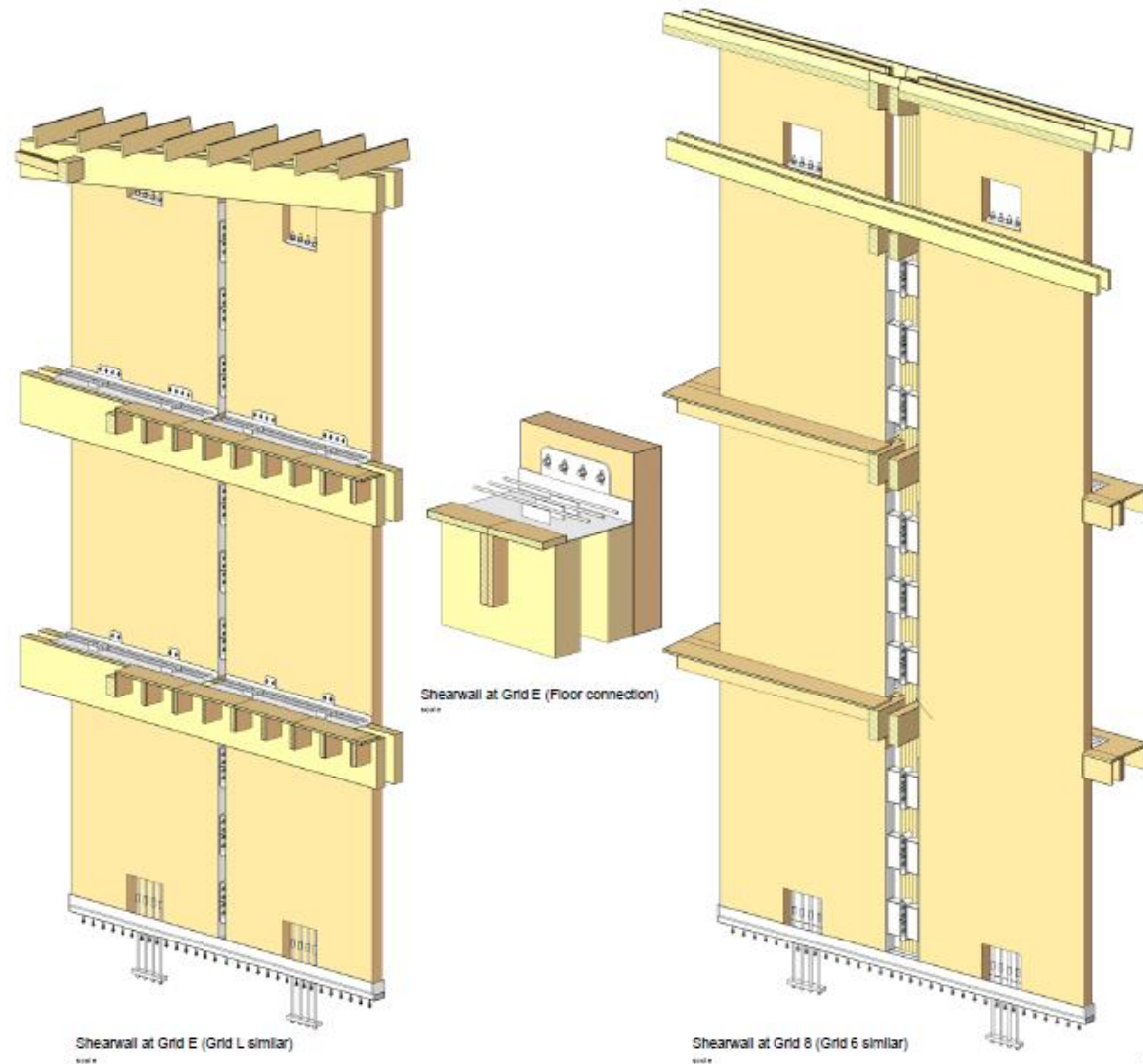
Structural Concept

LVL Post Tensioned Shear Walls

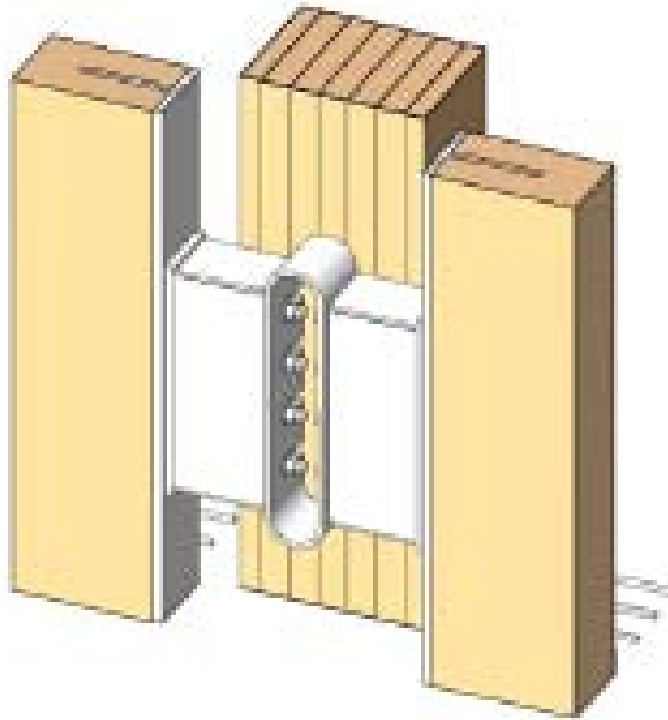
- Seismic and Wind Design
- 2 – 3.0m long x 189mm thick LVL Panels
- Tensioned bars or cables to provide pre stress
- U Shaped flexural plate dissipaters (UFP)

Structural Concept

“Rocking” Timber Walls

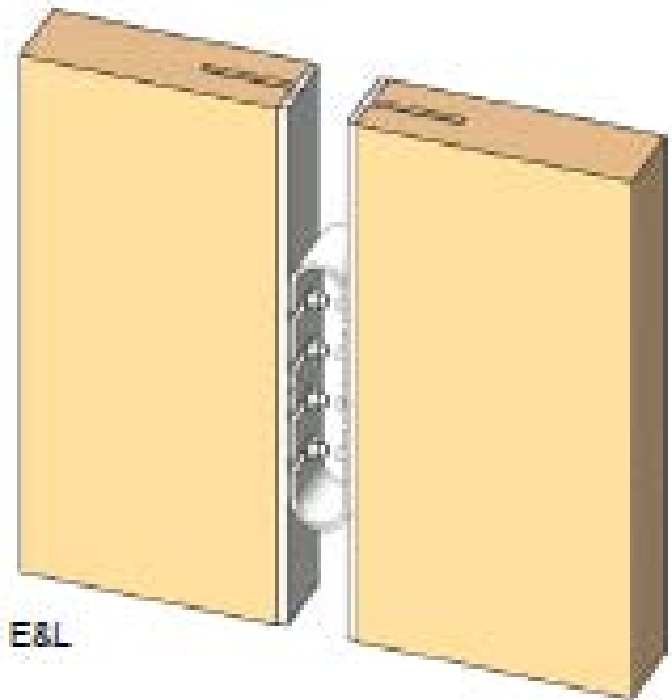


Structural Concept



EDD - GRIDS 6&8

1/4" scale



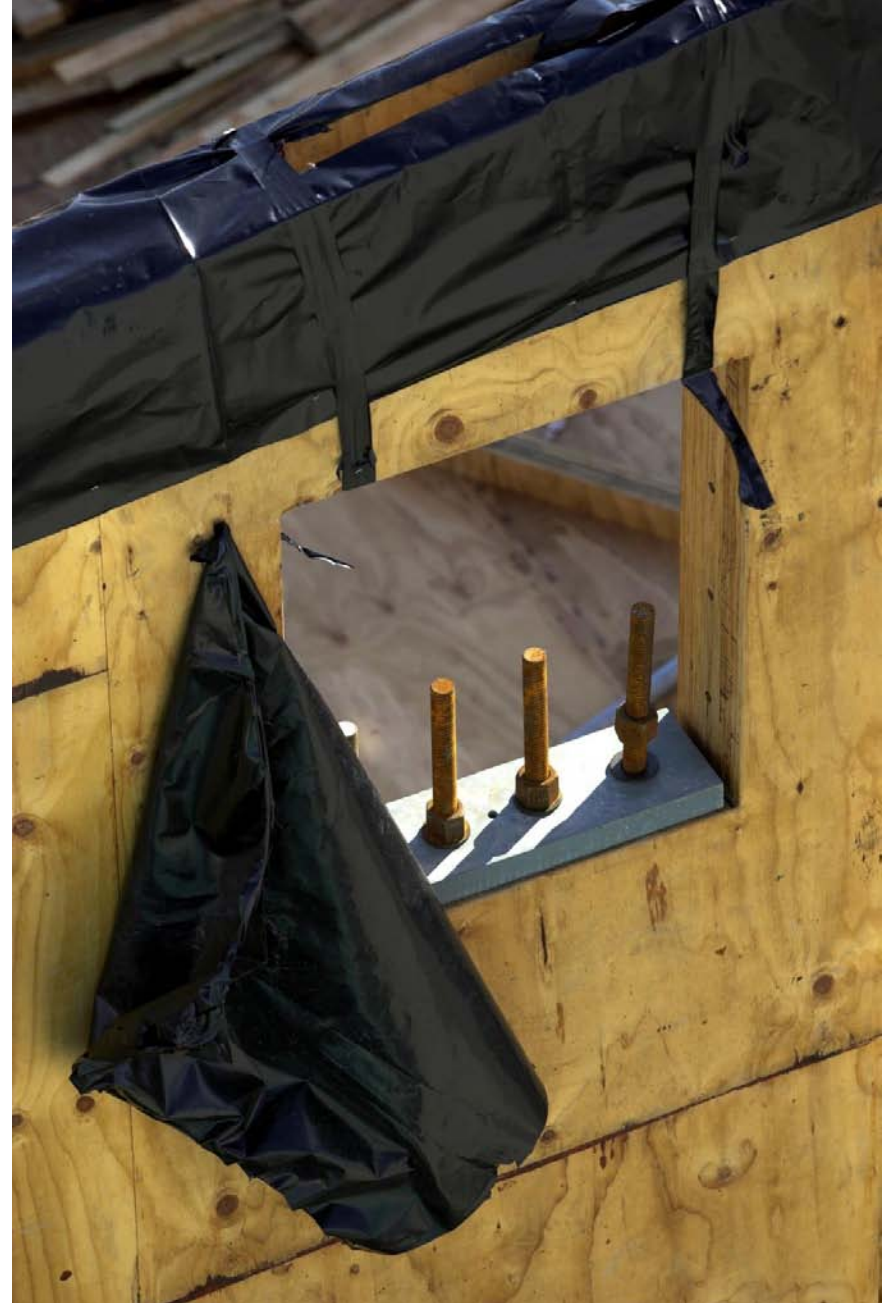
EDD - GRIDS E&L

1/4" scale

Seismic Energy Dissipaters



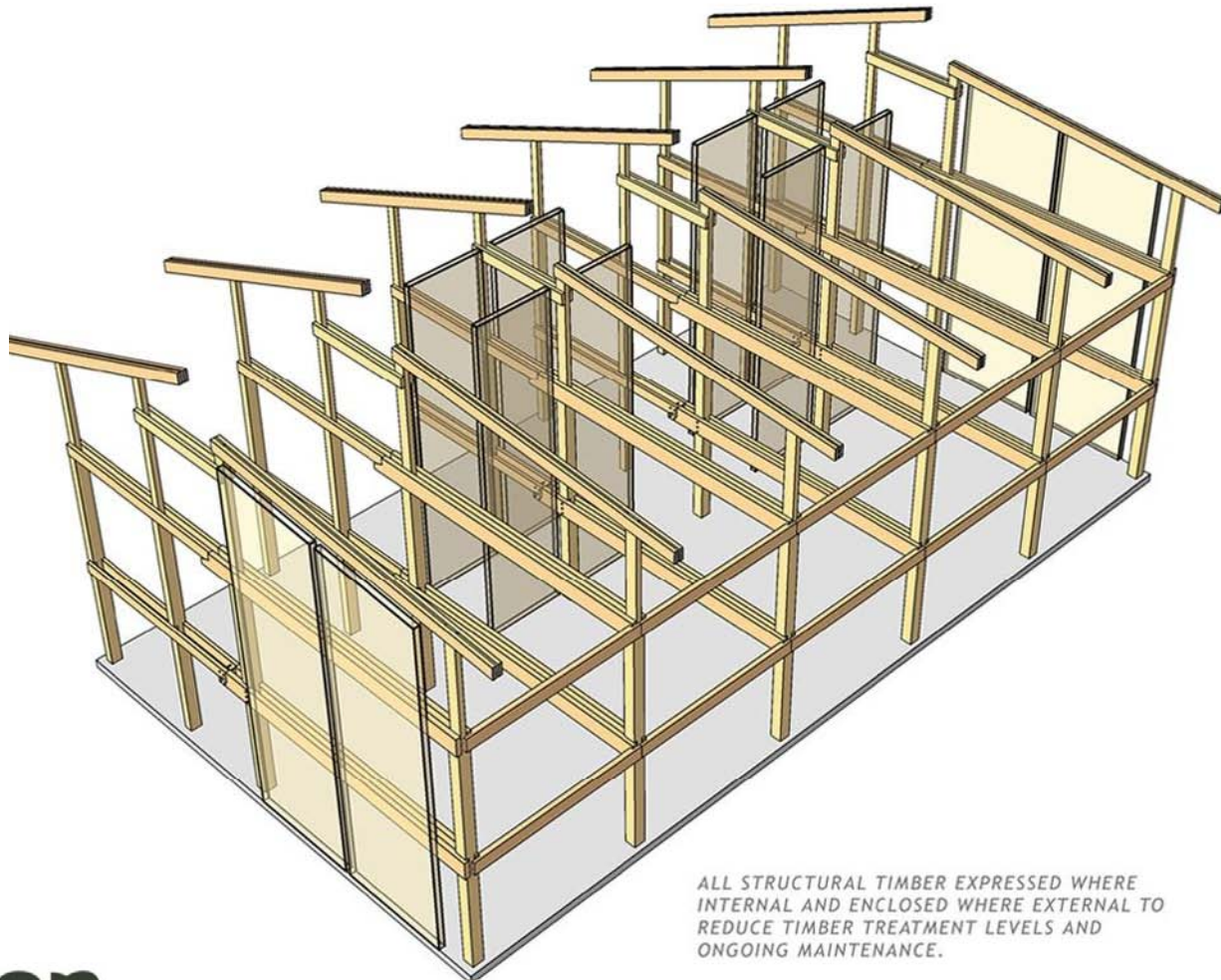
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Construction Methodology



ALL STRUCTURAL TIMBER EXPRESSED WHERE
INTERNAL AND ENCLOSED WHERE EXTERNAL TO
REDUCE TIMBER TREATMENT LEVELS AND
ONGOING MAINTENANCE.



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Design Development

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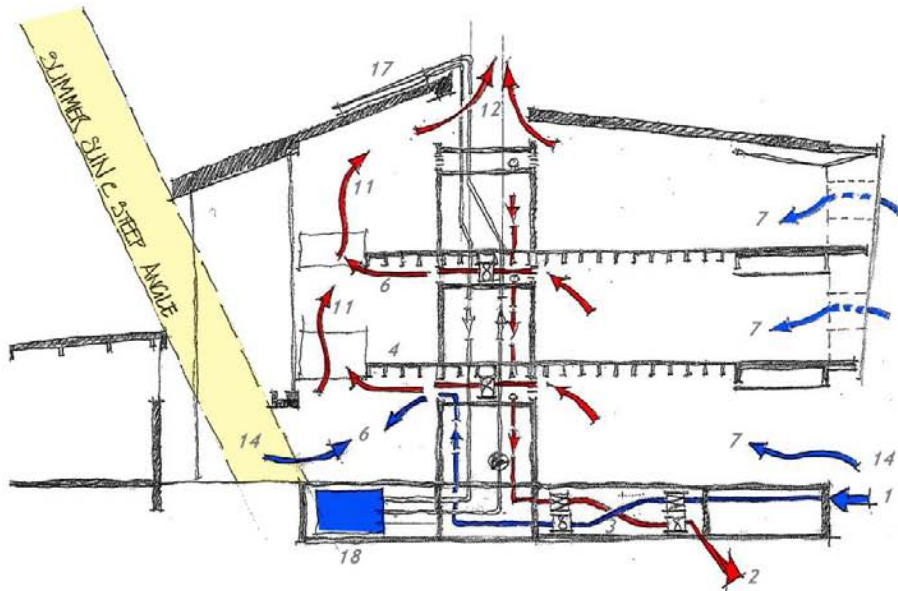
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Timber Design Challenges

- Fire Rating
- Durability/Treatment
- Sustainability
- Levels of Finish
- Connections
- Craneage

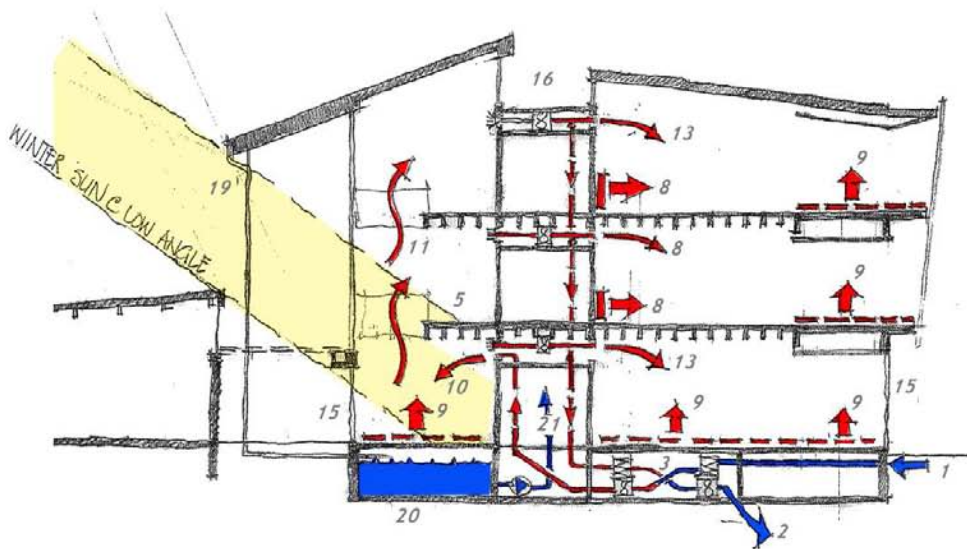


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ESD SERVICES : SUMMER

- 1 FRESH SUPPLY AIR
- 2 EXHAUST AIR VIA HEAT EXCHANGER
- 3 HEAT EXCHANGER TO VENTILATION SYSTEM
- 4 SHADED GALLERY AS THERMAL CHIMNEY
- 5 NORTH FACING GALLERY AS HEAT SOURCE
- 6 COOL FRESH AIR TO GALLERY SPACE
- 7 COOL FRESH AIR THROUGH SOUTHERN EASEL SIDES
- 8 RADIATOR AS HEAT SOURCE
- 9 LPHW SLAB HEATING AS HEAT SOURCE
- 10 WARM FRESH AIR TO GALLERY SPACE
- 11 AIR MOVEMENT THROUGH GALLERY SPACE
- 12 EXHAUST AIR EXITS THROUGH HIGH WINDOWS
- 13 WARM AIR TRANSFERRED TO MULTI-USE SPACE
- 14 DOORS OPEN IN SUMMER CONDITIONS
- 15 DOORS CLOSED SURING WINTER
- 16 HIGH LEVELS WINDOWS CLOSED
- 17 OPTIONAL SOLAR WATER HEATING
- 18 1000L HOT WATER CYLINDER IN BASEMENT
- 19 SYPHONIC RAIN WATER SYSTEM
- 20 RAIN WATER STORE TO BASEMENT
- 21 PRESSURISED FLUSHING SYSTEM



ESD SERVICES : WINTER



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Fabrication

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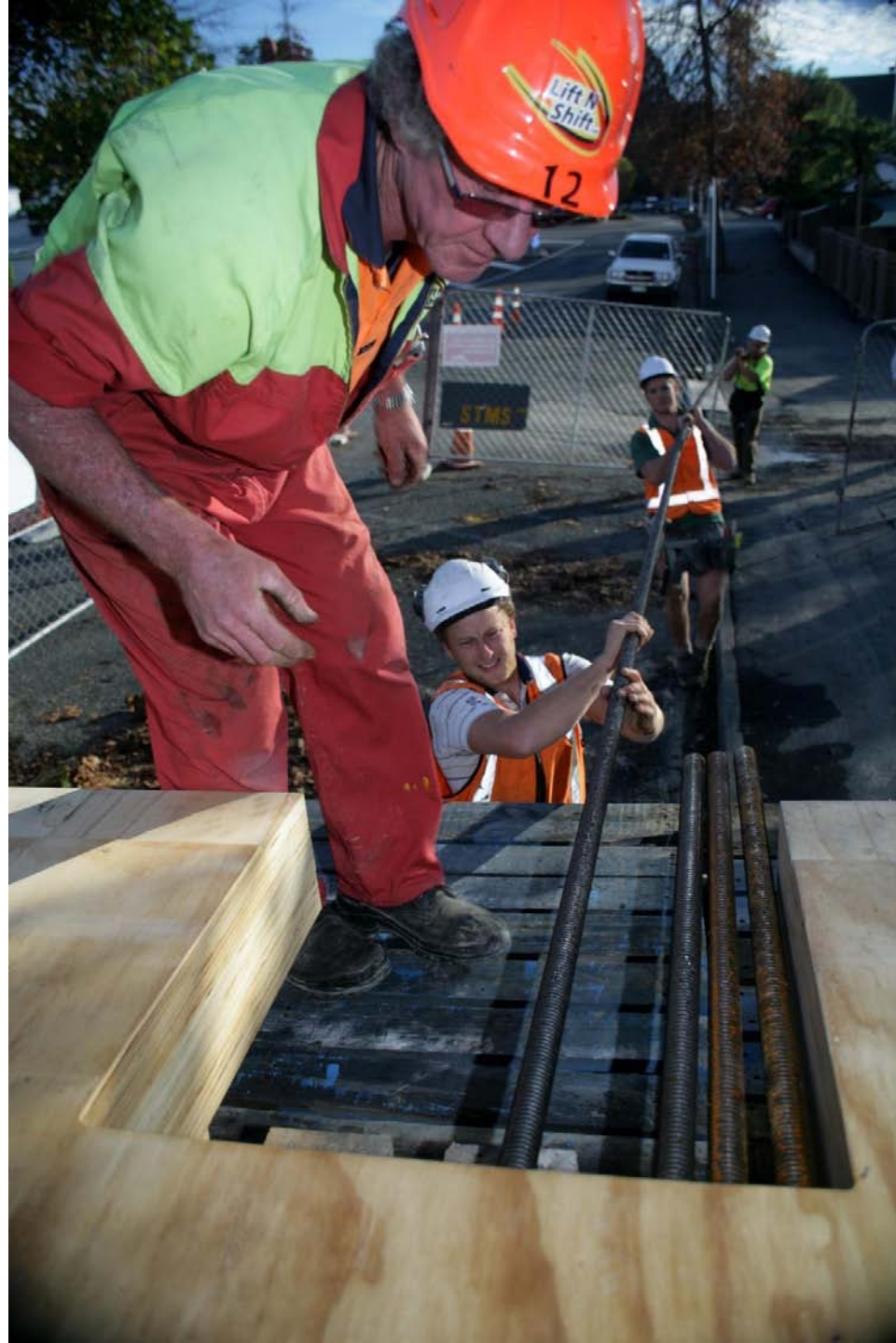
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Putting it Together

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Where we are today

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