# GENERAL NOTES

THE GENERAL NOTES SHALL BE READ IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS AND DRAWINGS. REGARDLESS OF WHETHER OR NOT SHOWN IN DRAWINGS OR OTHER TENDER DOCUMENTS, THE STANDARD PROVISIONS SPECIFIED HEREUNDER FOR COMPLIANCE BY THE CONTRACTOR SHALL APPLY TO ALL RELEVANT PORTIONS OF THE STRUCTURAL WORKS AND SHALL FORM PART OF THIS CONTRACT.

## 1.0 VERIFICATION OF DIMENSIONS AND LEVELS

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LEVELS ON SITE, AND RESOLVE ALL DISCREPANCIES WITH THE ARCHITECT OR ENGINEER PRIOR TO COMMENCEMENT OF WORK.
DRAWING INDICATES GENERAL & TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE OF SIMILAR CHARACTER TO DETAILS SHOWN AND ALTHOUGH NOT SPECIFICALLY INDICATED, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED SUBJECTED TO REVIEW BY THE ENGINEER.
PRIOR TO COMMENCEMENT OF WORKS, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LEVELS IN THE CONTRACT DRAWINGS.
DISCREPANCIES IN DRAWINGS ARISING FROM SUCH VERIFICATION WORKS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER.

## 2.0 SHOP DRAWINGS

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ENSURING TOTAL COORDINATION OF ALL WORKS AND SHALL TAKE SITE MEASUREMENTS PRIOR TO THE PREPARATION OF ANY SHOP DRAWINGS OR BEFORE COMMENCING FABRICATION.
THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL SPECIALIST TRADES, SUCH AS PRESTRESSING, CURTAIN WALLING, ETC. FOR REVIEWS AND COMMENTS BY THE ARCHITECT/ENGINEER PRIOR TO COMMENCEMENT OF WORK. SUCH SHOP DRAWINGS SUBMITTED SHALL INCORPORATE ALL NECESSARY CONNECTION DETAILS TO THE STRUCTURAL MEMBERS SUCH AS CAST-IN INSERTS, EMBEDDED PLATES, ETC.

## 3.0 INCORPORATION OF M & E REQUIREMENTS IN THE STRUCTURE

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ENSURING TOTAL COORDINATION OF STRUCTURAL, M & E PENETRATION DRAWINGS OF SERVICES AND SUBMIT SUCH SHOP DRAWINGS TO THE ARCHITECT/ENGINEER FOR REVIEWS AND APPROVAL PRIOR TO COMMENCEMENT OF WORK.
THESE SHOP DRAWINGS SHALL INCORPORATE ALL MECHANICAL, ELECTRICAL AND SANITARY WORKS TO BE EMBEDDED IN CONCRETE AND ALL OPENINGS FOR ALL PIPE OR DUCT WORKS, BASED ON THE REQUIREMENTS OF M & E DRAWINGS IN HIS POSSESSION.
HE SHALL CHECK AND RESOLVE ALL DISCREPANCIES WITH THE RESPECTIVE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.

## 4.0 LEAN CONCRETE FOR SUSPENDED STRUCTURES

UNLESS OTHERWISE STATED, 50mm THICK LEAN CONCRETE WITH A MINIMUM CONCRETE GRADE OF C12/15 SHALL BE PROVIDED ON ALL SOIL SURFACES FORMING THE UNDERSIDE OF STRUCTURAL CONCRETE MEMBERS.

## 5.0 STRUCTURAL ELEMENTS ON GRADE

UNLESS OTHERWISE STATED, A SINGLE LAYER OF 0.25mm (HEAVY DUTY) POLYTHENE SHEET, OR EQUIVALENT THERMOPLASTIC MATERIAL, LAID OVER A COMPACTED 100mm THICK LAYER OF HARD CORE BLINDED WITH SAND TO PREVENT GROUT LOSS FROM SEEPAGE INTO THE GROUND SHALL BE PROVIDED ON ALL SOIL SURFACES FORMING THE UNDERSIDE OF THE NON-SUSPENDED SLABS.

## 6.0 SUBGRADE UNDER STRUCTURAL ELEMENTS

WHERE THE CONTRACTOR REQUIRES REMOVAL AND SUBSEQUENT BACKFILL OF SUBGRADE PRIOR TO CASTING OF PILECAP/WALL/BEAM/SLAB, HE SHALL ENSURE THAT THE BACKFILL IS OF APPROVED MATERIAL AND THAT THE BACKFILL SHALL BE REASONABLY COMPACTED TO ENSURE THAT THE COMPACTED SOIL IS ABLE TO WITHSTAND THE WEIGHT OF THE WET CONCRETE. THE CONTRACTOR SHALL EXERCISE PROPER SKILL AND CARE TO AVOID DAMAGE TO ADJACENT INSTALLED STRUCTURES ARISING FROM HIS CONSTRUCTION SEQUENCE.

## 7.0 WATERPROOFING FOR STRUCTURES

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND METHOD STATEMENTS FOR THE ENGINEER'S APPROVAL PRIOR TO COMMENCEMENT OF WORK. REQUIRED SHOP DRAWING DETAILS INCLUDE BUT ARE NOT LIMITED TO TREATMENT OF FLASHINGS, WATERSTOP AT CONSTRUCTION JOINTS, WALL AND SLAB PENETRATIONS.

ALL PENETRATIONS THROUGH STRUCTURAL ELEMENTS SHALL BE CAST-IN, SLEEVED AND PROVIDED WITH APPROVED PUDDLE FLANGE DETAIL.
IF FOR ANY REASON THE CONTRACTOR IS UNABLE TO LAY WATERSTOP AT CONSTRUCTION JOINTS AS INDICATED IN THE DRAWINGS, HE SHALL AT HIS OWN EXPENSES PROVIDE ADEQUATE GROUT TUBES FOR WATERPROOF PRESSURE GROUTING TO ENSURE WATERTIGHTNESS OF THE JOINT.
ALL GROUT TUBES SHALL BE MARKED AND PROTECTED FROM BLOCKAGE.
BACKFILLING OPERATIONS AGAINST VERTICAL SURFACE SHALL BE CARRIED OUT AS SOON AS THE WATERPROOFING BARRIER IS INSTALLED TO THE SATISFACTION OF THE ENGINEER.

## 8.0 BACKFILL AGAINST BASEMENT WALL

BACKFILL AGAINST BASEMENT WALL AND UNDERGROUND TANK WALL SHALL COMMENCE ONLY AFTER THE SLAB AT TOP OF THE WALL HAS BEEN CAST AT LEAST 3 DAYS UNLESS OTHERWISE APPROVED BY ENGINEER.

## 9.0 CASTING LAYERS

INCLINED CASTING LAYERS AND INCLINED CONSTRUCTION JOINTS SHALL BE AVOIDED.
HORIZONTAL CASTING LAYERS SHALL NOT IN GENERAL EXCEED 0.6m THICKNESS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

## 10.0 CONSTRUCTION JOINTS

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR CONCRETE CASTING PLAN SHOWING THE LOCATIONS OF CONSTRUCTION JOINTS, EITHER IN PLAN FOR HORIZONTAL FLOOR SYSTEM OR IN ELEVATION FOR VERTICAL ELEMENTS, TO THE ENGINEER FOR HIS APPROVAL BEFORE THE COMMENCEMENT OF WORK.THE CASTING SEQUENCE SHALL BE THAT NO LENGTH OR WIDTH OF AN AREA TO BE CONCRETED EXCEEDS 15.0m.
WHERE THE CONTRACTOR INTRODUCES HORIZONTAL CONSTRUCTION JOINTS WITHIN THE DESIGN DEPTH OF PILECAP, HE SHALL PROVIDE AT HIS OWN EXPENSE SUFFICIENT SHEAR LINKS TO TRANSMIT THE DESIGN HORIZONTAL SHEAR FORCE ACROSS THE JOINT INTERFACE OF THE PILECAP.

## 11.0 CONSTRUCTION LOAD AND SHORING

CONSTRUCTION LIVE LOAD IMPOSED ON ANY SINGLE FLOOR SHALL NOT EXCEED 1.5 $KN/m^2$. UNLESS OTHERWISE APPROVED BY THE ENGINEER, DEAD LOAD OF THE TOP CONSTRUCTION FLOOR SHALL BE SUPPORTED BY TWO COMPLETED FLOORS DIRECTLY BELOW IT.

PROPS TO BEAMS AND SLABS AT ANY FLOORS SHALL NOT BE REMOVED UNTIL THE TWO IMMEDIATE FLOORS ABOVE THAT LEVEL ARE CAPABLE OF SUPPORTING THEMSELVES AS WELL AS ANY LOADS IMPOSED DURING CONSTRUCTION. CONSIDERATIONS GOVERNING REMOVAL OF PROPS INCLUDE BUT ARE NOT LIMITED TO THE ATTAINMENT OF 28-DAY STRENGTH FOR THE CONCRETE, DESIGN LOAD CAPACITY OF THE FLOOR UNDER REVIEW AND THE COMPLETION OF PRESTRESSING AND GROUTING OPERATIONS IN THE CASE OF A PRESTRESSED STRUCTURAL FLOOR SYSTEM.
PROPS SHALL BE LEFT IN PLACE FOR SUPPORTING THE CONSTRUCTION LOADS APPROVED BY THE ENGINEER.

NO ALLOWANCE HAS BEEN MADE IN THE DESIGN OF THE PERIMETER BEAMS/WALLS FOR THE SUPPORT OF TEMPORARY SCAFFOLDINGS.
THE CONTRACTOR SHALL ENGAGE HIS OWN PROFESSIONAL ENGINEER TO DESIGN AND STRENGTHEN THE BEAMS/WALLS.

## 12.0 COLUMN LOAD TRANSFER SYSTEMS

IN GENERAL, PROPS FOR TRANSFER BEAMS SHALL BE EXTENDED DOWN TO THE FLOOR LEVEL ABOVE FOUNDATION.
IF THIS IS NOT PRACTICALLY POSSIBLE, PROPS FOR TRANSFER BEAMS SHALL BE SUPPORTED BY THE COMPLETED FLOORS DIRECTLY BELOW IT.
PROPS SHALL BE LEFT UNTIL JUST PRIOR TO THE COMMENCEMENT OF ARCHITECTURAL FINISHING WORKS AT THE UPPER FLOORS AREAS SUPPORTED BY THE TRANSFER BEAM.

PRIOR TO THE REMOVAL OF PROPS, THE CONTRACTOR SHALL SET UP APPROVED SETTLEMENT POINTS ON COLUMNS SUPPORTED BY TRANSFER BEAMS TO MONITOR DEFLECTION BEHAVIOR OF THE TRANSFER SYSTEMS IMMEDIATELY FOLLOWING PROP REMOVAL.
ARCHITECTURAL FINISHING VARIES SUCH AS BRICKWALL PARTITIONS, PLASTERING AND FLOOR RENDERING AT UPPER FLOOR AREAS SUPPORTED BY THE TRANSFER SYSTEM SHALL COMMENCE ONLY WHEN NO FURTHER IMMEDIATE DEFLECTION OF THE TRANSFER SYSTEM UNDER ITS IMPOSED LOADS IS OBSERVED.

## 13.0 RC STIFFENERS, TIES AND LINTELS TO BRICKWALLS

VERTICAL RC STIFFENERS SHALL BE PROVIDED ON ALL FLOORS EITHER AT NOT MORE THAN 5m CENTRES OR AT THE END OF BRICKWALLS WHICH DO NOT TERMINATE AT A PERPENDICULAR CROSS WALL. TYPICAL STIFFENER STARTER BARS SHALL BE PROVIDED FROM RC STIFFENERS, WALLS OR COLUMNS AT EVERY ALTERNATE COURSE OF BRICKWALL FOR THE ENTIRE PROJECT.
HORIZONTAL RC LINTELS SHALL BE PROVIDED ON ALL FLOORS ABOVE INDIVIDUAL DOOR AND WINDOW OPENINGS. IN ADDITION, HORIZONTAL RC TIES FRAMING INTO RC STIFFENERS, WALLS OR COLUMNS SHALL BE PROVIDED AS SHOWN IN THE DRAWINGS FOR BRICKWALL EXCEEDING 3.0m IN HEIGHT.
SUBSTITUTION OF ALTERNATIVE USING STEEL LINTELS/STIFFENERS SHALL BE COATED WITH APPROVED PRIMER AND PAINT IN ACCORDANCE WITH THE SPECIFICATION. THE COATING SHALL APPLY ONLY TO EXPOSED STEEL MEMBERS.

## 14.0 STARTER BARS FOR WALLS AND COLUMNS

STARTER BARS FROM THE STRUCTURAL FLOOR SYSTEM FOR RC WALLS, AND COLUMNS SHALL CORRESPOND IN NUMBER AND SIZE TO THE REINFORCEMENT IN THE WALL OR COLUMN IN WHICH THEY ARE TO BE EMBEDDED. ALL STARTERS BARS FOR WORK NOT CARRIED OUT WITHIN ONE MONTH AFTER PLACEMENT SHALL BE PROTECTED WITH 2 COATS OF NEAT CEMENT WASH. THE COATING SHALL BE MAINTAINED PERIODICALLY TO ENSURE PROTECTION TO THE REINFORCEMENT.
HIGH TENSILE BARS SHALL NOT BE BENT OR OTHERWISE DAMAGED WHILE THEY ARE SO EXPOSED.
PRIOR TO CONCRETING WORKS, THE CEMENT WASH COATINGS OR OTHER EXISTING COATINGS SHALL BE REMOVED TO THE SATISFACTION TO THE ENGINEER.

## 15.0 CODES OF PRACTICE

WHERE APPLICABLE, ALL STANDARDS FOR DESIGNS, MATERIALS & WORKMANSHIP SHALL CONFIRM TO THE FOLLOWING CODE OF PRACTICE:

| | |
|---|---|
| DESIGN: | |
| SS EN 1990: 2008 | BASIS OF STRUCTURAL DESIGN |
| SS EN 1991-1-1: 2008 | GENERAL ACTIONS – DENSITIES, SELF-WEIGHT, IMPOSED LOADS FOR BUILDINGS |
| SS EN 1991-1-4: 2008 | GENERAL ACTIONS – WIND ACTIONS |
| SS EN 1992-1-1: 2008<br>SS EN 1992-3: 2010 | DESIGN OF CONCRETE STRUCTURES<br>LIQUID RETAINING AND CONTAINMENT STRUCTURES |
| SS EN 1993-1-1: 2010 | DESIGN OF STEEL STRUCTURES |
| SS EN 1997-1: 2010<br>SS EN 1997-2: 2010 | GEOTECHNICAL DESIGN – GENERAL RULES<br>GENERAL DESIGN – GROUND INVESTIGATION AND TESTING |
| MATERIAL: | |
| SS EN 197: 2008 | CEMENT |
| SS EN 12620: 2008<br>EN 933-1<br>SS 73 | SPECIFICATION FOR AGGREGATES FOR CONCRETE<br>TEST FOR GEOMETRICAL PROPERTIES OF AGGREGATES<br>METHODS OF SAMPLING AND TESTING OF MINERAL AGGREGATES, SAND AND FILLERS |
| SS EN 934: 2008 | ADMIXTURES FOR CONCRETE, MOTAR AND GROUT |
| SS EN 206-1: 2009<br>EN 12350<br>EN 12390 | CONCRETE<br>TESTING OF FRESH CONCRETE<br>TESTING OF HARDENED CONCRETE |
| BS 4449: 2005<br>BS 4483: 2005<br>BS 8666: 2006 | STEEL FOR REINFORCEMENT OF CONCRETE (A2:2009)<br>STEEL FABRIC FOR THE REINFORCEMENT OF CONCRETE<br>SCHEDULING, DIMENSIONING, BENDING AND CUTTING OF STEEL REINFORCEMENT |
| EN ISO 17660-1: 2006 | WELDING OF REINFORCING STEEL |
| EN 13670 | EXECUTION OF CONCRETE STRUCTURES |
| BS 4-1<br>BS EN 10034<br>BS EN 10056<br>BS EN 10279<br>BS EN 499 | STRUCTURAL STEEL SECTIONS<br>STRUCTURAL STEEL I AND H SECTIONS<br>STRUCTURAL STEEL EQUAL AND UNEQUAL LEG ANGLES<br>HOT ROLLED STEEL CHANNELS<br>WELDING CONSUMABLES |
| EN 1090 | EXECUTION OF STEEL STRUCTURES |
| BS EN 10080 | STEEL FOR REINFORCEMENT OF CONCRETE, WELDABLE REINFORCING STEEL |
| NATIONAL ANNEX | ALL APPLICABLE SINGAPORE NATIONAL ANNEXES |
| BC1 : 2012 | DESIGN GUIDE ON USE OF ALTERNATIVE STRUCTURAL |
| BCA REGULATIONS<br>LTA RAIL – CPRP | BUILDING CONTROL ACT AND REGULATIONS<br>CODE OF PRACTICE FOR RAILWAY PROTECTION |

## 16.0 MATERIAL STRENGTHS

A) HIGH TENSILE STEEL BARS (H) WITH A MINIMUM GUARANTEED YIELD STRENGTH OF 500 MPa (GRADE B500A, B500B OR B500C) SHALL CONFORM TO BS 4449: 2005. NOTATIONS H AND B ARE AT THE SUPPLIERS DISCRETION.

BAR DIAMETER SHALL BE OF GRADE B500B FOR ALL

B) MIN. CONCRETE GRADES TO BE USED ARE LISTED BELOW:
LEGEND: C32/40 = CONCRETE 28-DAY CYLINDER STRENGTH / CUBE STRENGTH IN $N/mm^2$.

| ELEMENT | MIN. CONCRETE GRADE ($N/mm^2$) |
|---|---|
| RC SQUARE PILE | REFER TO RESPECTIVE BLOCKS |
| FOOTING, TIE-BEAM, CAPPING BEAM, PILECAP | |
| LEAN CONCRETE | |
| MASS CONCRETE TOPPING | |
| CAST IN-SITU BEAM / SLAB / COLUMN / WALL | |
| RETAINING WALL | |
| ALL OTHERS (CULVERT, DRAINS, MANHOLE ETC.) | C28/35 |

C) ALL MECHANICAL COUPLERS PROPOSED FOR JOINTS IN REINFORCING BARS SHALL COMPLY WITH RELEVANT EURO CODE AND SHALL NOT HAVE TENSILE FAILURE OCCURRING AT THE JOINTS. THE SUPPLIER SHALL BE ACCREDITED AND ABLE TO DEMONSTRATE QUALITY AND PROCEDURES TO THE RELEVANT EURO CODE.

## 17.0 CONCRETE COVER

WHERE NOMINAL CONCRETE COVER EXCEED 40mm (THAT IS 45mm AND ABOVE), EXCEPT FOR BORED PILE AND AT BOTTOM OF PILE CAP, PROVIDE ONE LAYER WSFR A6 WITHIN THE COVER AT 20mm FROM CONCRETE FACE (PROVISIONAL). REFERENCE TO BAR DIAMETER UNDER THIS CLAUSE SHALL MEAN EITHER ACTUAL BAR DIAMETER FOR SINGLE BARS OR EQUIVALENT BAR DIAMETER FOR GROUPS OF BARS.

NOTE: UNLESS OTHERWISE STATED, CONCRETE NOMINAL COVER BELOW IS BASED ON:
A) STRUCTURAL CLASS S4 (DESIGN WORKING LIFE OF 50 YRS).
B) EXPOSURE CLASS RELATED TO ENVIRONMENTAL CONDITIONS IN ACCORDANCE WITH CORROSION INDUCED BY CARBONATION.
(FOR OTHER EXPOSURE CLASS, REFER TO EC2 TABLE 4.4N)
C) NOMINAL MAX. AGGREGATE SIZE IS 20mm.
D) MIN. NOMINAL COVER BELOW REFERS TO CLEAR COVER TO NEAREST LINK (ASSUMED 10MM) WHENEVER APPLICABLE.

| ELEMENT | MIN. NOMINAL COVER (mm) | REMARK | FIRE |
|---|---|---|---|
| RC SQUARE PILE | 75 | – | – |
| FOOTING, PILECAP | 40 | WITH LEAN CONCRETE | – |
| | 75 | CAST DIRECTLY AGAINST SOIL | – |
| PILECAP TIE-BEAM, CAPPING BEAM | 40 | – | – |
| | 40 | WITH LEAN CONCRETE | – |
| | 75 | CAST DIRECTLY AGAINST SOIL | – |
| SUBSTRUCTURE : CAST IN-SITU WALL / COLUMN | 45 | – | 4 HRS |
| SUPERSTRUCTURE : CAST IN-SITU WALL / COLUMN | 30 | – | 2 HRS |
| CAST IN-SITU BEAM (CONTINUOUS / SIMPLY SUPPORTED) | 50 | BEAM WIDTH 200 ABOVE | 2 HRS |
| | 40 | BEAM WIDTH 300 ABOVE | 2 HRS |
| | 35 | BEAM WIDTH 500 ABOVE | 2 HRS |
| CAST IN-SITU SLAB | 30 | ONE-WAY SLAB | 2 HRS |
| | 35 | TWO-WAY SLAB | 2 HRS |

## 18. REINFORCEMENT BAR ANCHORAGE AND LAP LENGTH

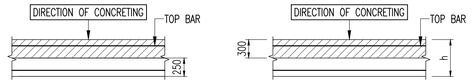
A) MINIMUM ANCHORAGE AND LAP LENGTH FOR STRAIGHT AND BENT BARS SHALL COMPLY WITH THE TABLE BELOW:
FOR 50% STAGGERED BARS

| ANCHORAGE / LAP LENGTH (IN NO. OF BAR DIAMETER, ø) FOR ø ≤ 32mm | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | BOND CONDITION | CONCRETE GRADE (CYLINDER / CUBE STRENGTH) | | | | | | |
| | | C25/30 | C28/35 | C32/40 | C35/45 | C40/50 | C45/55 | C50/60 |
| TENSION & COMPRESSION ANCHORAGE, $l_{bd}$ | POOR (TOP BARS) | 58 | 54 | 49 | 47 | 43 | 40 | 38 |
| | GOOD (OTHER BARS) | 41 | 38 | 35 | 33 | 30 | 28 | 26 |
| TENSION & COMPRESSION LAP, $l_0$ | POOR (TOP BARS) | 81 | 75 | 69 | 65 | 60 | 55 | 51 |
| | GOOD (OTHER BARS) | 57 | 53 | 48 | 46 | 42 | 39 | 36 |

FOR NON-STAGGERED BARS

| ANCHORAGE / LAP LENGTH (IN NO. OF BAR DIAMETER, ø) FOR ø ≤ 32mm | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | BOND CONDITION | CONCRETE GRADE (CYLINDER / CUBE STRENGTH) | | | | | | |
| | | C25/30 | C28/35 | C32/40 | C35/45 | C40/50 | C45/55 | C50/60 |
| TENSION & COMPRESSION ANCHORAGE, $l_{bd}$ | POOR (TOP BARS) | 58 | 54 | 49 | 47 | 43 | 40 | 38 |
| | GOOD (OTHER BARS) | 41 | 38 | 35 | 33 | 30 | 28 | 26 |
| TENSION & COMPRESSION LAP, $l_0$ | POOR (TOP BARS) | 87 | 81 | 74 | 70 | 64 | 59 | 55 |
| | GOOD (OTHER BARS) | 61 | 57 | 52 | 49 | 45 | 41 | 39 |

B) NOTE:
1. BOND CONDITION – POOR (TOP BARS) REFERS TO:
- TOP BARS OF MEMBER SECTION WITH DEPTH h > 250mm
- TOP BARS (WITHIN 300mm FROM TOP SURFACE) OF MEMBER SECTION WITH DEPTH h > 600mm




a) h > 250mm  b) h > 600mm

a) & b) UNHATCHED ZONE – 'GOOD' BOND CONDITIONS
HATCHED ZONE – 'POOR' BOND CONDITIONS

2. FOR Ø > 32mm, LAP LENGTH SHALL BE INCREASED BY A FACTOR 100/(132-Ø).

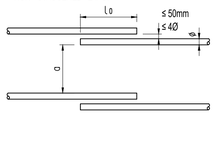
3. ALL LAPS SHOULD NORMALLY BE STAGGERED & NOT POSITIONED AT AREAS OF MAXIMUM STRESS OR HIGH MOMENTS.

4. WHERE THE BARS ARE IN SEVERAL LAYERS, THE PERCENTAGE OF LAPPED BARS SHOULD BE REDUCED TO 50%. FOR BEAMS WITH TWO OR MORE LAYERS, LAPS SHOULD BE STAGGERED BY 50%.

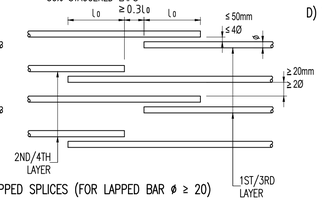
5. FOR BUNDLED BARS, THE EFFECTIVE DIAMETER SHALL BE THE DIAMETER OF A SINGLE BAR OF EQUIVALENT AREA TO THE BUNDLED BARS.

6. CLEAR DISTANCE BETWEEN LAPPED BARS SHOULD BE ≤ 4 Ø OR 50mm, OTHERWISE THE LAP LENGTH SHOULD BE INCREASED BY A LENGTH EQUAL TO THE CLEAR DISTANCE BETWEEN THE LAPPED BARS.

NON-STAGGERED LAPS:

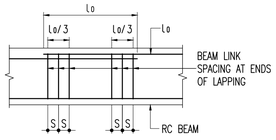



50% STAGGERED LAPS




C) TRANSVERSE REINFORCEMENT FOR LAPPED SPLICES (FOR LAPPED BAR ø ≥ 20)

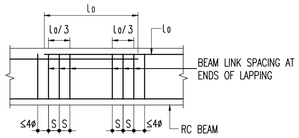
a) (i) BARS IN TENSION (BEAM)
(FOR SUPPORT HOGGING BARS & SPAN SAGGING BARS)



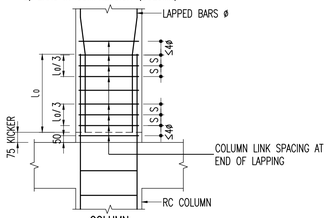

| LAPPED BAR ø | S |
|---|---|
| 20 ≤ ø ≤ 25 | 150 |
| 25 < ø ≤ 32 | 100 |

NOTE:
GENERALLY S ≤ 150 AND SHALL NOT BE LARGER THAN THE LINK SPACING SHOWN IN THE RELEVANT BEAM / COLUMN SCHEDULE.

(ii) BARS IN COMPRESSION (BEAM)

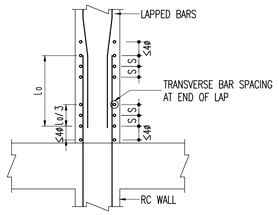



b) BARS IN COMPRESSION (COLUMN)



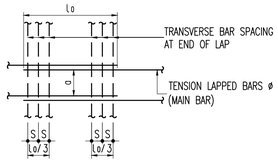

COLUMN

c) BARS IN COMPRESSION (WALL)



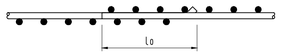

WALL

d) BARS IN TENSION (SLAB)
(FOR SUPPORT HOGGING BARS & SPAN SAGGING BARS)
IF a ≤ 10 Ø , PROVIDE TRANSVERSE BARS
NOTE: a = CLEAR DISTANCE BETWEEN ADJACENT LAPS

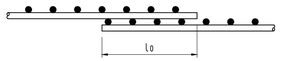



e) LAPS FOR WELDED MESH FABRICS MADE OF RIBBED WIRES

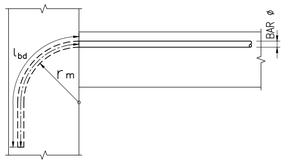
(i) LAPPING OF WELDED FABRIC
INTERMESHED FABRIC (LONGITUDINAL SECTION)




(ii) LAPPING OF WELDED FABRIC
LAYERED FABRIC (LONGITUDINAL SECTION)




D) TENSION ANCHORAGE FOR CANTILEVER END




TOP BAR ANCHORAGE FOR CANTILEVER END

FOR CONCRETE GRADE ≥ 28/35

| BAR ø | rm |
|---|---|
| 10 | 8 ø |
| 13 | 9 ø |
| 16 | 10 ø |
| 20 | 10 ø |
| 25 | 11 ø |
| 32 | 13 ø |



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| CO | 16/02/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 14/02/2023 | TWA | STO5 NOA RECEIVED |

01 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

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HCD ( Architecture )
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PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

GENERAL NOTES 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_SDGN_01-02_ALL

Drawing no.
S_WS1416_SDGN_01_ST06

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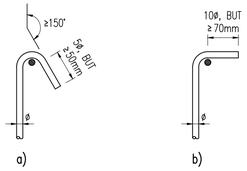
## 19.0 STIRRUPS, LINKS AND TIES

A. ALL STIRRUPS, LINKS AND TIES IN BEAMS, COLUMNS AND WALLS RESPECTIVELY SHALL TERMINATE NOT MORE THAN 75mm FROM THE FACE OF ANY ADJACENT STRUCTURAL MEMBERS.

B. ANCHORAGE OF LINKS AND SHEAR REINFORCEMENT SHALL BE AS FOLLOW:




## 20.0 SPACER BARS

ALL SPACER BARS BETWEEN 2 OR MORE LAYERS OF REINFORCEMENT SHALL H25 OR BAR DIAMETER (WHICHEVER IS GREATER) AT ±1-5m C/C.

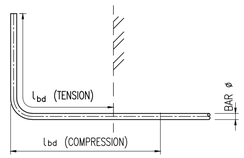
## 21.0 SLAB DISTRIBUTION BARS

REGARDLESS OF WHETHER OR NOT SHOWN ON PLAN, ALL DISTRIBUTION BARS FOR SLAB SHALL COMPRISE TYPICALLY ONE OF THE FOLLOWING COMBINATIONS, UNLESS OTHERWISE STATED IN THE RELEVANT DRAWINGS :

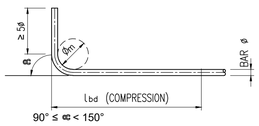
| SLAB THICKNESS (mm) | MIN. DISTRIBUTION BAR |
|---|---|
| 250 OR LESS | H10-250 |
| GREATER THAN 250 BUT LESS THAN OR EQUAL TO 300 | H10-200 |
| GREATER THAN 300 BUT LESS THAN OR EQUAL TO 400 | H10-150 |

## 22.0 ANCHORAGE OF LONGITUDINAL BAR OTHER THAN STRAIGHT BAR - BENDS, HOOKS AND LOOPS

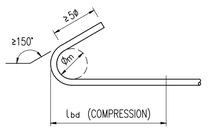
MANDREL DIAMETER, $\phi_m$ ≥ 4ø (FOR BAR ø ≤ 16mm)
≥ 7ø (FOR BAR ø > 16mm)



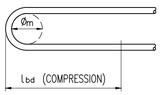

a) TENSION ANCHORAGE LENGTH, lbd
FOR ANY SHAPE MEASURED ALONG THE CENTERLINE




b) STANDARD BEND




c) STANDARD HOOK




c) STANDARD LOOP

METHODS OF ANCHORAGE OTHER THAN BY A STRAIGHT BAR

## 24.0 STRUCTURAL LEVEL FOR FOOTINGS, STRIP FOUNDATION & NON-SUSPENDED SLAB

A) FORMATION LEVEL SHALL BE TAKEN DOWN TO SOUND UNDISTURBED SOIL WITH A DESIGN BEARING CAPACITY OF MINIMUM 100KN/mm² (PLATE BEARING TEST VALUE)
UNLESS OTHERWISE APPROVED BY THE ENGINEER:-
B) OVER-EXCAVATION SHALL BE FILLED WITH MIN. G10 CONCRETE.
C) PLATE BEARING SHALL BE CONDUCTED AT FORMATION LEVEL TO VERIFY THE DESIGN BEARING CAPACITY.

## 25.0 FLOOR RENDERING

THICKNESS OF SCREED RENDERING/MASS CONCRETE TOPPING EXCEEDING 60 OR MORE SHALL BE REINFORCED WITH ONE LAYER OF WSFR A6.

## 26.0 SHRINKAGE CRACKS

THE SURFACE OF CONCRETE SHALL BE ADEQUATELY AND CONTINUOUSLY CURED TO SPECIFICATION TO PREVENT FORMATION OF SHRINKAGE CRACKS.THOUGH SHRINKAGE CRACKS HAVE NO EFFECT ON THE STRENGTH AND INTEGRITY OF THE STRUCTURE, THEY SHOULD BE SEALED BY EPOXY PRESSURE GROUTING. ALL COST INCURRED FOR THE NECESSARY SEALING UP OF SHRINKAGE CRACKS BY EPOXY PRESSURE GROUTING SHALL BE DEEMED TO BE INCLUDED IN THE CONCRETE WORK AS TENDERED.

## 27.0 SPECIALIZED TRADE

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ENSURING THE TOTAL COORDINATION OF ALL SPECIALIZED TRADE SUCH AS SKYLIGHT, CURTAIN WALL, ETC, AND SHALL TAKE SITE MEASUREMENT OR PLACE NECESSARY INSERTS PRIOR TO THE PREPARATION OF ANY SHOP DRAWING, FABRICATION OF SUBFRAME AND CASTING OF CONCRETE.

## 28.0 STEEL BAR CORROSION PROTECTION

ALL EXPOSED BARS FOR FUTURE CONSTRUCTION PURPOSES (EXCEEDING 3 MONTHS) MUST BE COATED WITH SIKA TOP ARMATEC 108 PROTECTING COAT OR APPROVED EQUIVALENT AND PROVIDED WITH ADEQUATE MAINTENANCE.

## 29.0 STRUCTURAL STEELWORK - GENERAL (REFER TO STRUCTURAL STEELWORK FOR OTHER REQUIREMENT)

A) (I) ALL STRUCTURAL STEEL MATERIALS SHALL COMPLY WITH REQUIREMENTS OF SS EN 1993 OR SS EN 1994, WHICHEVER IS APPLICABLE.
(II) ALL STEEL MATERIALS SHALL COMPLY AS CLASS 1 UNDER SINGAPORE BC1:2012 OR ITS LATEST VERSION BOLTING ASSEMBLIES SHALL COMPLY WITH BS EN 20898-2, BS EN 15048-1 AND BS EN 898-1.

B) ALL WELDING SHALL COMPLY WITH THE REQUIREMENTS OF SS EN 1993 OR SS EN 1994 AND THEIR ASSOCIATED WELDING CONSUMABLES SPECIFICATIONS.

C) NO SITE WELDING IS ALLOWED EXCEPT WHERE APPROVED.

D) ALL SURFACES OF NON-ENCASED STRUCTURAL STEEL ARE TO BE THOROUGHLY CLEANED IN ACCORDANCE WITH BS 7079. REFER TO SPECIFICATION FOR PAINTING REQUIREMENTS.

E) THE CONTRACTOR SHALL PROPOSE THE ERECTION PROCEDURES AT THEIR OWN EXPENSE INCLUDING STABILITY SYSTEM AND CALCULATIONS FOR THE ENGINEER TO REVIEW AND COMMENT BEFORE PROCEEDING WITH THE ERECTION.

F) IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ADEQUATE SHORING AND BRACING DURING CONSTRUCTION TO TAKE CARE OF WIND LOAD AND OTHER LOADS IMPOSED DURING CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT DRAWING OF THE SHORING AND BRACING FOR THE ENGINEER'S RECORDS PRIOR TO THE COMMENCEMENT OF THE COMMENCEMENT OF THE FABRICATION WORKS.

G) THE CONTRACTOR SHALL VERIFY ALL THE DIMENSIONS BY MEASURING THEM AT THE SITE AND RESOLVES ALL THE DISCREPANCIES WITH THE ARCHITECT AND THE ENGINEER BEFORE COMMENCEMENT OF WORK.

H) ALL DIMENSIONS INDICATED ARE IN MILLIMETERS UNLESS OTHERWISE STATED.

I) SHOP DRAWING AND CALCULATIONS ARE TO BE PREPARED AND SUBMITTED FOR APPROVAL PRIOR TO THE FABRICATION WORKS.

J) ALL WELDED CONNECTIONS,COMPRISING FILLET WELD OR FULL PENETRATION BUTT WELD, SHALL BE SUBJECTED TO NON DESTRUCTION TESTS TO BE CONDUCTED BY ACCREDITED LABORATORY TO PROVE THE SOUNDNESS OF WELDS AT THE DISCRETION OF THE ENGINEER
I) ALL FULL PENETRATION BUTT WELDED SPLICE JOINTS SHALL BE SUBJECTED TO TESTS OR OTHER APPROVED METHODS.
II) MINIMUM 10% OF WELDED CONNECTIONS SHALL BE SUBJECTED TO MAGNETIC PARTICLE RADIOGRAPHIC OR ULTRASONIC TESTS.
THE CONTRACTOR SHALL SUBMIT ALL ORIGINAL WELD TEST REPORTS TO THE ENGINEER FOR REVIEW PRIOR TO ERECTION OF STEEL MEMBERS.

K. FULL CAPACITY OF MEMBER SHALL BE USED FOR REDESIGNING CONNECTIONS. IN CASES WHERE ONLY MOMENTS & FORCES ARE SHOWN, DESIGN CALCULATIONS SHALL BE SUBMITTED FOR ENGINEER'S REVIEW PRIOR TO FABRICATION.

M. SPLICING SHOULD NOT BE DONE AT MAXIMUM STRESS LOCATIONS OF MEMBERS. THE CONTRACTOR SHALL INDICATE THE EXACT LOCATIONS OF SPLICING AND DETAILS OF SPLICING IN HIS SHOP DRAWINGS FOR APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF FABRICATION.

N. ALL BOLTS SHALL BE GRADE 8.8 HIGH STRENGTH BOLTS TO BS 3692 TIGHTENED TO A SNUG TIGHT FIT UNLESS OTHERWISE STATED.

P. THE CONTRACTOR SHALL TAKE NECESSARY SITE MEASUREMENTS PRIOR TO FABRICATION OF CONNECTING STEEL BRACKETS, SUB-FRAMES, ETC. FOR OTHER TRADES.

Q. UNLESS OTHERWISE INDICATED, ALL STEEL SECTIONS AND BASE/END PLATES ARE TO BE HOT-DIP GALVANISED.

R. UNLESS OTHERWISE SPECIFIED ALL STEELWORK SHALL BE PRIMED WITH ONE COAT OF EPOXY ZINC RICH PRIMER (INTERPLATE NLA112/NLA066 FROM INTERNATIONAL PAINT). AND ONE COAT OF HIGH BUILD EPOXY MICACEOUS IRON OXIDE ( EPA001/EPA 740 FROM INTERNATIONAL PAINT). AN EQUIVALENT TYPE PAINT MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER.

S. ALL WELDING TO BE 6mm FILLET WELD UNLESS OTHERWISE STATED.

T. PROVIDE 6mm THICK END PLATE FOR HOLLOW SECTION MEMBERS.

U. ALL EXPOSE STEEL MEMBERS ARE TO BE HOT-DIPPED GALVANISED UNLESS OTHERWISE STATED.

## 30.0 STRUCTURAL STEEL-YIELD STRENGTH & ULTIMATE TENSILE STRENGTH

NOMINAL VALUES OF YIELD STRENGTH fy & ULTIMATE STRENGTH fu FOR NON-ALLOY STRUCTURAL STEEL TO EN 10025-2:2004 ARE AS FOLLOWS:

NOMINAL VALUES OF YIELD STRENGTH fy & ULTIMATE STRENGTH fu FOR NON-ALLOY STRUCTURAL STEEL

| NOMINAL THICKNESS (mm) | S235 | | S275 | | S355 | | S450 | |
|---|---|---|---|---|---|---|---|---|
| | fy [MPa] | fu [MPa] | fy [MPa] | fu [MPa] | fy [MPa] | fu [MPa] | fy [MPa] | fu [MPa] |
| t ≤ 16 | 235 | 360 | 275 | 410 | 355 | 470 | 450 | 550 |
| 16 < t < 40 | 225 | 360 | 265 | 410 | 345 | 470 | 430 | 550 |
| 40 < t < 63 | 215 | 360 | 255 | 410 | 335 | 470 | 410 | 550 |
| 63 < t < 80 | 215 | 360 | 245 | 410 | 325 | 470 | 390 | 550 |
| 80 < t < 100 | 215 | 360 | 235 | 410 | 315 | 470 | 380 | 550 |
| 100 < t < 150 | 195 | 350 | 225 | 400 | 295 | 470 | 380 | 530 |
| 150 < t < 200 | 185 | 340 | 215 | 380 | 285 | 450 | – | – |
| 200 < t < 250 | 175 | 340 | 205 | 380 | 275 | 450 | – | – |

## 31.0 NON-PRELOADED BOLTS - YIELD STRENGTH & ULTIMATE TENSILE STRENGTH

NOMINAL VALUES OF YIELD STRENGTH fyb & ULTIMATE TENSILE STRENGTH fu FOR NON-PRE-LOADED BOLTS ARE AS FOLLOWS:

CHARACTERISTIC VALUES FOR YIELD STRENGTH AND ULTIMATE TENSILE STRENGTH

| BOLT CLASS | 4.6 | 8.8 | 10.9 | |
|---|---|---|---|---|
| fyb(N/mm²) | 240 | 640 | 900 | YIELD STRENGTH |
| fub(N/mm²) | 400 | 800 | 1000 | TENSILE STRENGTH |

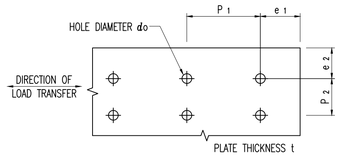
## 32.0 NON-PRELOADED BOLTS - NOMINAL HOLE CLEARANCES FOR BOLTS

NOMINAL HOLE CLEARANCES FOR NON-PRELOADED BOLTS ARE AS FOLLOWS:

| NORMINAL BOLT DIAMETER (mm) | 16 | 18 | 20 | 22 | 24 | 27 AND OVER |
|---|---|---|---|---|---|---|
| NORMAL ROUND HOLES | 2 | | | | 2 | 3 |
| OVERSIZE ROUND HOLES | 4 | | | | 6 | 8 |
| SHORT SLOTTED HOLES (ON THE LENGTH) | 6 | | | | 8 | 10 |
| LONG SLOTTED HOLES (ON THE LENGTH) | 1.5 NOMINAL BOLT DIAMETER | | | | | |

## 33.0 NON-PRELOADED BOLTS - BOLTS SPACING & END DISTANCE

THE NON-PRELOADED BOLTS MINIMUM & MAXIMUM SPACINGS ARE AS FOLLOWS:




IN THE DIRECTION OF LOAD
PITCH: $P_1 = 2.2do \le P_1 \le 14t$ OR 200mm
END DISTANCE: $e_1 = 1.2do \le e_1 \le 4t + 40mm$

PERPENDICULAR TO THE DIRECTION OF LOAD
PITCH: $P_2 = 2.4do \le P_2 \le 14t$ OR 200mm
END DISTANCE: $e_2 = 1.2do \le e_2 \le 4t + 40mm$

## 34.0 FILLET WELD STRENGTH

THE FILLET WELD STRENGTH ARE AS FOLLOWS:

| STEEL GRADE | FILLET WELD STRENGTH (N/mm²) |
|---|---|
| S275 | 222 |
| S355 | 241 |



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 16/02/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 14/02/2023 | TWA | ST05 NOA RECEIVED |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
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LOH JU-HON
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PROJECT TITLE

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DRAWING TITLE

GENERAL NOTES 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_SDGN_01-02_ALL

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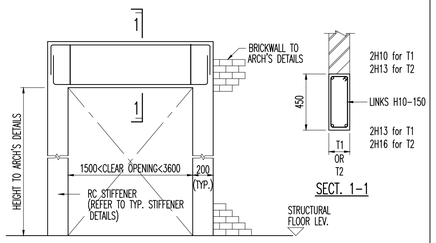
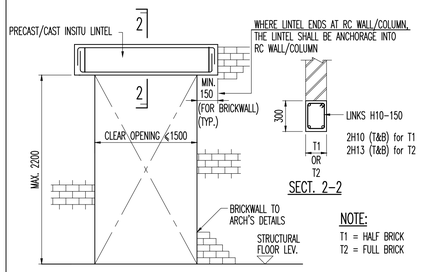
## ABBREVIATION IN DRAWINGS

| | | | | | |
|---|---|---|---|---|---|
| ADD | – | ADDITIONAL | NF | – | NEAR FACE |
| ALT | – | ALTERNATE | | | |
| | | | O'PNG | – | OPENING |
| B | – | BOTTOM | | | |
| B/W | – | BOTHWAYS | PT | – | POINT |
| | | | REINFT | – | REINFORCEMENT |
| C.O.L | – | CUT-OFF LEVEL | REQ | – | REQUIREMENT |
| CONC | – | CONCRETE | | | |
| CONT'D | – | CONTINUED | REF | – | REFERENCE |
| COMP | – | COMPRESSION | RAD | – | RADIUS |
| c/c | – | CENTRE TO CENTRE | RL | – | REDUCED LEVEL |
| | | | | | |
| DWG | – | DRAWING | SYMM | – | SYMMETRICAL |
| ø, DIA | – | DIAMETER | SECT | – | SECTION |
| DIST | – | DISTANCE | STD | – | STANDARD |
| DP | – | DROP | SHT | – | SHEET |
| DN | – | DOWN | STAGG | – | STAGGERED |
| DIM | – | DIMENSION | SQ | – | SQUARE |
| | | | SFL | – | STRUCTURAL FLOOR LEVEL |
| ELEV | – | ELEVATION | | | |
| EXIT'G | – | EXISTING | T | – | TOP |
| EF | – | EACH FACE | TYP | – | TYPICAL |
| | | | TEMP | – | TEMPORARY |
| FF | – | FAR FACE | THRU | – | THROUGHOUT |
| FLR | – | FLOOR | T.O.P | – | TOP OF PILECAP |
| | | | | | |
| IL | – | INVERT LEVEL | U.O.S. | – | UNLESS OTHERWISE STATED |
| HORZ | – | HORIZONTAL | VERT | – | VERTICAL |
| | | | | | |
| MIN | – | MINIMUM | FW | – | FILLET WELD |
| MAX | – | MAXIMUM | BW | – | BUTT WELD |
| MECH | – | MECHANICAL | FPBW | – | FULL PENETRATION BUTT WELD |



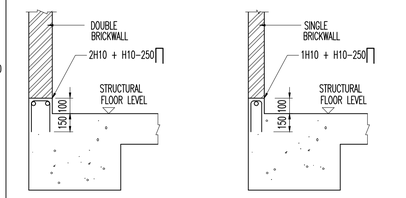

SECT. 1–1




SECT. 2–2

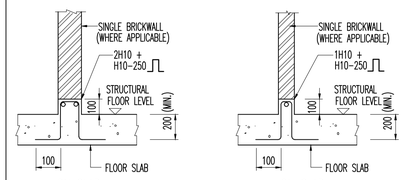
NOTE:
T1 = HALF BRICK
T2 = FULL BRICK

TYPICAL ELEVATION FOR DOOR/WINDOW OPENING




ALONG EDGE BEAM (DOUBLE BRICKWALL)

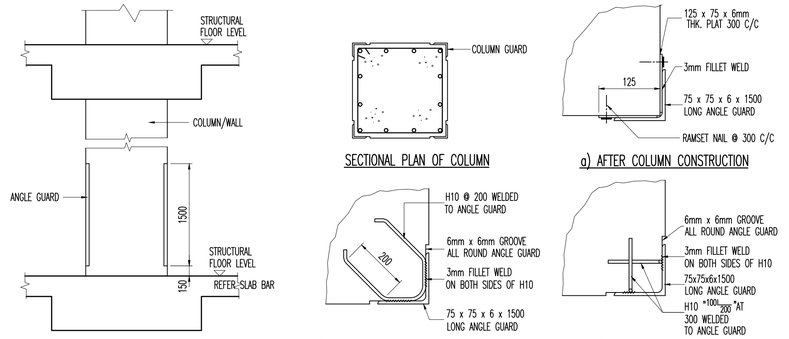
ALONG EDGE BEAM (SINGLE BRICKWALL)




ON SLAB (DOUBLE BRICKWALL)

ON SLAB (SINGLE BRICKWALL)

TYPICAL RC KERB DETAILS (AROUND BATHROOM, YARD & M&E VERTICAL DUCT AREAS)




ELEVATION OF WALL/COLUMN GUARD (FOR CAR PARKS & DRIVEWAY AREA)

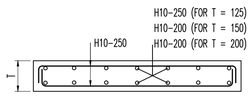
SECTIONAL PLAN OF COLUMN

a) AFTER COLUMN CONSTRUCTION

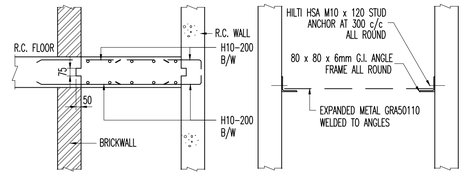
b) BEFORE COLUMN CONSTRUCTION TYPE 1

b) BEFORE COLUMN CONSTRUCTION TYPE 2

COLUMN GUARD DETAILS (FOR POSITION AND LOCATION REFER TO ARCH'S DWGS)



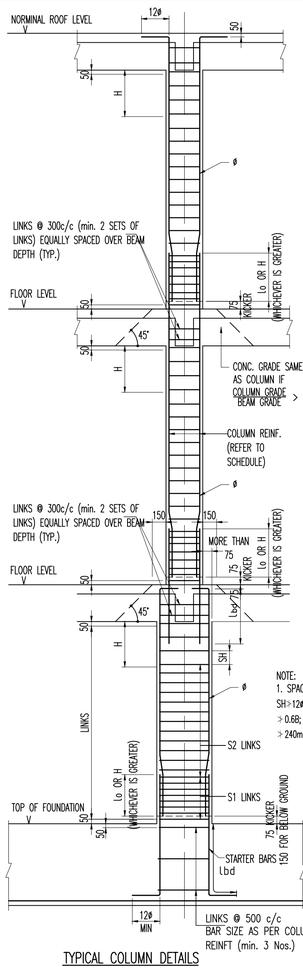

NON-STRUCTURE COLUMN/WALL




TYPICAL SECTION FOR FIRE STOP AT VERTICAL DUCT

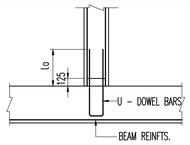
NOTE: EXPANDED METAL HAVING EVERY SECOND STRAND WELDED TO SUPPORTS AND WITH MIN. 40mm BEARING

WIRE MESH OVER VENTILATION DUCT

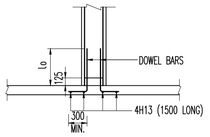



NOTE:
1. SPACING WITHIN ZONE H, SH>12ø; ø=COLUMN MAIN BAR DIA.
> 0.6B; B=LESSER COLUMN DIMENSION
> 240mm

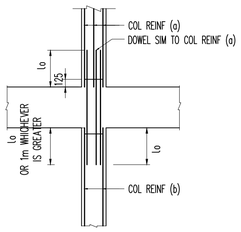
TYPICAL COLUMN DETAILS



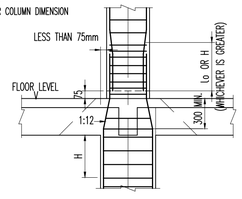

STIFFENER RESTING ON R.C. BEAM




STIFFENER SITTING ON R.C. SLAB

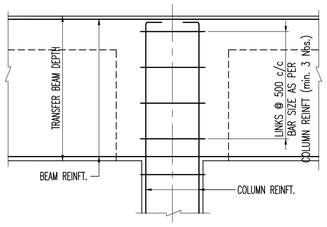



TYPICAL DOWEL DETAILS
APPLICABLE WHERE UPPER COL REINF (a) IS MORE THAN LOWER COL REINF (b)

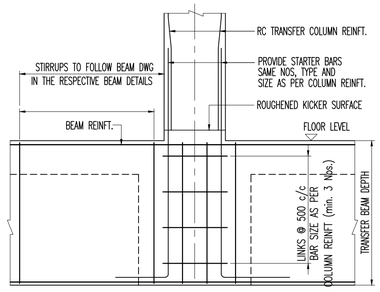



ALTERNATIVE STEPPED OR OFFSET COLUMN JOINT DETAILS

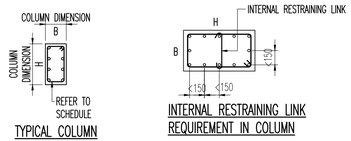
TYPICAL COLUMN & STIFFENER DETAILS




TYPICAL TRANSFER BEAM ON COLUMN DETAILS

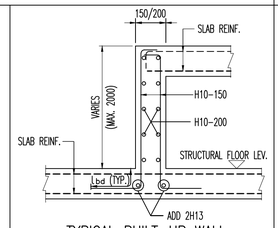



TYPICAL TRANSFER COLUMN ON BEAM DETAILS

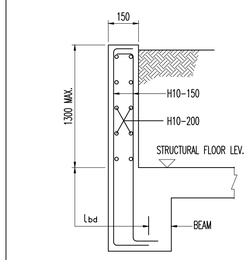



TYPICAL COLUMN SECTION

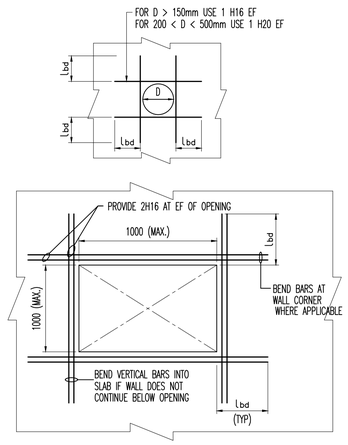
INTERNAL RESTRAINING LINK REQUIREMENT IN COLUMN




TYPICAL BUILT-UP WALL

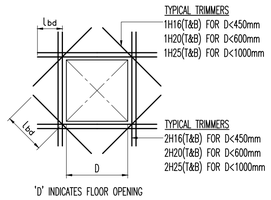



TYPICAL PLANTER WALL



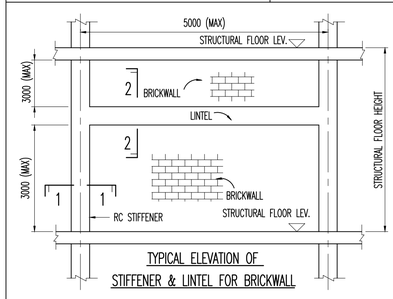

TYPICAL TRIMMER BARS DETAILS FOR OPENING THROUGH RC WALL

NOTE : LOCATION AND SIZES OF OPENINGS TO BE APPROVED BY THE ENGINEER



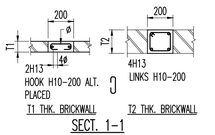

NOTE:
1. FOR OPENINGS LESS THAN 200x200. SLAB REBARS TO BE ADJUSTED AROUND OPENING.
2. FOR OPENINGS GREATER THAN 1000x1000. REFER TO SLAB PLANS.
3. LOCATION OF OPENINGS TO THE APPROVAL OF THE ENGINEER.
4. EQUIVALENT OPENING AREA SHALL APPLY THE DETAILS SHOWN ABOVE
5. EQUIVALENT OPENING AREA SHALL INCLUDE RECTANGLE, TRIANGLE AND ANY POLYGON SHAPE.

TYPICAL TRIMMER BARS DETAILS FOR OPENING IN SLABS

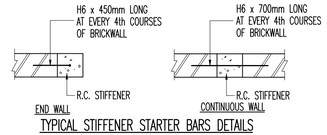



TYPICAL ELEVATION OF STIFFENER & LINTEL FOR BRICKWALL

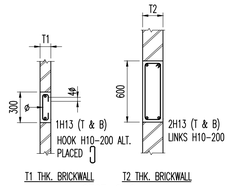
NOTE:
T1 = HALF BRICK
T2 = FULL BRICK
C HOOK TO BE ALT. PLACED FOR VERT. & HORIZ. STIFFENERS



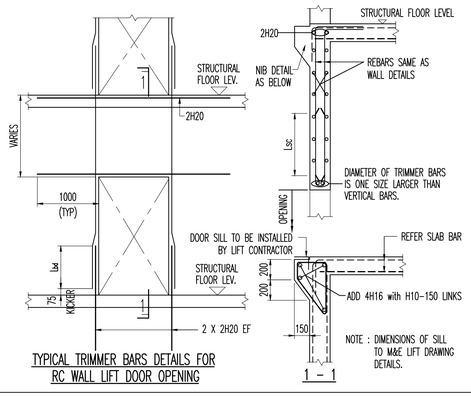

SECT. 1–1




TYPICAL STIFFENER STARTER BARS DETAILS FOR BRICKWALL




SECT. 2–2




TYPICAL TRIMMER BARS DETAILS FOR RC WALL LIFT DOOR OPENING

1 – 1

THE ABOVE DETAILS SHOULD BE USED WHERE APPLICABLE UNLESS OTHERWISE DETAILED

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| CO | 16/02/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 14/02/2023 | TWA | ST05 NOA RECEIVED |

03 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

FOR OFFICIAL USE

AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
TYPICAL DETAILS 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_SDTD_01_ALL

Drawing no.
S_WS1416_SDTD_01_ST06

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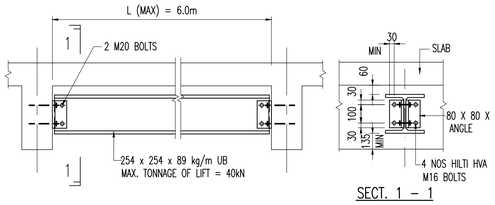
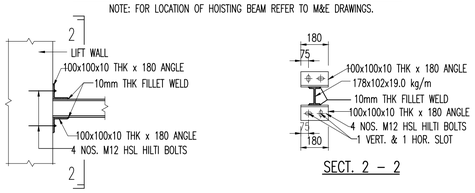
RESTRICTED



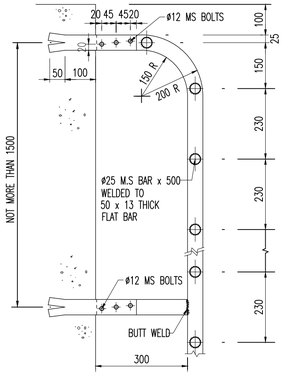

TYPICAL HOISTING BEAM DETAILS FOR LIFT MOTOR ROOM

NOTE: FOR LOCATION OF HOISTING BEAM REFER TO M&E DRAWINGS.



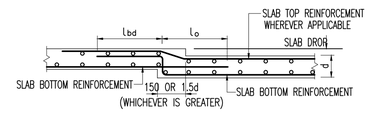

TYPICAL SEPARATOR BEAM DETAILS FOR LIFTCORE

NOTE: FOR LOCATION OF SEPARATOR BEAM REFER TO LIFT DRAWINGS. TO BE AT EACH FLOOR LEVEL.

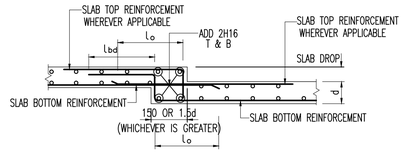



1. LOCATION & LENGTH OF CAT LADDER REFER TO ARCHITECT/M&E'S DWG, UNLESS OTHERWISE STATED.
2. ALL STEEL MEMBERS TO BE HOT-DIPPED GALVANISED

TYPICAL CAT LADDER DETAILS

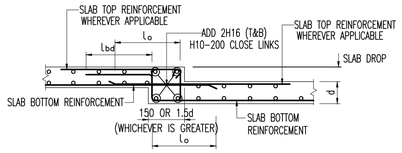



SLAB DROP < 50mm

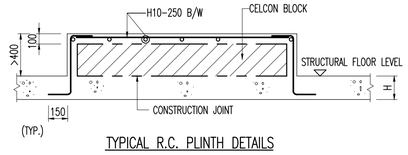



50mm < SLAB DROP ≤ 500mm

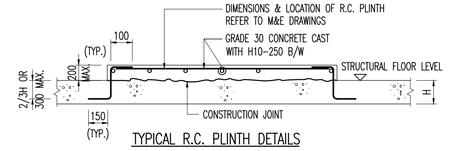
TYPICAL SLAB DROP DETAILS



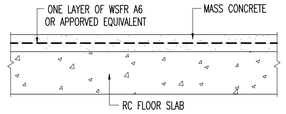

SLAB DROP > 500mm



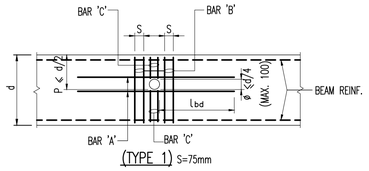

TYPICAL R.C. PLINTH DETAILS




TYPICAL R.C. PLINTH DETAILS




TYPICAL DETAIL OF MASS CONCRETE TOPPING



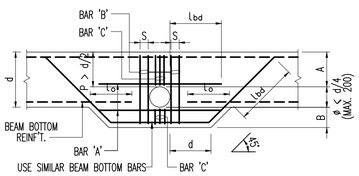

(TYPE 1) S=75mm

| BEAM WIDTH | BAR A | BAR B | BAR C | LINK SHAPE FOR BAR B & C |
|---|---|---|---|---|
| b<=300 | 2H16 | 2xH13 ES | H10-50 T&B | |
| 300<b<=400 | 3H16 | 2xH13 ES | H10-50 T&B | |
| 400<b<=600 | 4H16 | 2x2H13 ES | 2H10-50 T&B | |
| 600<b<=700 | 5H16 | 2x2H13 ES | 2H10-50 T&B | |
| 700<b<=900 | 6H16 | 2x3H13 ES | 3H10-50 T&B | |
| 900<b<=1000 | 7H16 | 2x3H13 ES | 3H10-50 T&B | |
| 1000<b<=1200 | 8H16 | 2x4H13 ES | 4H10-50 T&B | |

NOTE : ES DENOTES EACH SIDE OF PIPE
P DENOTES POSITION OF PIPE PENETRATION.

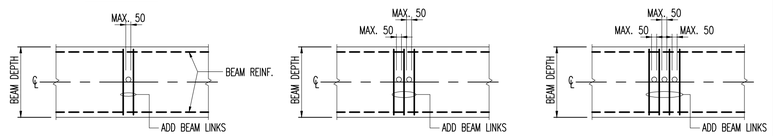
NOTES :

1. PROPOSED LOCATION AND INVERT LEVEL OF PIPE THRO' BEAM TO M&E DWGS & SUBJECT TO APPROVAL OF ENGINEER.
2. PIPES SHALL GENERALLY PENETRATE THRO' BEAM BETWEEN $\frac{1}{4}$ TO $\frac{1}{3}$ SPAN OF BEAM UNLESS OTHERWISE APPROV. BY THE ENGINEER.
3. CONTRACTOR SHALL SUBMIT SHOP DRAWING TO INDICATE LOCATION OF PIPE OPENING THRO' BEAM TO ENGINEER'S APPROV. PRIOR TO COMMENCEMENT OF WORK.
4. DISTANCE BETWEEN ADJACENT OPENINGS ≥ 3ø.
5. FOR VARIATION TO THE ABOVE TYPE 1 & 2 TYPICAL DETAILS, APPROVAL FROM THE ENGINEER IS REQUIRED.

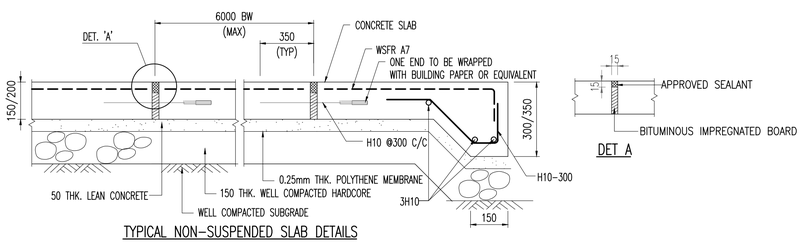



(TYPE 2) S=75mm

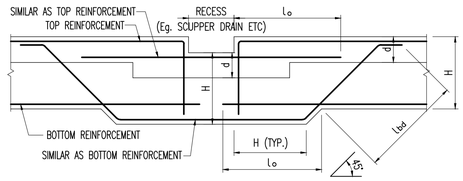
NOTE : A + B =D




DETAILS OF PIPE PENETRATION THROUGH R.C. BEAM

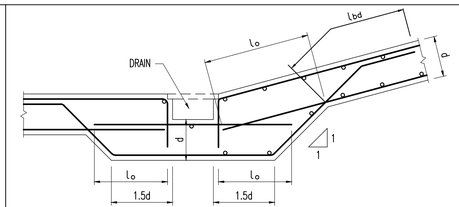



TYPICAL NON-SUSPENDED SLAB DETAILS

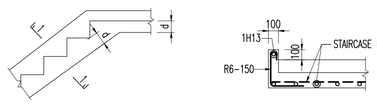



BEAM AND SLAB WITH RECESS

N.T.S.
H = BEAM DEPTH
d = SLAB DEPTH



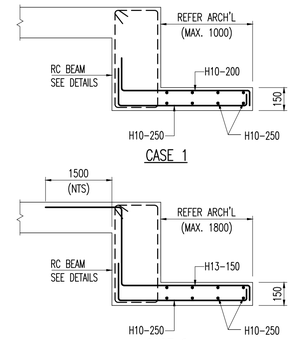

TYPICAL SCUPPER DRAIN DETAILS AT RAMP




ELEVATION

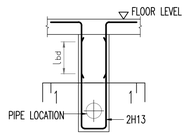
1 – 1

TYPICAL DETAIL OF STAIRCASE KERB

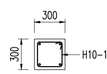



TYP. RC LEDGE DETAIL

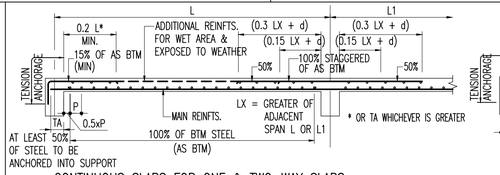
NOTE: REFER FLOOR PLAN FOR ACTUAL LOCATIONS



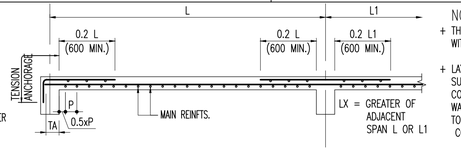

TYP. PIPE HANGER SUPPORT




SECT. 1–1



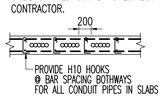

CONTINUOUS SLABS FOR ONE & TWO-WAY SLABS



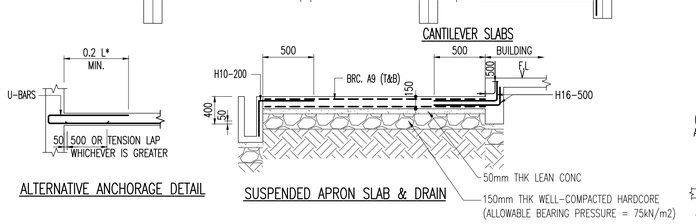

DISTRIBUTION BAR FOR ONE-WAY SLAB

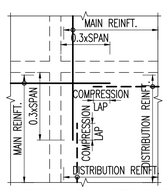
NOTES:

+ THIS DWG. SHALL BE USED IN CONJUNCTION WITH OTHER DRAWINGS WHERE APPLICABLE.
+ LAYING OF WATERPROOFING ARE TO BE SUBMITTED FOR APPROVAL BEFORE COMMENCEMENT. A MINIMUM TEN YEARS WARRANTY IS REQUIRED FOR SUCH WORK TO BE CARRIED OUT BY SPECIALIST CONTRACTOR.

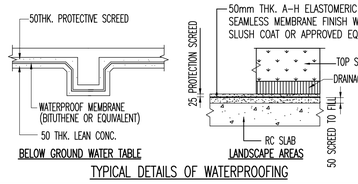



DETAILS OF PIPES IN SLABS

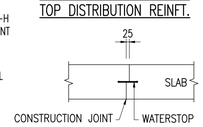



TYPICAL PLAN DETAILS OF TOP DISTRIBUTION REINFT.




TYPICAL DETAILS OF WATERPROOFING




DETAILS OF CONSTRUCTION JOINT FOR EXPOSED SLAB

THE ABOVE DETAILS SHOULD BE USED WHERE APPLICABLE UNLESS OTHERWISE DETAILED

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 16/02/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 14/02/2023 | TWA | ST05 NOA RECEIVED |

04 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT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PE ENDORSEMENT

PROFESSIONAL ENGINEER
CIVIL
LEOW GEOK MUI
4072
SINGAPORE

AC ENDORSEMENT

ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT

TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

TYPICAL DETAILS 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_SDTD_02_ALL

Drawing no.
S_WS1416_SDTD_02_ST06


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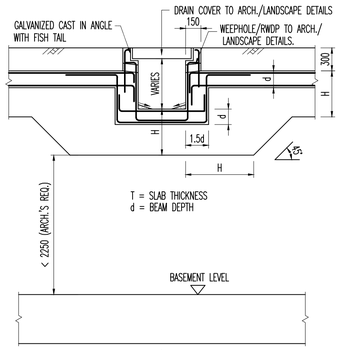
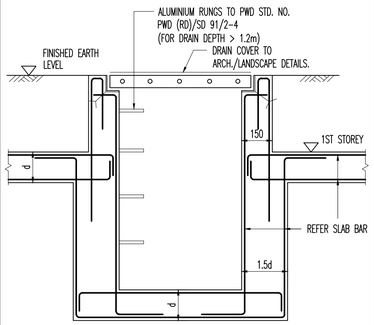
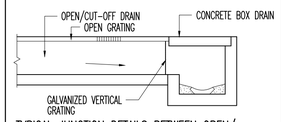


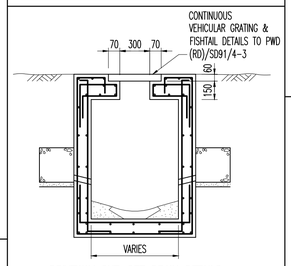

TYPICAL SECTION THRO' HOUSEDRAIN –TYPE 1
('a' & 'b' – REFER SLAB BAR DETAILS)




TYPICAL HOUSE DRAIN SECTION THRO' THE SUMP/INSPECTION CHAMBER

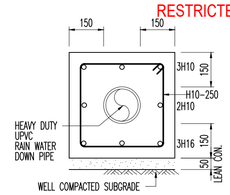



TYPICAL JUNCTION DETAILS BETWEEN OPEN/ CUT-OFF DRAIN & CONCRETE BOX DRAIN

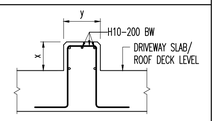



DRIVEWAY CUT-OFF DRAIN DETAILS
(FOR DETAILS NOT SHOWN REFER TO DRIVEWAY CLOSED DRAIN DETAILS)

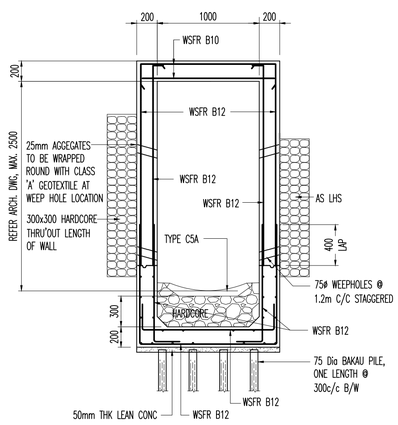
RESTRICTED

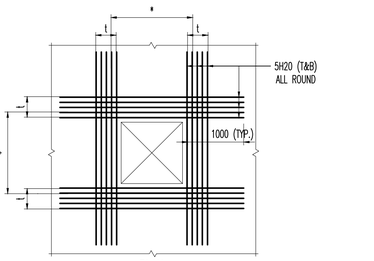



TYPICAL CONCRETE ENCASEMENT AROUND PIPE BELOW DRIVEWAY

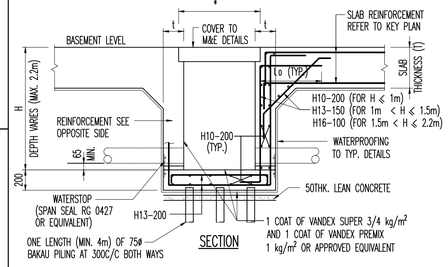



TYP. TRAFFIC ISLAND/STOPPER DETAILS
TYP. PLINTH ROOF SUPPORT STUMP

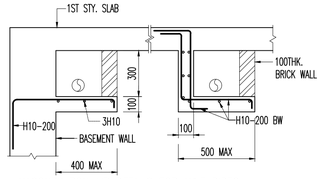


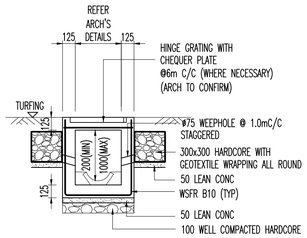

PLAN



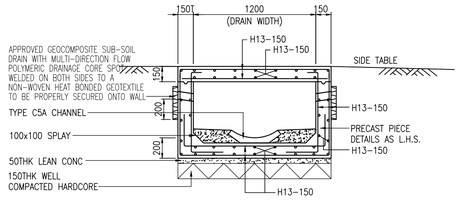

HATCHBOX & INSPECTION CHAMBER DETAILS
NOTE: THIS DETAIL IS APPICABLE FOR HATCH BOX/INSPECTION CHAMBER AT BASEMENT LEVEL ONLY
* REFER TO M&E DETAILS



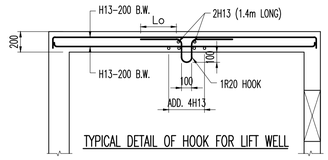

MASONRY BOX-UP DETAILS FOR M&E PIPES
(NOTE : LOCATION TO CONFIRM WITH M&E/ARCH. DWG.)



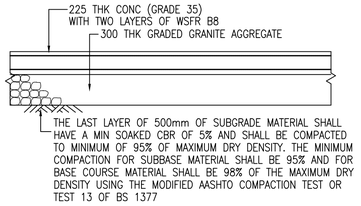

TYPICAL SECTION THRO' HOUSEDRAIN –TYPE 2



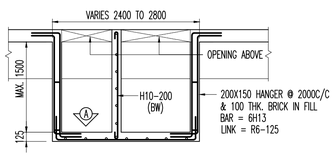

PRECAST SLABBED OVER U-DRAIN
DRAIN WIDTH = 1200
SCALE 1:25



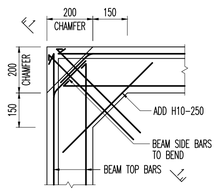

TYPICAL DETAIL OF HOOK FOR LIFT WELL



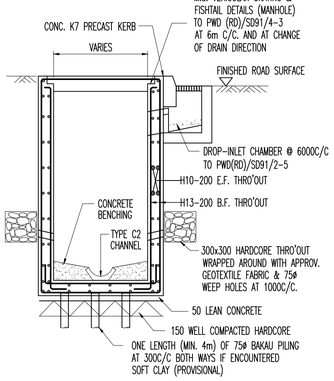

TYPICAL FIRE-ENGINE
HARDSTANDING/ACCESSWAY DETAILS



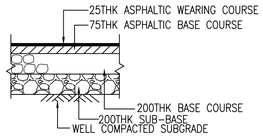

PLENUM DETAILS FOR M&E DUCT
(NOTE: ALL LOCATIONS & DIMENSIONS TO CONFIRM WITH M&E AND ARCH. DRAWING)



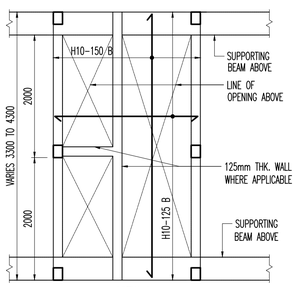

PLAN



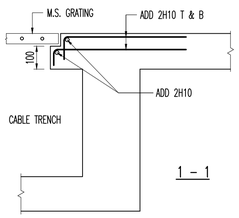

DRIVEWAY CLOSED DRAIN DETAILS




TYPICAL DETAILS FOR PREMIX DRIVEWAY




VIEW A



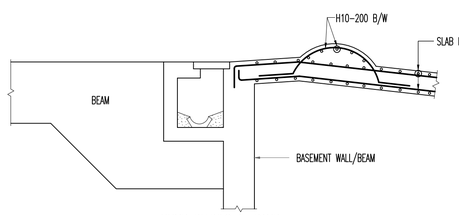

1 – 1

TYPICAL CHAMFER DETAILS AT CORNER OF CABLE TRENCH OF SUBSTATION

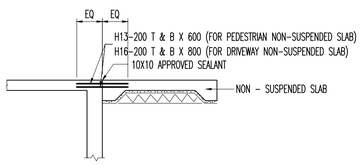



TYPICAL FIRE ENGINE
ACCESSWAY ON TURFING

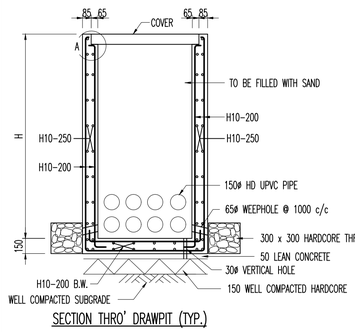
TYPICAL FIRE ENGINE
HARDSTANDING ON TURFING



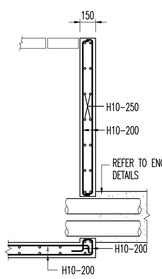

HUMP DETAILS AT RAMP
(LOCATION OF HUMP REFER ARCH'S DWG)



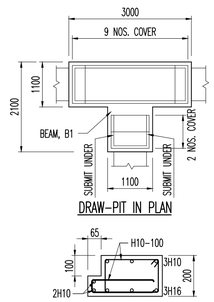

TYPICAL JOINT DETAIL BETWEEN SUSPENDED/
NON – SUSPENDED SLAB




SECTION THRO' DRAWPIT (TYP.)

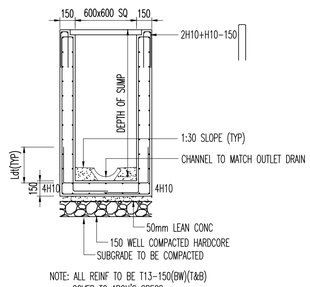



SECTION THRO' DRAWPIT
AND CABLE ENTRY (TYP.)




DRAW-PIT IN PLAN

BEAM B1 (300 x 200)




TYPICAL DETAILS OF DRAINAGE SUMP
1:30

THE ABOVE DETAILS SHOULD BE USED WHERE APPLICABLE UNLESS OTHERWISE DETAILED

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 16/02/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 14/02/2023 | TWA | ST05 NOA RECEIVED |

05 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT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general@idarchitects.com.sg
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BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
TYPICAL DETAILS 3

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_SDTD_03_ALL

Drawing no.
S_WS1416_SDTD_03_ST06


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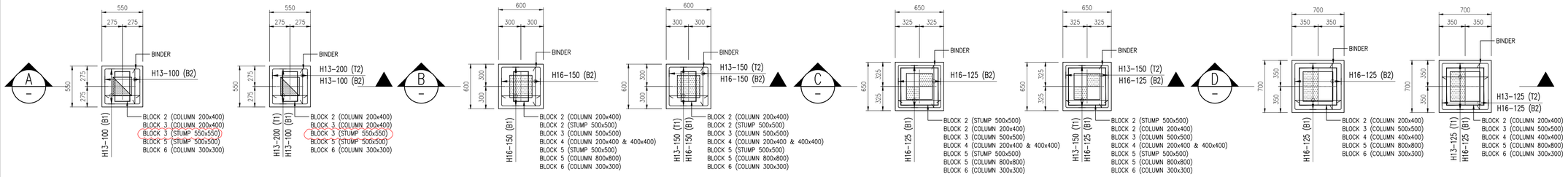
RESTRICTED

NOTE:

ALL COLUMN & WALL LOCATIONS SHALL BE VERIFIED WITH ARCHITECT'S SETTING OUT PLAN
ALL PILECAP CONCRETE GRADE SHALL BE C35/45.

ALL BINDER SHALL BE

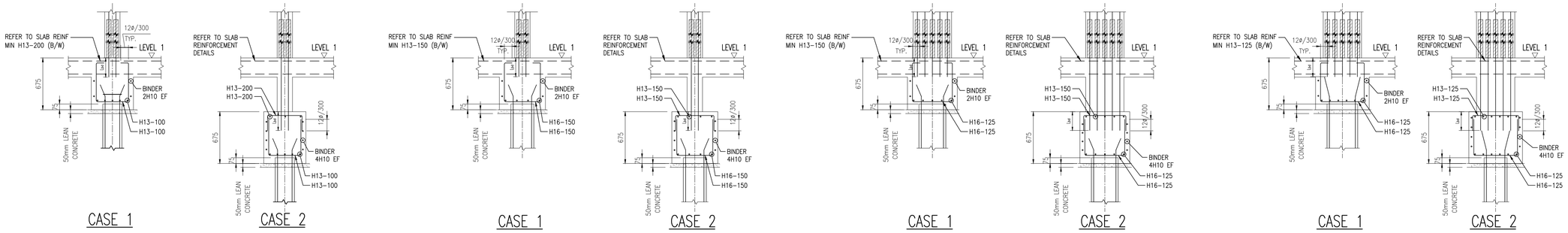



1–PILE GROUP (1P250)
SCALE: 1:30

1–PILE GROUP (1P300)
SCALE: 1:30

1–PILE GROUP (1P350)
SCALE: 1:30

1–PILE GROUP (1P400)
SCALE: 1:30

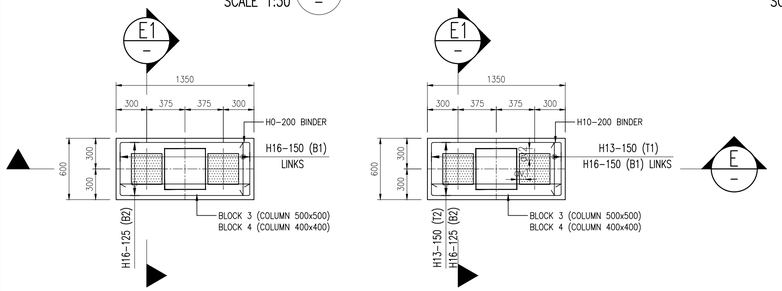



SECTION A
SCALE 1:30

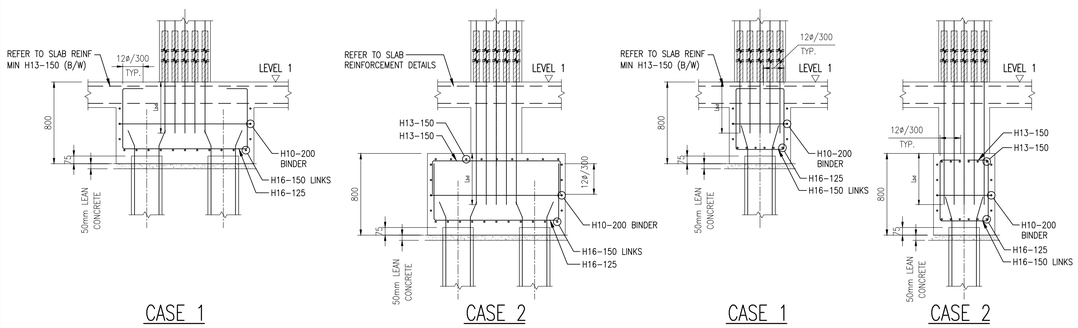
SECTION B
SCALE 1:30

SECTION C
SCALE 1:30

SECTION D
SCALE 1:30




2–PILE GROUP (2P300)
SCALE: 1:30




SECTION E
SCALE 1:30

SECTION E1
SCALE 1:30

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| REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| – | 03/03/2023 | TWA | ST06 NOA RECEIVED | C1 | 26/04/2023 | TWA | REVISED AS CLOUDED. | | | | | | | | | | | | | | | | | | | | |
| C0 | 16/02/2023 | TWA | ST05 – ISSUED FOR CONSTRUCTION. | C0 | 03/03/2023 | TWA | ST07 – ISSUED FOR CONSTRUCTION. | | | | | | | | | | | | | | | | | | | | |
| – | 14/02/2023 | TWA | ST05 NOA RECEIVED | – | 03/03/2023 | TWA | ST07 NOA RECEIVED | | | | | | | | | | | | | | | | | | | | |

06 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE
BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST07 &ST05

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
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(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

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Harbourfront Tower Two,
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ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
TYPICAL PILECAP DETAILS – 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

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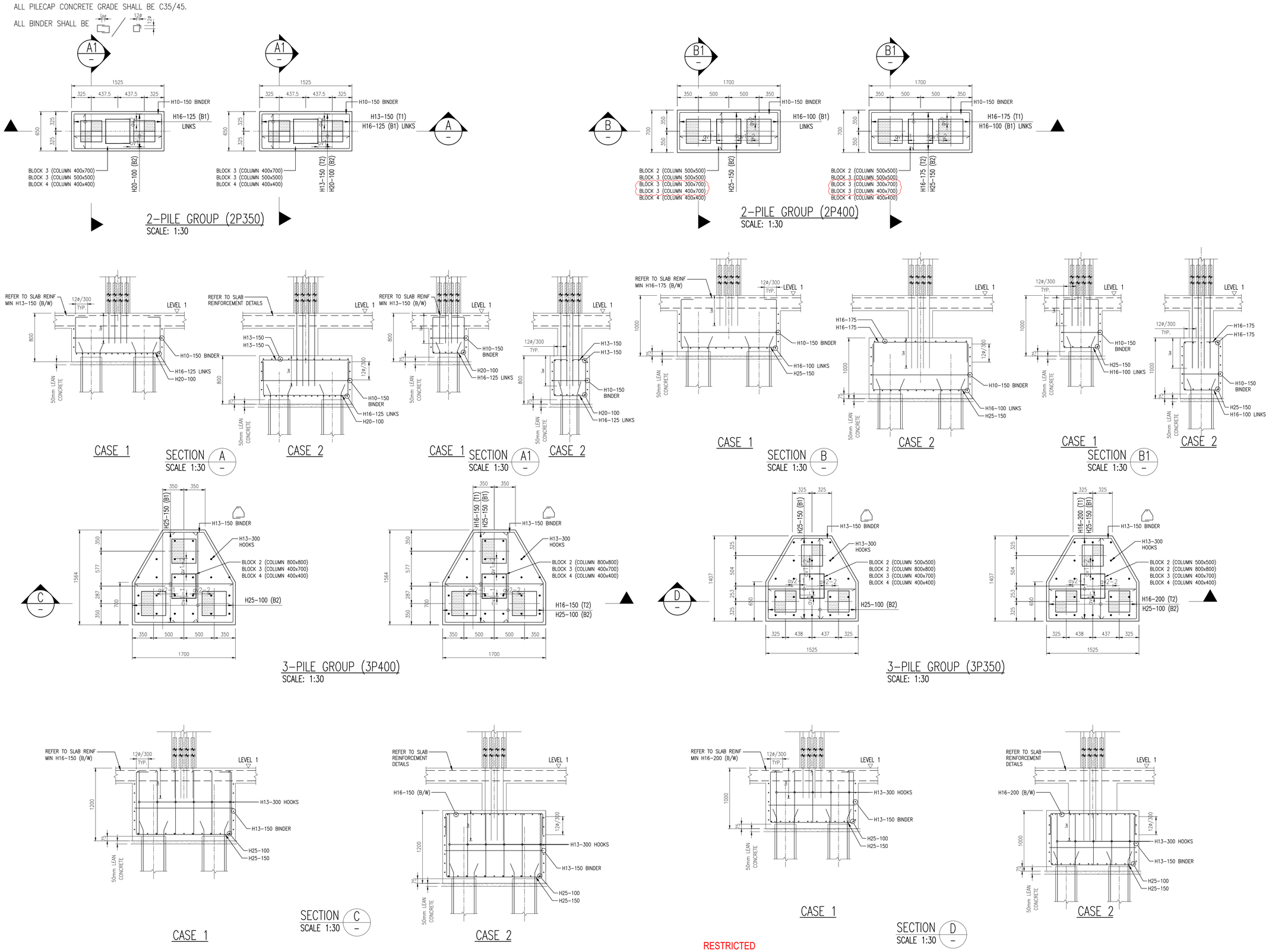
ALL BINDER SHALL BE

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| C0 | 03/03/2023 | TWA | ST06 – ISSUED FOR CONSTRUCTION. | | | | | | | | | | | | | | | | | | | | | | | | |
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| C0 | 16/02/2023 | TWA | ST05 – ISSUED FOR CONSTRUCTION. | C0 | 03/03/2023 | TWA | ST07 – ISSUED FOR CONSTRUCTION. | | | | | | | | | | | | | | | | | | | | |
| – | 14/02/2023 | TWA | ST05 NOA RECEIVED | – | 03/03/2023 | TWA | ST07 NOA RECEIVED | | | | | | | | | | | | | | | | | | | | |

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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST07 &ST05

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DRAWING TITLE

TYPICAL PILECAP DETAILS – 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

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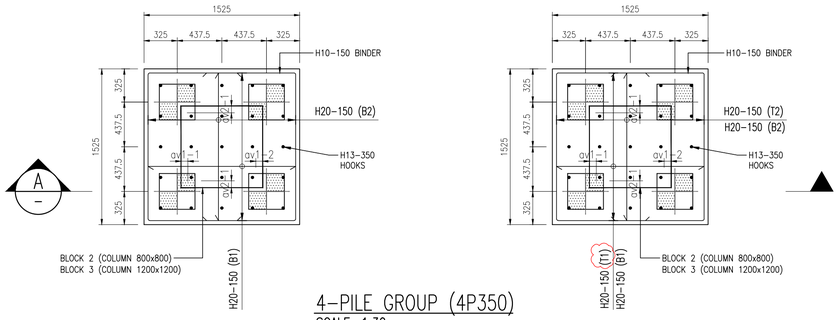
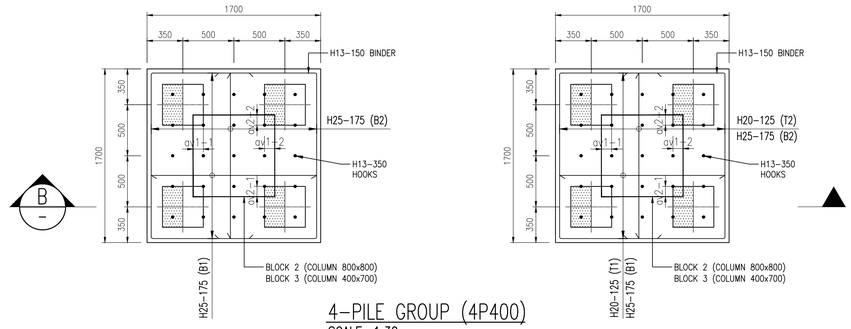
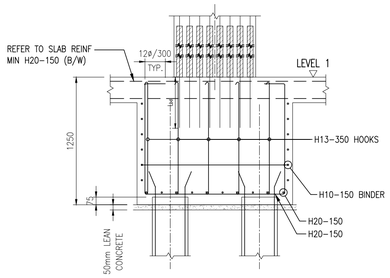
ALL BINDER SHALL BE 12ø / 12ø



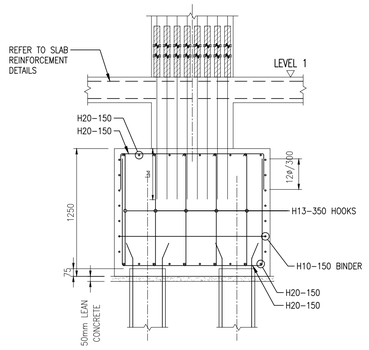

4-PILE GROUP (4P350)
SCALE: 1:30




4-PILE GROUP (4P400)
SCALE: 1:30

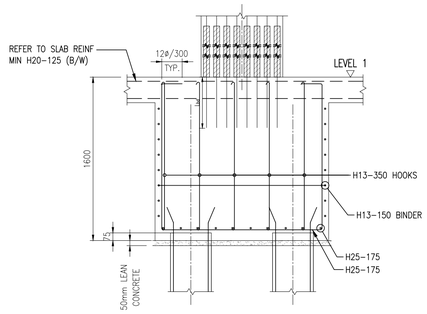



CASE 1

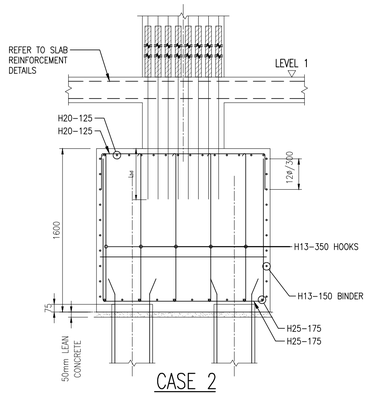



CASE 2

SECTION A
SCALE 1:30




CASE 1




CASE 2

SECTION B
SCALE 1:30

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| REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION |
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08 sheet of 90

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DRAWING TITLE

TPICAL PILECAP DETAILS – 3

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| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

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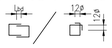
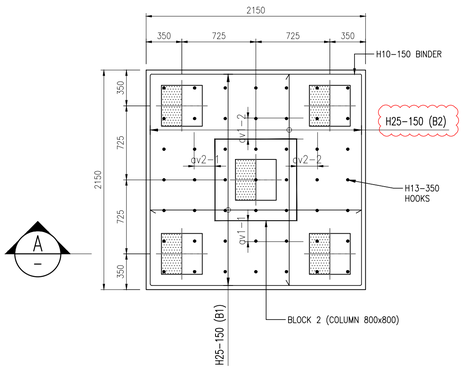
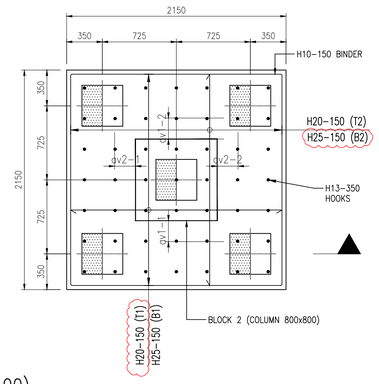
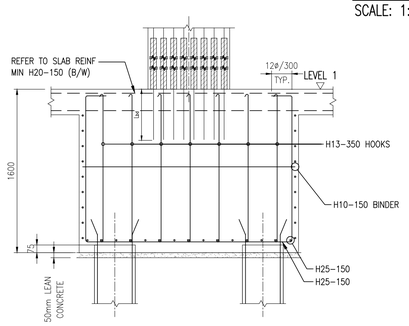
ALL BINDER SHALL BE 

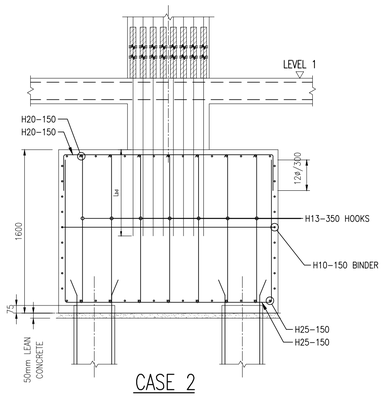




5-PILE GROUP (5P400)
SCALE: 1:30

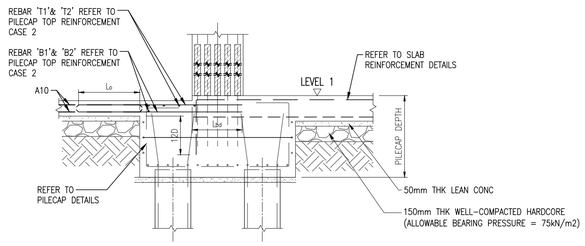



CASE 1

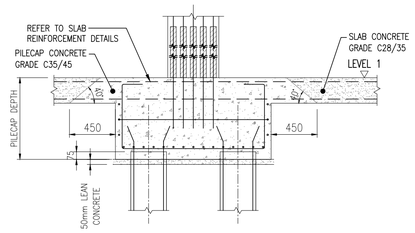



CASE 2

SECTION A
SCALE 1:30




TYPICAL PILECAP WITH SLAB DROP
SCALE: 1:30




TYPICAL CONNECTION PILECAP WITH SLAB (CASE 1 ONLY)
SCALE: 1:30

## PILECAP SCHEDULE

| PILECAP / BLOCK | 1-PILE GROUP | | | | | | | 2-PILE GROUP | | | | | | | | | | | | | | 3-PILE GROUP | | | | 4-PILE GROUP | | | | | 5-PILE GROUP | | | | 8-PILE GROUP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1P250 | 1P300 | 1P350 | 1P400 | 1P300-a | 1P350-a | 1P400-a | 2P250 | 2P300 | 2P350 | 2P400 | 2P250-a | 2P300-a | 2P300-b | 2P300-c | 2P350-a | 2P350-b | 2P350-c | 2P400-a | 2P400-b | 2P400-c | 3P250 | 3P300 | 3P350 | 3P400 | 4P250 | 4P300 | 4P350 | 4P400 | 4P400-a | 5P250 | 5P300 | 5P350 | 5P400 | 8P250 | 8P300 | 8P350 | 8P400 |
| BLOCK 2 | ● | ● | ● | ● | | | | | | | ● | ● | | ● | ● | | ● | | | | ● | | | ● | ● | | ● | ● | ● | | | | | ● | | | | |
| BLOCK 3 | ● | ● | ● | ● | | | | | ● | ● | ● | | ● | ● | | ● | ● | | | ● | | | | ● | ● | | | ● | ● | | | | | | | ● | | |
| BLOCK 4 | | ● | ● | ● | | | | | ● | ● | ● | | | ● | | | | ● | ● | | | | | ● | ● | | | | | ● | | | | | | | | |
| BLOCK 5 | ● | ● | ● | | ● | ● | ● | | | | | | | ● | | | ● | | | | | | | | | | | | | | | | | | | | | |
| BLOCK 6 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| – | 03/03/2023 | TWA | ST06 NOA RECEIVED | C2 | 26/04/2023 | TWA | REVISED AS CLOUDED. | | | | | | | | | | | | | | | | | | | | |
| C1 | 16/02/2023 | TWA | ST05 – PILECAP SCHEDULE ADDED | C1 | 03/03/2023 | TWA | ST07 – ISSUED FOR CONSTRUCTION. | | | | | | | | | | | | | | | | | | | | |
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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
TYPICAL PILECAP DETAILS – 4

| | Initial | Date | Job ref. no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_PCDT

Drawing no.
S_WS1416_PCDT_4_ST06

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NOTE:

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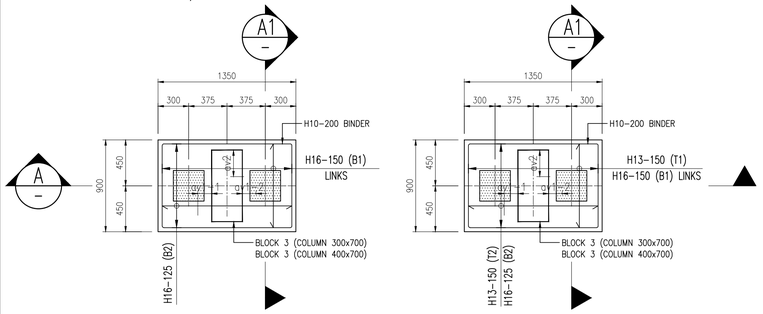
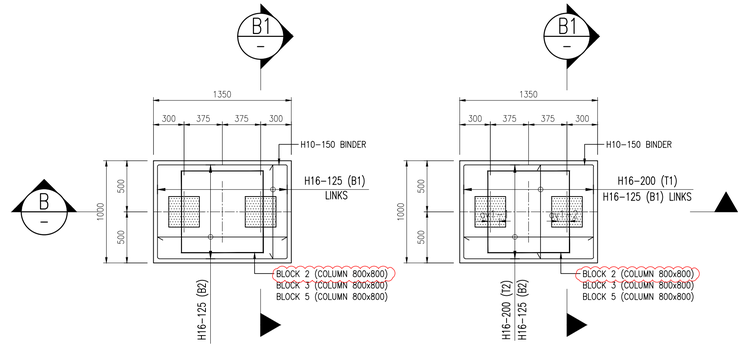
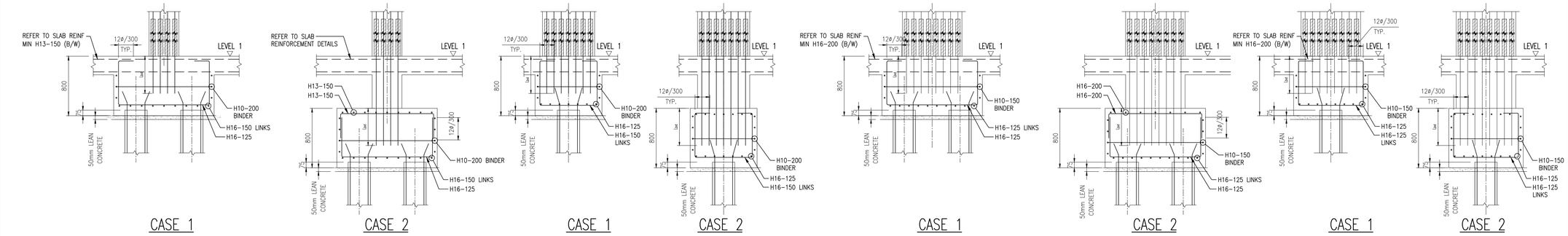
ALL BINDER SHALL BE

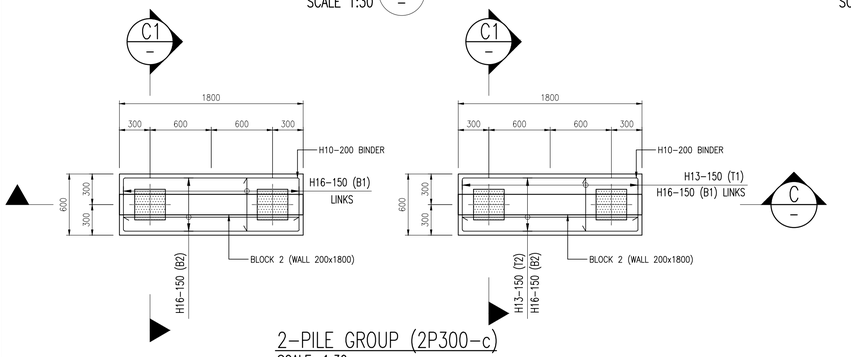



2-PILE GROUP (2P300-a)
SCALE: 1:30

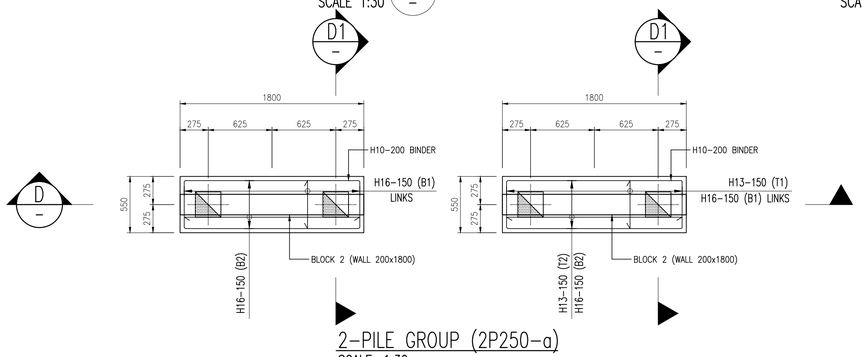



2-PILE GROUP (2P300-b)
SCALE: 1:30

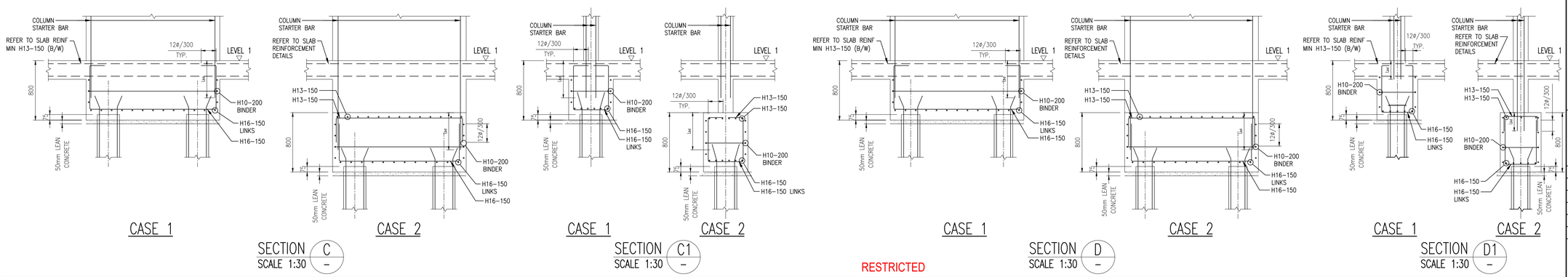



2-PILE GROUP (2P300-c)
SCALE: 1:30




2-PILE GROUP (2P250-a)
SCALE: 1:30

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C1 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 03/03/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 03/03/2023 | TWA | STO6 NOA RECEIVED |

10 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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PE ENDORSEMENT
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CIVIL
LEOW GEOK MUI
4072
SINGAPORE

AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
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DRAWING TITLE
TYPICAL PILECAP DETAILS – 6

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

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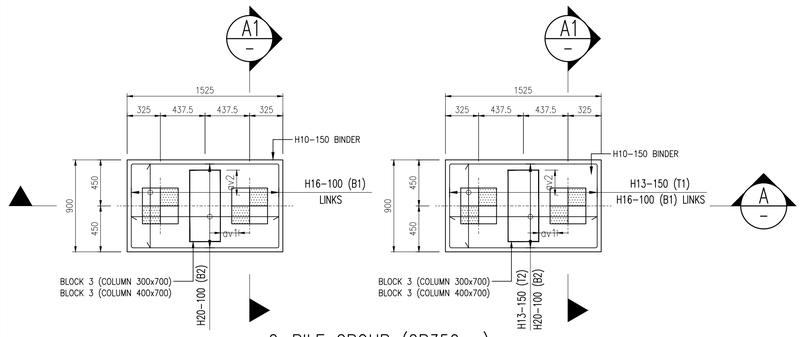
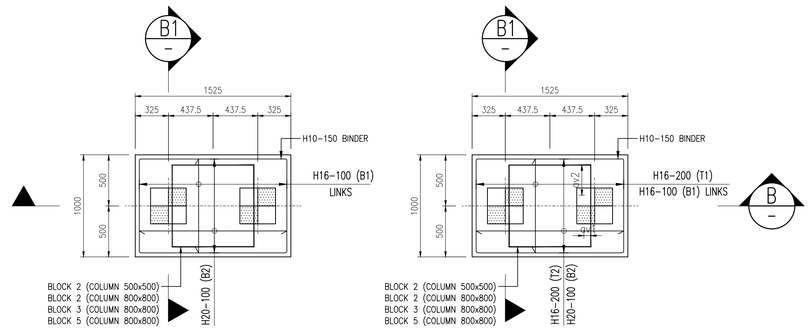
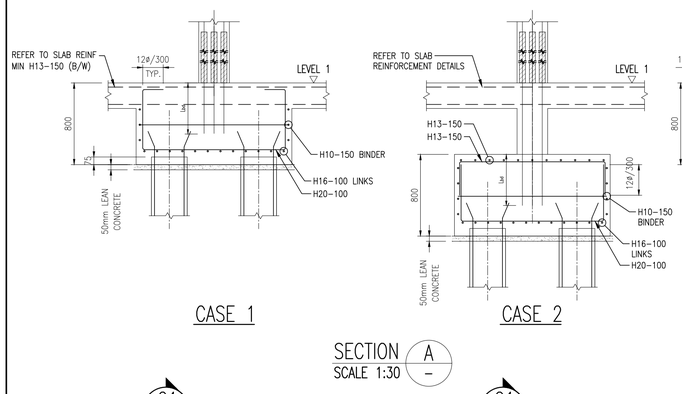
ALL BINDER SHALL BE

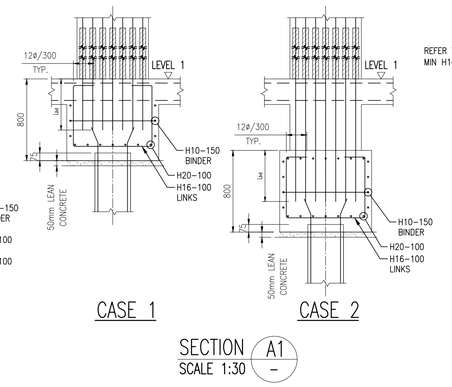


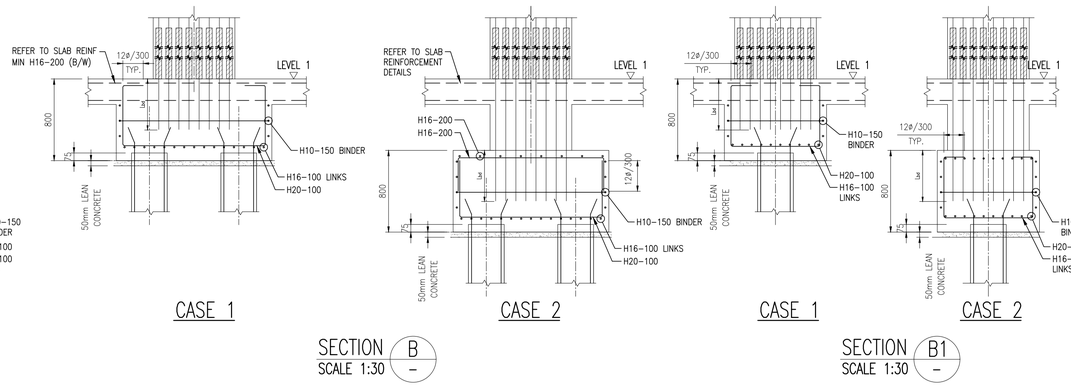

2-PILE GROUP (2P350-a)
SCALE: 1:30

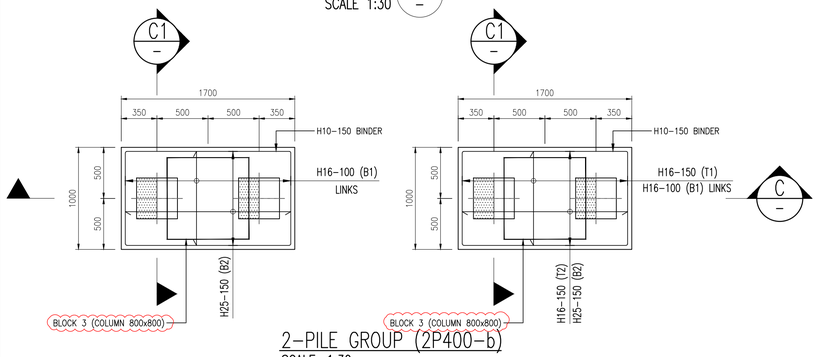



2-PILE GROUP (2P350-b)
SCALE: 1:30

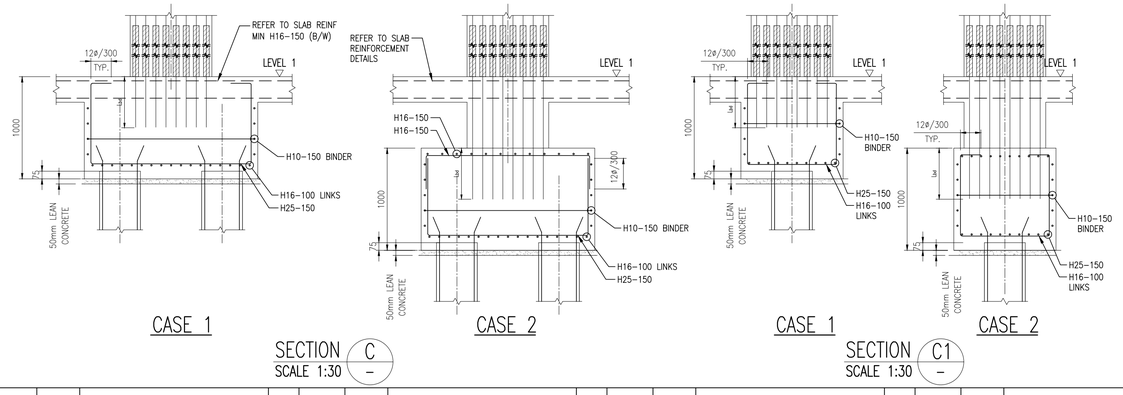



2-PILE GROUP (2P400-b)
SCALE: 1:30




RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C1 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 03/03/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |

11 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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ACCREDITED CHECKER
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CHEN HAO
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BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT

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DRAWING TITLE

TYPICAL PILECAP DETAILS – 7

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_PCDT

Drawing no.
S_WS1416_PCDT_7_ST06


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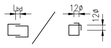
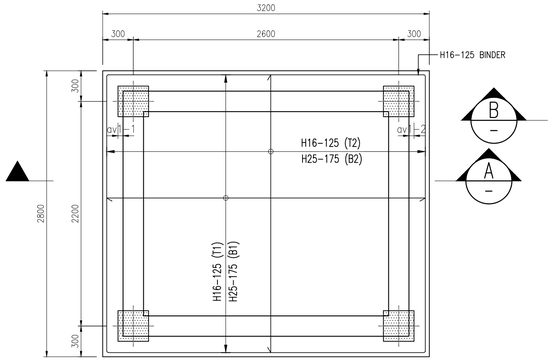
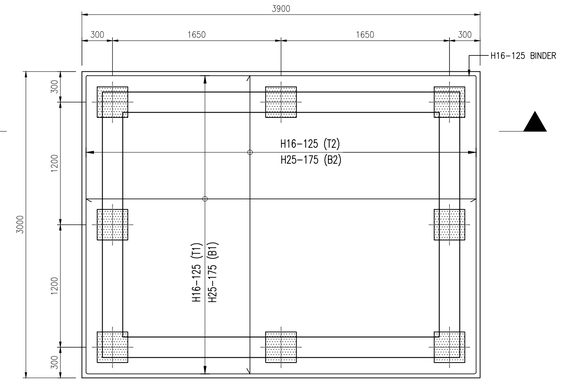
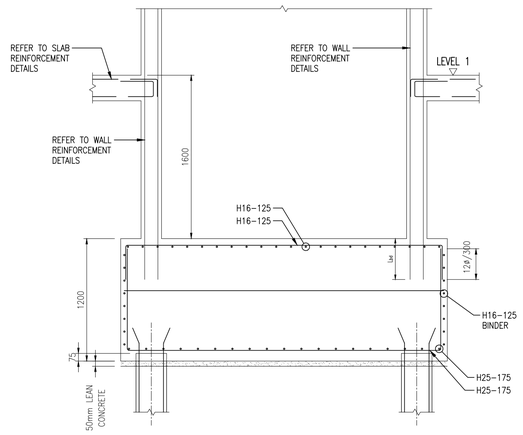
ALL BINDER SHALL BE 



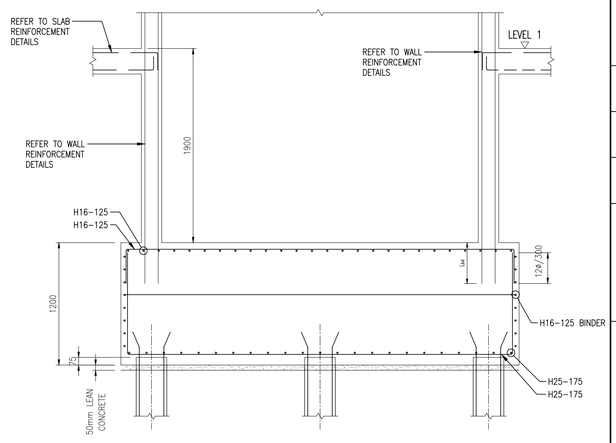

4-PILE GROUP (4P300) - 2LW15 (BLOCK 2)
SCALE: 1:30



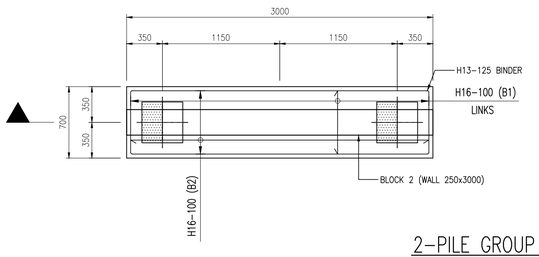

8-PILE GROUP (8P300) - 3LW48 & 3LW184 (BLOCK 3)
SCALE: 1:30

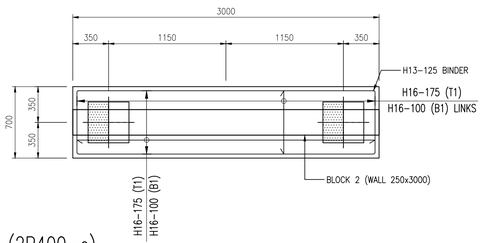



SECTION A
SCALE 1:30



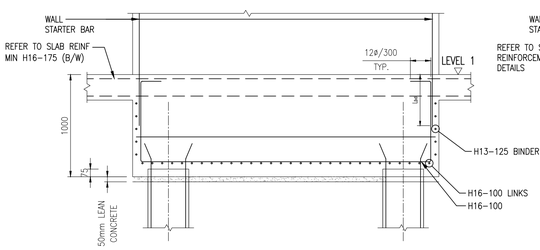

SECTION B
SCALE 1:30



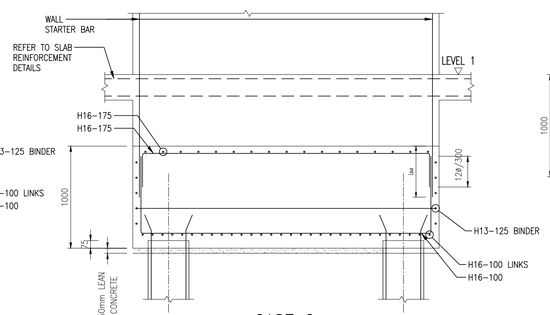




D

2-PILE GROUP (2P400-c)
SCALE: 1:30

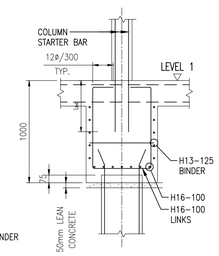



CASE 1

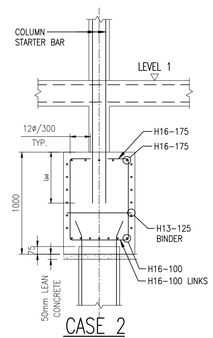



CASE 2

SECTION C
SCALE 1:30




CASE 1




CASE 2

SECTION C1
SCALE 1:30

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
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| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |



BUILDING AND CONSTRUCTION AUTHORITY
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DRAWING TITLE

TYPICAL PILECAP DETAILS - 8

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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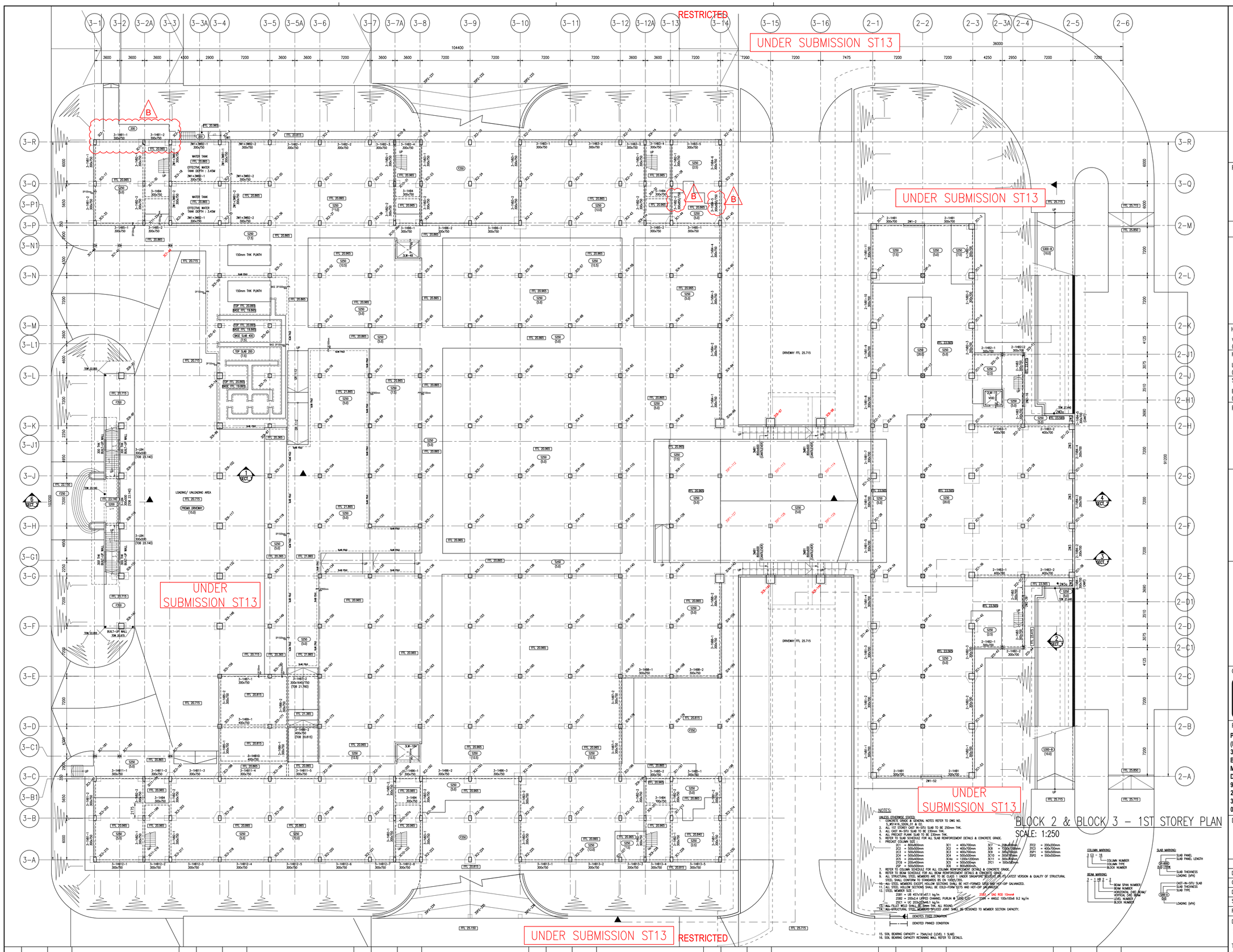


| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| B | 03/03/2023 | TWA | 3-1HB1 (2 SPAN BEAMS) 300X750 FROM APPROVED 300X1825. |
| | | | 3-1VB2 (2 SPAN BEAMS) .SPAN 2 INCREASE 100MM IN DEPTH DUE TO DROP |
| | | | 3-1VB4 (6 SPAN BEAMS) .SPAN 5 INCREASE 100MM IN DEPTH DUE TO DROP |

13 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

**ID ARCHITECTS PTE LTD**
3 Harbourfront Place, #03-01,
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PE ENDORSEMENT
PROFESSIONAL ENGINEER
CIVIL
LEOW GEOK MUI
4072
SINGAPORE

AC ENDORSEMENT

| ACCREDITED CHECKER |
|---|
| No: 1078 |
| CHEN HAO<br>in AC Organisation<br>Registration No: A068 |
| BUILDING CONTROL ACT<br>SINGAPORE |

C&S CONSULTANT

TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
1ST STOREY PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_FP01_ST06

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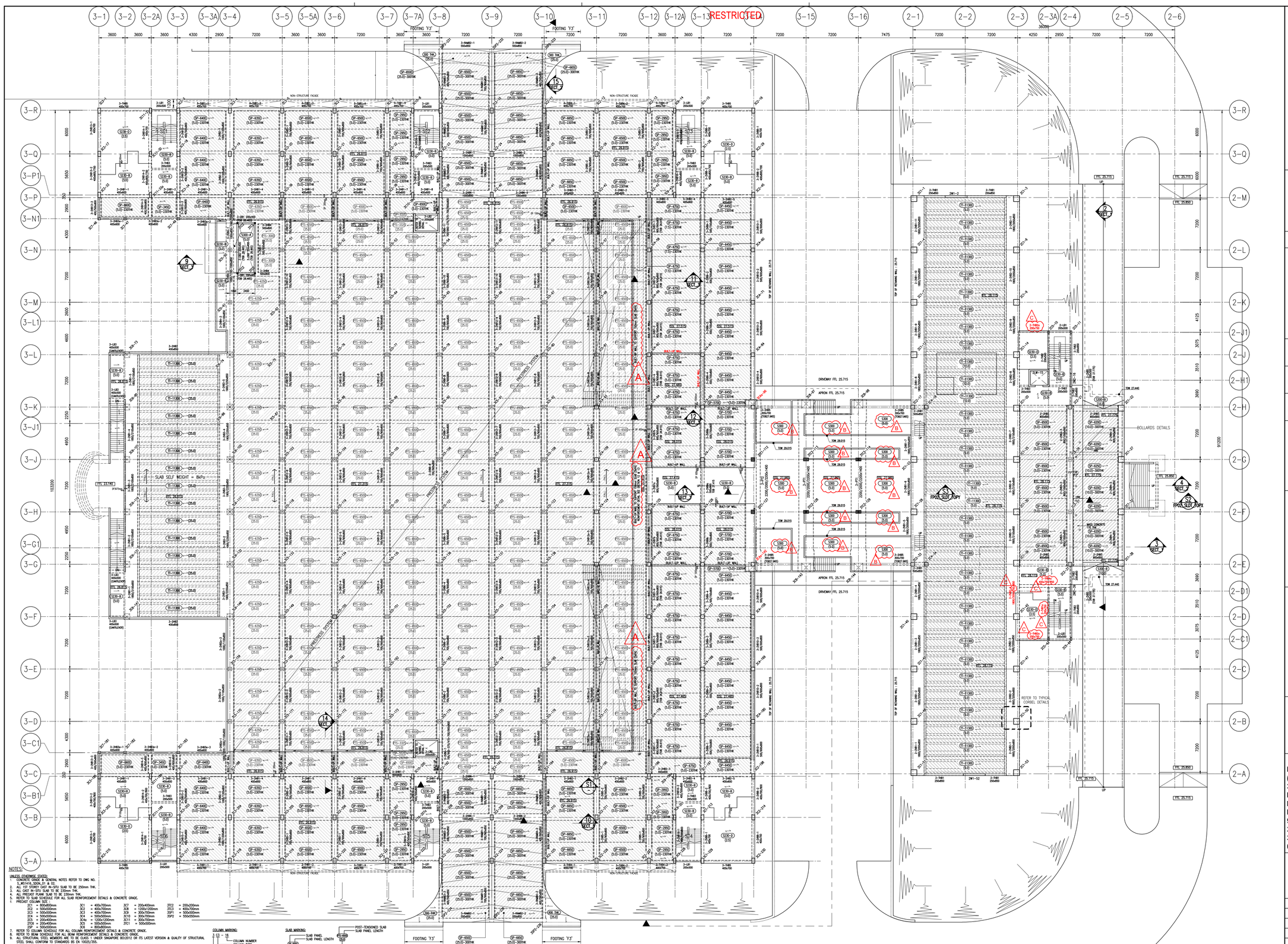


NOTES:

UNLESS OTHERWISE STATED:
1. CONCRETE GRADE & GENERAL NOTES REFER TO DWG NO. S_WS1416_SSON_01 & 02.
2. ALL 1ST STOREY CAST IN-SITU SLAB TO BE 250mm THK.
3. ALL CAST IN-SITU SLAB TO BE 230mm THK.
4. ALL PRECAST SLAB TO BE 150 TO BE 230mm THK.
5. REFER TO SLAB SCHEDULE FOR ALL SLAB REINFORCEMENT DETAILS & CONCRETE GRADE.
6. PRECAST COLUMN SIZE :

| | | | | | |
|---|---|---|---|---|---|
| 2C1 = 800x800mm | 3C1 = 400x700mm | 3C7 = 200x400mm | 3TC2 = 200x200mm | | |
| 2C2 = 500x500mm | 3C2 = 400x700mm | 3C8 = 1200x1200mm | 3TC3 = 400x700mm | | |
| 2C3 = 500x800mm | 3C3 = 400x700mm | 3C9 = 300x700mm | 3SP1 = 500x500mm | | |
| 2C4 = 500x600mm | 3C4 = 500x500mm | 3C10 = 300x700mm | 3SP2 = 550x550mm | | |
| 2C5 = 200x400mm | 3C5 = 1200x1200mm | 3C11 = 300x700mm | | | |
| 2C6 = 200x400mm | 3C6 = 500x500mm | 3TC1 = 500x500mm | | | |
| 2C7 = 200x400mm | 3C7 = 200x400mm | | | | |

7. REFER TO COLUMN SCHEDULE FOR ALL COLUMN REINFORCEMENT DETAILS & CONCRETE GRADE.
8. REFER TO BEAM SCHEDULE FOR ALL BEAM REINFORCEMENT DETAILS & CONCRETE GRADE.
9. ALL STRUCTURAL STEEL MEMBERS ARE TO BE CLASS 1 UNDER SINGAPORE BS5950 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/355.
10. ALL STEEL MEMBERS EXCEPT HOLLOW SECTIONS SHALL BE HOT-FORMED S355 AND HOT-DIP GALVANIZED.
11. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
12. STEEL MEMBER SIZE :
    2SB1 = UB 457x191x67.1 kg/m
    2SB2 = 200x2.4 LIPPED CHANNEL PURLIN @ 1200 C/C
    2SC1 = 203x203x46.1 kg/m
    2SB4 = ANGLE 100x100x8 9.2 kg/m
    2SB3 = SAG ROD 13mmø
13. ALL PLATE MILD STEEL GRADE S275 UNLESS STATED, ALL ROUND.
14. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

COLUMN MARKING: 3 C3 – 16 — COLUMN NUMBER; COLUMN TYPE; BLOCK NUMBER

BEAM MARKING: 3 – 1 1B2 2 — BEAM SPAN NUMBER; BEAM NUMBER; HORIZONTAL (HB) BEAM/ VERTICAL (VB) BEAM LEVEL NUMBER; BLOCK NUMBER

SLAB MARKING: SLAB PANEL; SLAB PANEL LENGTH; SLAB THICKNESS; LOADING (kPA); POST-TENSIONED SLAB; SLAB PANEL LENGTH; LOADING (kPA); CAST-IN-SITU SLAB; SLAB THICKNESS; SLAB TYPE; LOADING (kPA)

DENOTES FIXED CONDITION

DENOTED PINNED CONDITION

## BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN

SCALE: 1:250

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C | 30/10/2023 | TWA | 2–THB2a reduce beam 750 depth from 850 depth |
| C | 30/10/2023 | TWA | 2–THB2a reduce beam 750 depth from 850 depth |
| B | 30/10/2023 | TWA | BLK 3–2ND STY GL 13–16 SLAB REBAR CHANGES |
| A | 04/10/2023 | TWA | BLK 3–2ND STY GL 3–12 ADDED BUILT UP WALL TO SUPPORT SLAB |
| C | 30/10/2023 | TWA | 2–TVB1a reduce beam 750 depth from 850 depth |

14 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

.....

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AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
2ND STOREY PLAN

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
| Scale | AS SHOWN | | Sources | |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_FP02_ST09

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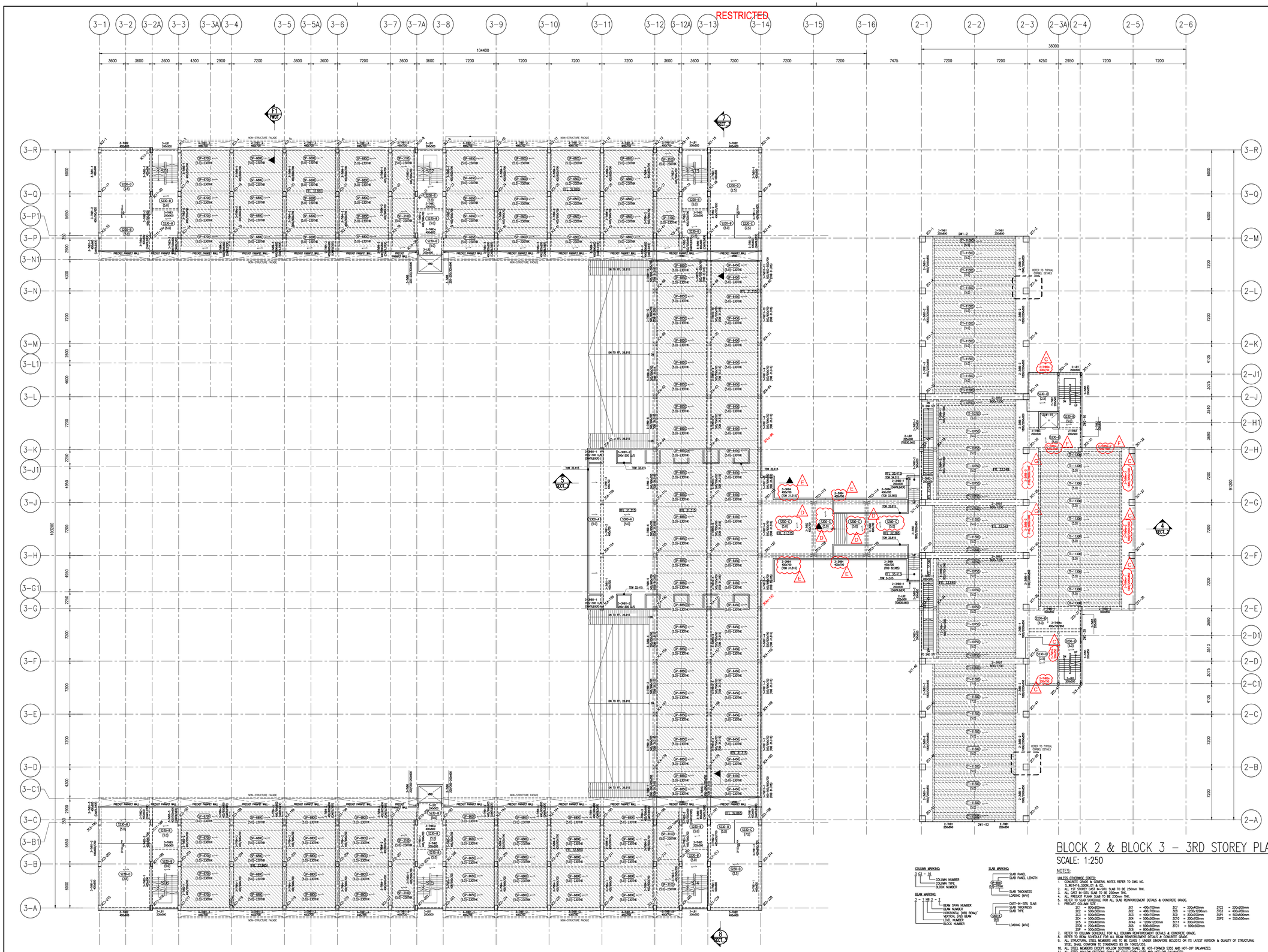

# BLOCK 2 & BLOCK 3 – 3RD STOREY PLAN

SCALE: 1:250

NOTES:

UNLESS OTHERWISE STATED:
1. CONCRETE GRADE & GENERAL NOTES REFER TO DWG NO. S_WS1416_SGN_01 & 02.
2. ALL 1ST STOREY CAST IN-SITU SLAB TO BE 250mm THK.
3. ALL CAST IN-SITU SLAB TO BE 230mm THK.
4. ALL PRECAST PLANK SLAB TO BE 230mm THK.
5. REFER TO SLAB SCHEDULE FOR ALL SLAB REINFORCEMENT DETAILS & CONCRETE GRADE.
6. PRECAST COLUMN SIZE :

| | | | | | |
|---|---|---|---|---|---|
| 2C1 | = 500x500mm | 3C1 | = 400x700mm | 3C7 | = 200x400mm |
| 2C2 | = 500x500mm | 3C2 | = 400x700mm | 3C8 | = 1200x1200mm |
| 2C3 | = 500x500mm | 3C3 | = 400x700mm | 3C9 | = 300x700mm |
| 2C4 | = 500x500mm | 3C4 | = 500x500mm | 3C10 | = 300x700mm |
| 2C5 | = 200x400mm | 3C4a | = 1200x1200mm | 3C11 | = 300x700mm |
| 2C6 | = 200x400mm | 3C5 | = 500x500mm | 3C1' | = 500x500mm |
| 2SP | = 500x500mm | 3C6 | = 800x800mm | | |

| | | | |
|---|---|---|---|
| 3T02 | = 200x200mm | 3T03 | = 400x700mm |
| 3SP1 | = 500x500mm | 3SP2 | = 500x500mm |

7. REFER TO COLUMN SCHEDULE FOR ALL COLUMN REINFORCEMENT DETAILS & CONCRETE GRADE.
8. REFER TO BEAM SCHEDULE FOR ALL BEAM REINFORCEMENT DETAILS & CONCRETE GRADE.
9. ALL STRUCTURAL STEEL MEMBERS ARE TO BE DESIGNED TO SINGAPORE BC(2012 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/10210.
10. ALL STEEL MEMBERS EXCEPT HOLLOW SECTIONS SHALL BE HOT-FORMED S355 AND HOT-DIP GALVANIZED.
11. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
12. STEEL MEMBER SIZE :
    - 2SB1 = UB 457x191x67.1 kg/m
    - 2SB2 = 200x2.4 LIPPED CHANNEL PURLIN @ 1200 C/C
    - 2SC1 = UC 203x203x46.1 kg/m
    - 2SB3 = SAG ROD 10mmø
    - 2SB4 = ANGLE 100x100x6 9.2 kg/m
13. ALL FILLET WELD SHALL BE 5mm THK. ALL ROUND.
14. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

DENOTES FIXED CONDITION

DENOTED PINNED CONDITION

COLUMN MARKING: 3 C3 – 16 — COLUMN NUMBER, COLUMN TYPE, BLOCK NUMBER

BEAM MARKING: 2 – 1 HB 2 – 2 — BEAM SPAN NUMBER, BEAM NUMBER, HORIZONTAL (HB) BEAM/ VERTICAL (VB) BEAM, LEVEL NUMBER, BLOCK NUMBER

SLAB MARKING: SLAB PANEL; SLAB PANEL LENGTH; SLAB THICKNESS; LOADING (kPA); CAST-IN-SITU SLAB; SLAB THICKNESS; SLAB TYPE; LOADING (kPA)

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| F | 30/10/2023 | TWA | 2–THB5a–1 increase beam depth 1000 from 850 |
| E | 30/10/2023 | TWA | 3–3HB4 revise to single span |
| D | 04/10/2023 | TWA | Blk 3–3rd Sty GL 13–16 slab rebar direction changes |
| C | 04/10/2023 | TWA | 2–THB2a reduce beam 750 depth from 850 depth |
| G | 28/11/2023 | TWA | 2–3VB6–2–3 increase beam depth 1000 from 850 in span 2 and 3 |

15 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

.....

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AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

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VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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C&S CONSULTANT

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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
3RD STOREY PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |
| Filename | S_WS1416_BLK02_03_FP | | |

Drawing no.
S_WS1416_BLK02_03_FP03_ST09

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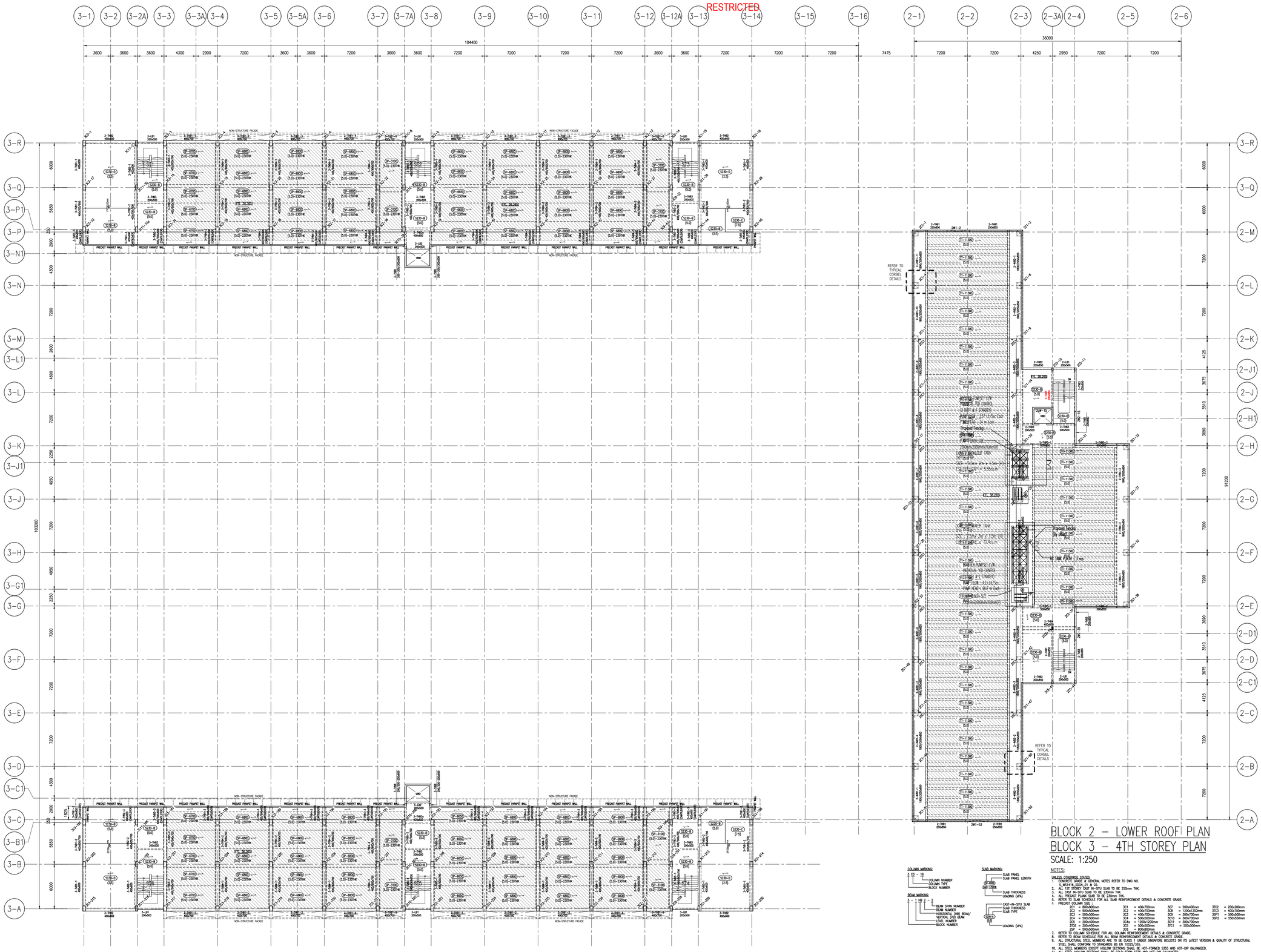


BLOCK 2 – LOWER ROOF PLAN
BLOCK 3 – 4TH STOREY PLAN
SCALE: 1:250

COLUMN MARKING:
3 C3 – 16
COLUMN NUMBER
COLUMN TYPE
BLOCK NUMBER

BEAM MARKING:
2 – 1 – 1B 2 – 2
BEAM SPAN NUMBER
BEAM NUMBER
HORIZONTAL (HB) BEAM/ VERTICAL (VB) BEAM
LEVEL NUMBER
BLOCK NUMBER

SLAB MARKING:
SLAB PANEL
SLAB PANEL LENGTH
SP-6800 (LO-2.5)KN
SLAB THICKNESS
LOADING (kPA)
CAST-IN-SITU SLAB
SLAB THICKNESS
SLAB TYPE
S200-A (LO)
LOADING (kPA)

NOTES:

UNLESS OTHERWISE STATED:
1. CONCRETE GRADE & GENERAL NOTES REFER TO DWG NO. S_WS1416_S00N_01 & 03.
2. ALL 125 STOREY CAST IN-SITU SLAB TO BE 250mm THK.
3. ALL CAST IN-SITU SLAB TO BE 230mm THK.
4. ALL PRECAST PLANK SLAB TO BE 230mm THK.
5. REFER TO SLAB SCHEDULE FOR ALL SLAB REINFORCEMENT DETAILS & CONCRETE GRADE.
6. PRECAST COLUMN SIZE :

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2C1 | = 500x800mm | 3C1 | = 400x700mm | 3C7 | = 500x450mm | 3S2C2 | = 300x200mm |
| 2C2 | = 500x500mm | 3C2 | = 400x700mm | 3C8 | = 1200x1200mm | 3S3C1 | = 400x700mm |
| 2C3 | = 500x500mm | 3C3 | = 400x700mm | 3C9 | = 300x700mm | 3SP1 | = 500x500mm |
| 2C4 | = 500x500mm | 3C4 | = 500x500mm | 3C10 | = 300x700mm | 3SP2 | = 550x550mm |
| 2C5 | = 200x400mm | 3C4a | = 1200x1200mm | 3C11 | = 300x700mm | | |
| 2SC6 | = 200x400mm | 3C5 | = 500x500mm | 3TC1 | = 500x500mm | | |
| 2SP | = 500x500mm | 3C6 | = 800x800mm | | | | |

7. REFER TO COLUMN SCHEDULE FOR ALL COLUMN REINFORCEMENT DETAILS & CONCRETE GRADE.
8. REFER TO BEAM SCHEDULE FOR ALL BEAM REINFORCEMENT DETAILS & CONCRETE GRADE.
9. ALL STRUCTURAL STEEL MEMBERS ARE TO BE CLASS 1 UNDER SINGAPORE BC3:2012 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/3450.
10. ALL STEEL MEMBERS EXCEPT HOLLOW SECTIONS SHALL BE HOT-ROLLED S355 AND HOT-DIP GALVANIZED.
11. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
12. STEEL MEMBER SIZE :

| | | | |
|---|---|---|---|
| 2SB1 | = UB 457x191x67.1 kg/m | 2SB3 | = SAS 800 10mm# |
| 2SB2 | = 200x2.4 LIPPED CHANNEL PURLIN @ 1200 C/C | 2SB4 | = ANGLE 100x100x6 9.2 kg/m |
| 2SC1 | = UC 203x203x46.1 kg/m | | |

13. ALL FILLET WELD SHALL BE 5mm THK. ALL ROUND.
14. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

DENOTES FIXED CONDITION
DENOTED PINNED CONDITION

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C1 | 30/10/2023 | TWA | REVISED AS CLOUDED. |
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

16 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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FOR OFFICIAL USE

AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
4TH STOREY PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_FP04_ST09

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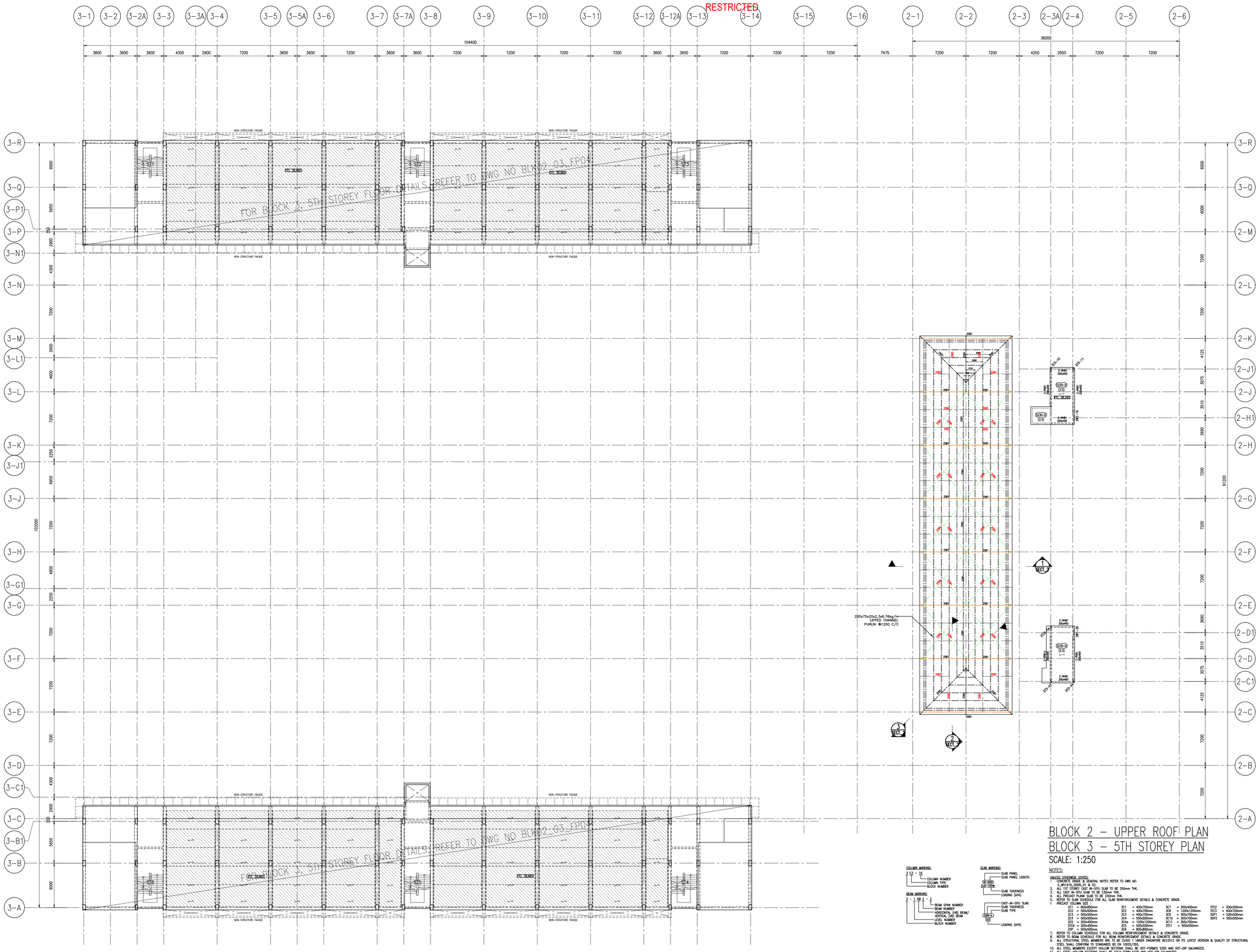


BLOCK 2 – UPPER ROOF PLAN
BLOCK 3 – 5TH STOREY PLAN

SCALE: 1:250

COLUMN MARKING:
3 C3 – 18
COLUMN NUMBER
COLUMN TYPE
BLOCK NUMBER

BEAM MARKING:
3 – 18 B 2 – 2
BEAM SPAN NUMBER
BEAM NUMBER
HORIZONTAL (H8) BEAM/ VERTICAL (V8) BEAM
LEVEL NUMBER
BLOCK NUMBER

SLAB MARKING:
SP-180 (L3) 1.25HK
SLAB PANEL
SLAB PANEL LENGTH
SLAB THICKNESS
LOADING (kPA)
CAST-IN-SITU SLAB
SLAB THICKNESS
SLAB TYPE
CSSP-1 (L3)
LOADING (kPA)

NOTES:

UNLESS OTHERWISE STATED:
1. CONCRETE GRADE & GENERAL NOTES REFER TO DWG NO. S_WS1416_SD06_01 & 02.
2. ALL 1ST STOREY FLOOR SLAB TO BE 250mm THK.
3. ALL 2ND STOREY FLOOR SLAB TO BE 230mm THK.
4. ALL ROOF PLANS SLAB TO BE 230mm THK.
5. REFER TO SLAB SCHEDULE FOR ALL SLAB REINFORCEMENT DETAILS & CONCRETE GRADE.
6. PRECAST COLUMN SIZE :

| | | | | | |
|---|---|---|---|---|---|
| 2C1 = 800x800mm | 3C1 = 400x700mm | 3C7 = 200x400mm | 3TC2 = 200x200mm |
| 2C2 = 500x500mm | 3C2 = 400x700mm | 3C8 = 1200x1200mm | 3TC3 = 400x700mm |
| 2C3 = 500x500mm | 3C3 = 400x700mm | 3C9 = 300x700mm | 3SP1 = 500x500mm |
| 2C4 = 500x500mm | 3C4 = 500x500mm | 3C10 = 300x700mm | 3SP2 = 550x550mm |
| 2C5 = 500x500mm | 3C5 = 500x500mm | 3C11 = 300x700mm | |
| 2TC6 = 200x400mm | 3C6 = 500x500mm | 3C12 = 500x500mm | |
| 2SP = 500x500mm | 3C6 = 800x800mm | | |

7. REFER TO COLUMN SCHEDULE FOR ALL COLUMN REINFORCEMENT DETAILS & CONCRETE GRADE.
8. REFER TO BEAM SCHEDULE FOR ALL BEAM REINFORCEMENT DETAILS & CONCRETE GRADE.
9. ALL STRUCTURAL STEEL MEMBERS ARE TO BE CLASS 1 UNDER SINGAPORE BCS2012 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/355.
10. ALL STEEL MEMBERS EXCEPT HOLLOW SECTIONS SHALL BE HOT-FORMED S355 AND HOT-DIP GALVANIZED.
11. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
12. STEEL MEMBER SIZE :
    2SB1 = UB 457x191x67.1 kg/m
    2SB2 = 200x5.4 LIPPED CHANNEL PURLIN @ 1200 C/C
    2SB3 = 250x8 PLATE 10mm#
    2SC1 = UC 203x203x46.1 kg/m
    2SB4 = SAC ROD 10mm#
    2SB5 = ANGLE 100x100x6 9.2 kg/m
13. ALL FILLET WELD SHALL BE 5mm THK. ALL ROUND.
14. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

DENOTES FIXED CONDITION
DENOTED PINNED CONDITION

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C2 | 28/11/2023 | TWA | REVISED AS CLOUDED. |
| C1 | 30/10/2023 | TWA | REVISED AS CLOUDED. |
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

17 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

.....

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AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA
Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

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general@idarchitects.com.sg
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PE ENDORSEMENT
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CIVIL
LEOW GEOK MUI
4072
SINGAPORE

AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
5TH STOREY PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_FP05_ST09

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RESTRICTED

RESTRICTED

COLUMN MARKING:
3-C3 - 16
COLUMN NUMBER
COLUMN TYPE
BLOCK NUMBER

BEAM MARKING:
3 - 1 HB 2 - 2
BEAM SPAN NUMBER
BEAM NUMBER
HORIZONTAL (HB) BEAM/ VERTICAL (VB) BEAM
LEVEL NUMBER
BLOCK NUMBER

SLAB MARKING:
SLAB PANEL
SLAB PANEL LENGTH
GP-6800
(5.0)-230THK
SLAB THICKNESS
LOADING (kPA)
CAST-IN-SITU SLAB
SLAB THICKNESS
SLAB TYPE
SB6-1
SLB
LOADING (kPA)

# BLOCK 3 – 6TH STOREY PLAN

SCALE: 1:250

NOTES:

UNLESS OTHERWISE STATED:
1. CONCRETE GRADE & GENERAL NOTES REFER TO DWG NO. S_WS1416_SOON_01 & 02.
2. ALL 1ST STOREY CAST IN-SITU SLAB TO BE 250mm THK.
3. ALL CAST IN-SITU SLAB TO BE 230mm THK.
4. ALL PRECAST PLANK SLAB TO BE 230mm THK.
5. REFER TO SLAB SCHEDULE FOR ALL SLAB REINFORCEMENT DETAILS & CONCRETE GRADE.
6. PRECAST COLUMN SIZE :

| | | | | | |
|---|---|---|---|---|---|
| 2C1 = 800x800mm | 3C1 = 400x700mm | 3C7 = 200x400mm | 3TC2 = 200x200mm |
| 2C2 = 500x500mm | 3C2 = 400x700mm | 3C8 = 1200x1200mm | 3TC3 = 400x700mm |
| 2C3 = 500x500mm | 3C3 = 400x700mm | 3C9 = 300x700mm | 3SP1 = 500x500mm |
| 2C4 = 500x500mm | 3C4 = 500x500mm | 3C10 = 300x700mm | 3SP2 = 550x550mm |
| 2C5 = 200x400mm | 3C4a = 1200x1200mm | 3C11 = 300x700mm | |
| 2C6 = 200x400mm | 3C5 = 500x500mm | 3TC1 = 500x500mm | |
| 2C7 = 200x400mm | 3C6 = 500x500mm | | |

7. REFER TO COLUMN SCHEDULE FOR ALL COLUMN REINFORCEMENT DETAILS & CONCRETE GRADE.
8. REFER TO BEAM SCHEDULE FOR ALL BEAM REINFORCEMENT DETAILS & CONCRETE GRADE.
9. ALL STRUCTURAL STEEL MEMBERS ARE TO BE CLASS 1 UNDER SINGAPORE BC(CS)12 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/355.
10. ALL STEEL MEMBERS EXCEPT HOLLOW SECTIONS SHALL BE HOT-FORMED S355 AND HOT-DIP GALVANIZED.
11. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
12. STEEL MEMBER SIZE :
    - 2SB1 = UB 457x191x67.1 kg/m
    - 2SB2 = 200x2.4 LIPPED CHANNEL PURLIN @ 1200 C/C
    - 2SC1 = UC 203x203x46.1 kg/m
    - 2SB3 = SAG ROD 10mmø
    - 2SB4 = ANGLE 100x100x6 9.2 kg/m
13. ALL FILLET WELD SHALL BE 5mm THK. ALL ROUND.
14. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

DENOTES FIXED CONDITION

DENOTED PINNED CONDITION

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| H | 04/10/2023 | TWA | vertical beam span 1 cantilever removed, replaced with the approved 230-A |

18 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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PROFESSIONAL ENGINEER
CIVIL
LEOW GEOK MUI
4072
SINGAPORE

AC ENDORSEMENT

| ACCREDITED CHECKER |
|---|
| No: 1078 |
| CHEN HAO<br>in AC Organisation<br>Registration No: A068 |
| BUILDING CONTROL ACT<br>SINGAPORE |

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
6TH STOREY PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |
| Filename | S_WS1416_BLK02_03_FP | | |

Drawing no.
S_WS1416_BLK02_03_FP06_ST09

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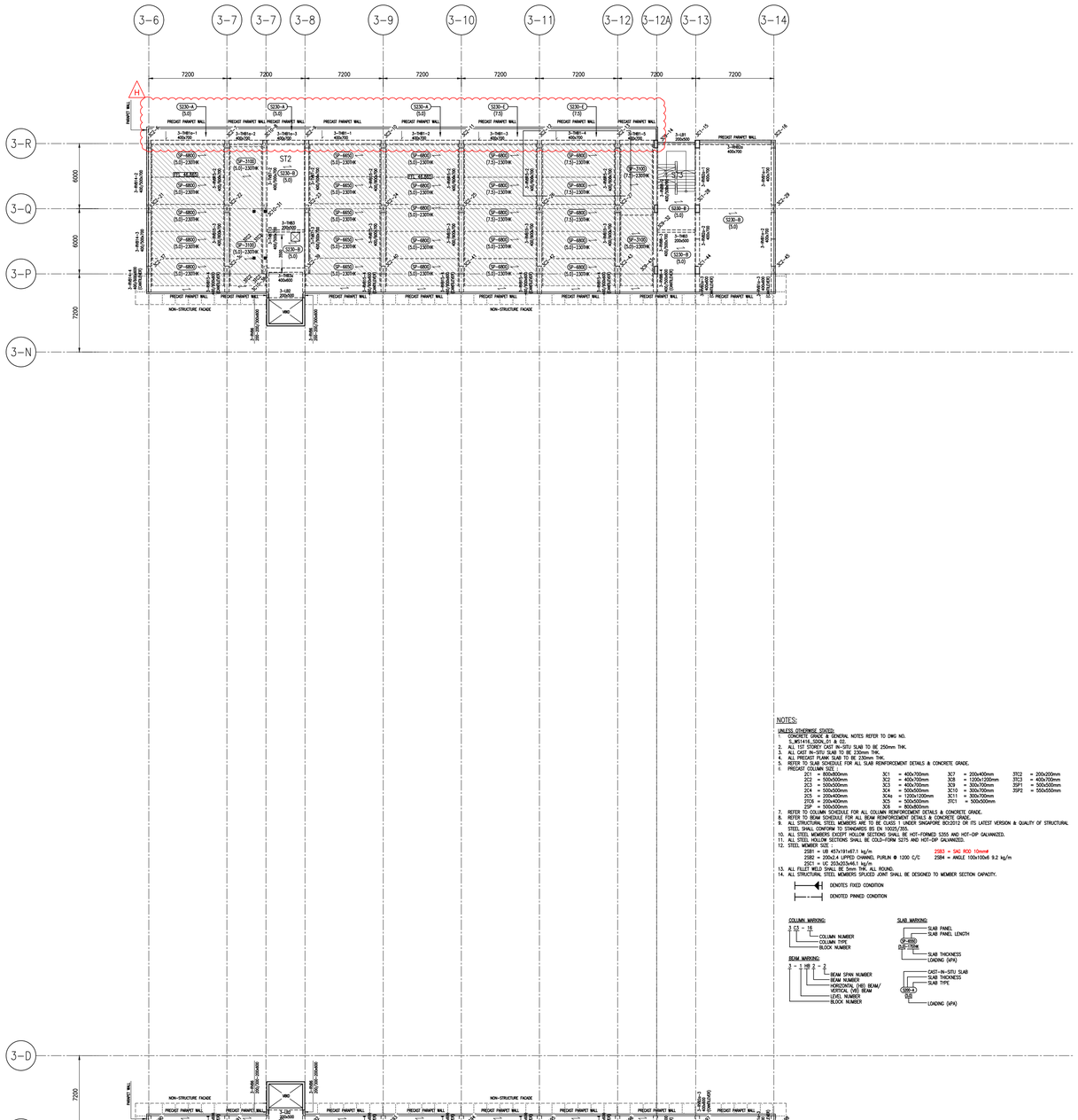
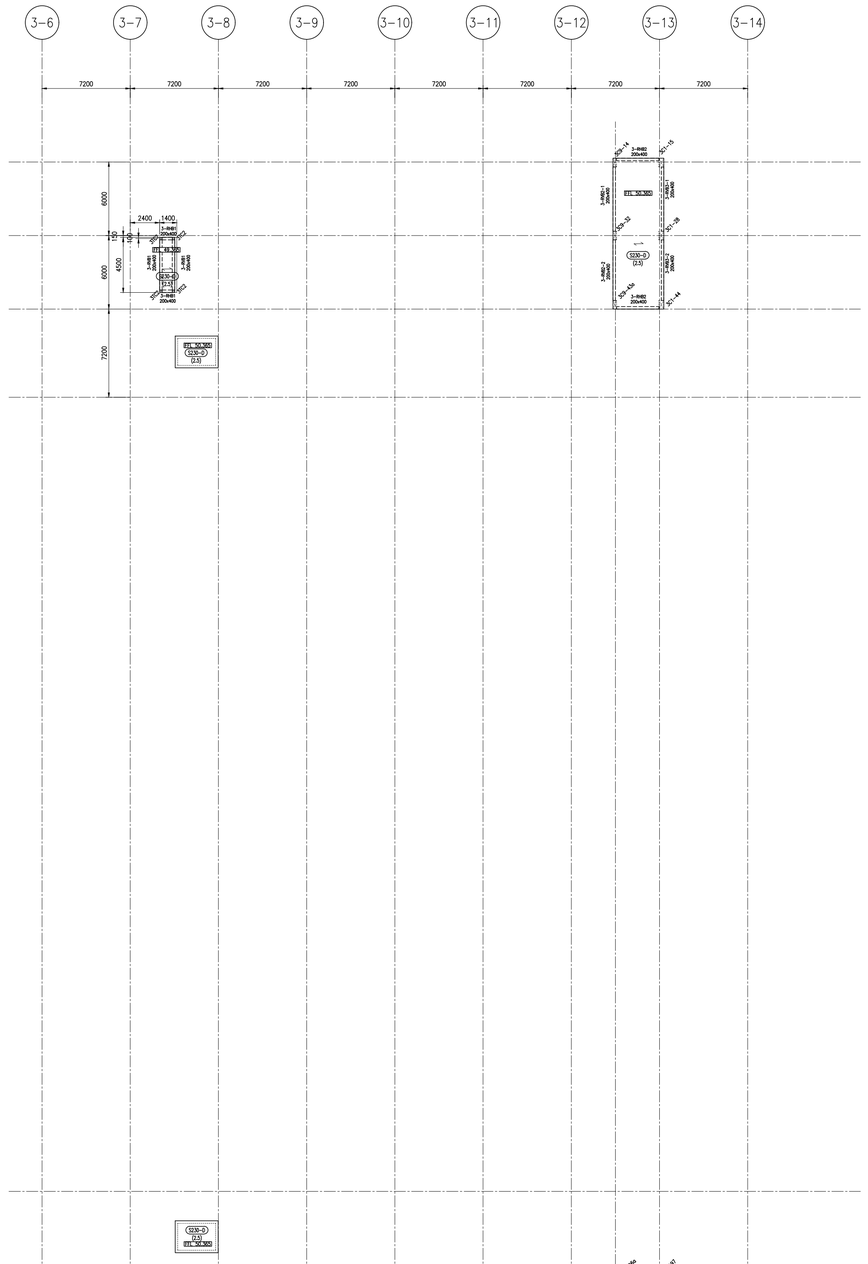



NOTES:

UNLESS OTHERWISE STATED:
1. CONCRETE GRADE: ALL GENERAL NOTES REFER TO DWG NO. "METAL SCHL 01 & 02.
2. ALL 1ST STOREY CAST IN-SITU SLAB TO BE 250mm THK.
3. ALL CAST IN-SITU SLAB TO BE 230mm THK.
4. ALL PRECAST PLANK SLAB TO BE 230mm THK.
5. REFER TO SLAB SCHEDULE FOR ALL SLAB REINFORCEMENT DETAILS & CONCRETE GRADE.
6. PRECAST COLUMN SIZE :

| | | | | | |
|---|---|---|---|---|---|
| 2C1 | = 800x800mm | 3C1 | = 400x700mm | 3C7 | = 200x400mm |
| 2C2 | = 500x500mm | 3C2 | = 400x700mm | 3C8 | = 1200x1200mm |
| 2C3 | = 400x400mm | 3C3 | = 400x700mm | 3C9 | = 300x700mm |
| 2C4 | = 500x500mm | 3C4 | = 500x500mm | 3C10 | = 300x700mm |
| 2C5 | = 200x400mm | 3C4a | = 1200x1200mm | 3C11 | = 300x700mm |
| 2TC6 | = 200x400mm | 3C5 | = 500x500mm | 3TC1 | = 500x500mm |
| 2SP | = 500x500mm | 3C6 | = 800x800mm | | |

| | | | | | |
|---|---|---|---|---|---|
| 3TC2 | = 200x200mm | | | | |
| 3TC3 | = 400x700mm | | | | |
| 3SP1 | = 500x500mm | | | | |
| 3SP2 | = 550x550mm | | | | |

7. REFER TO COLUMN SCHEDULE FOR ALL COLUMN REINFORCEMENT DETAILS & CONCRETE GRADE.
8. REFER TO BEAM SCHEDULE FOR ALL BEAM REINFORCEMENT DETAILS & CONCRETE GRADE.
9. ALL STRUCTURAL STEEL MEMBERS ARE TO BE S355 1 UNDER SINGAPORE BC3:2012 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/35C
10. ALL STEEL HOLLOW SECTIONS EXCEPT RHS/CHS SHALL BE HOT-FORMED S355 AND HOT-DIP GALVANIZED.
11. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
12. STEEL MEMBER SIZE :

| | |
|---|---|
| 2SB1 = UB 457x191x67.1 kg/m | 2SB3 = SAC 800 10mm# |
| 2SB2 = 200x2.4 LIPPED CHANNEL PURLIN @ 1200 C/C | 2SB4 = ANGLE 100x100x6 9.2 kg/m |
| 2SC1 = UC 203x203x46.1 kg/m | |

13. ALL FILLET WELD SHALL BE 5mm THK. ALL ROUND.
14. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

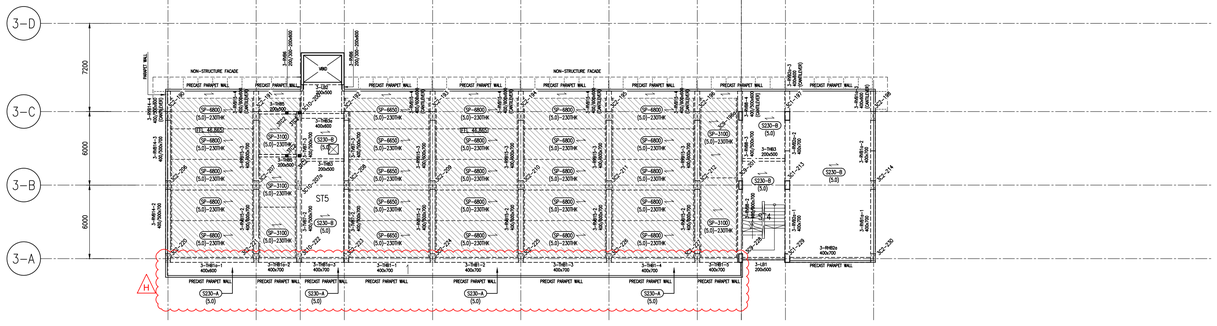
DENOTES FIXED CONDITION

DENOTED PINNED CONDITION

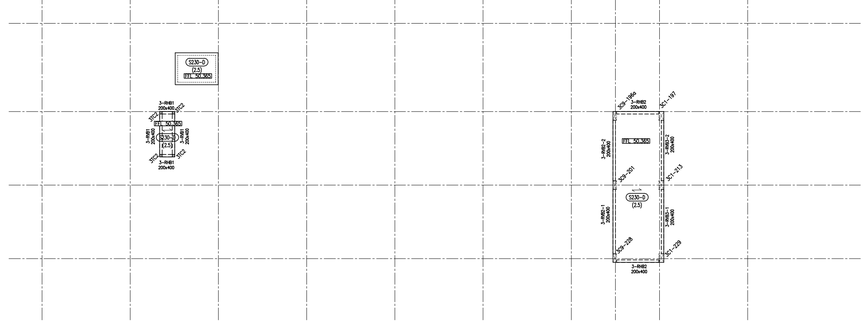
COLUMN MARKING:
3 C3 - 16
COLUMN NUMBER
COLUMN TYPE
BLOCK NUMBER

BEAM MARKING:
3 - 1 HB 2 - 2
BEAM SPAN NUMBER
BEAM NUMBER
HORIZONTAL (HB) BEAM/ VERTICAL (VB) BEAM
LEVEL NUMBER
BLOCK NUMBER

SLAB MARKING:
SLAB PANEL
SLAB PANEL LENGTH
SLAB THICKNESS
LOADING (kPa)
CAST-IN-SITU SLAB
SLAB THICKNESS
SLAB TYPE
LOADING (kPa)




BLOCK 3 – LOWER ROOF PLAN
SCALE: 1:250



BLOCK 3 – UPPER ROOF PLAN
SCALE: 1:250



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| H | 04/10/2023 | TWA | vertical beam span 1 cantilever removed, replaced with the approved 230-A |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

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AC ENDORSEMENT

| ACCREDITED CHECKER |
|---|
| No: 1078 |
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| BUILDING CONTROL ACT<br>SINGAPORE |

C&S CONSULTANT

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NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
LOWER & UPPER ROOF PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_FPRP_ST09

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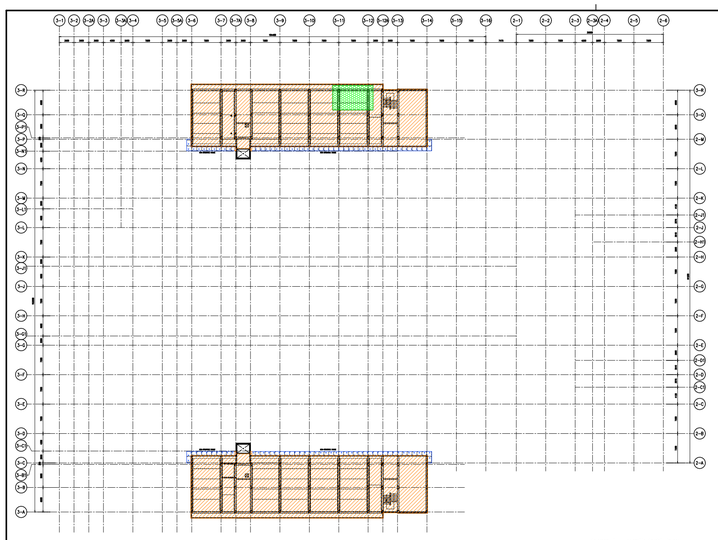
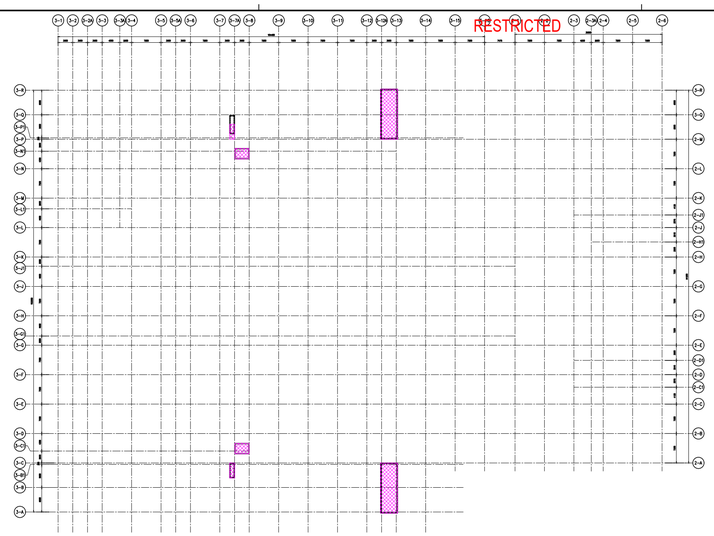
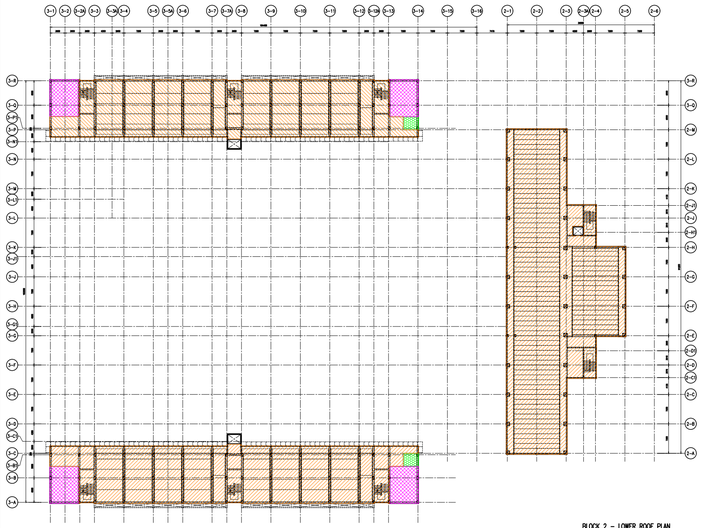


BLOCK 3 – LOWER ROOF PLAN
SCALE: 1:250

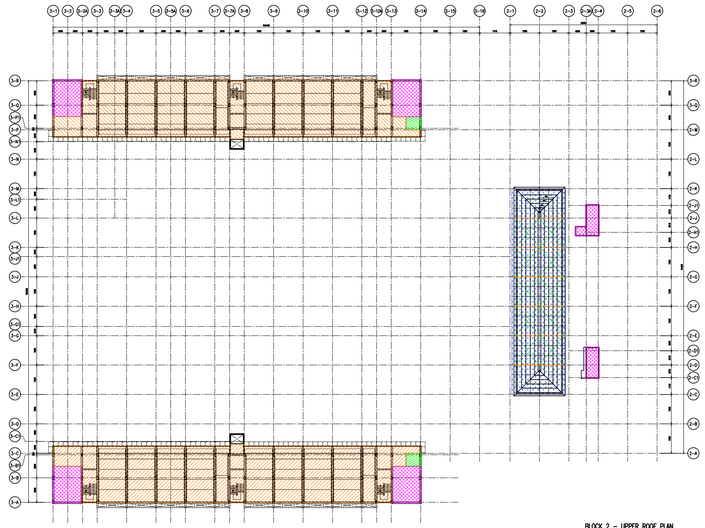


BLOCK 3 – LOWER ROOF PLAN
SCALE: 1:250

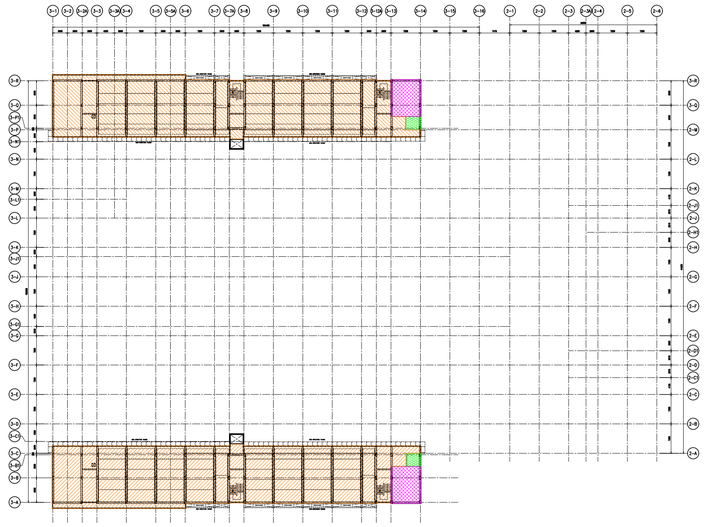
| LL (kN/m²) | SDL (kN/m²) |
|---|---|
| 0.75 | |
| 2.50 | |
| 5.00 | |
| 7.50 | |
| 10.00 | |
| 12.00 | |
| 12.50 | |
| 20.00 | |
| 25.00 | WATERPROOFING + INTERLOCKING TILES |



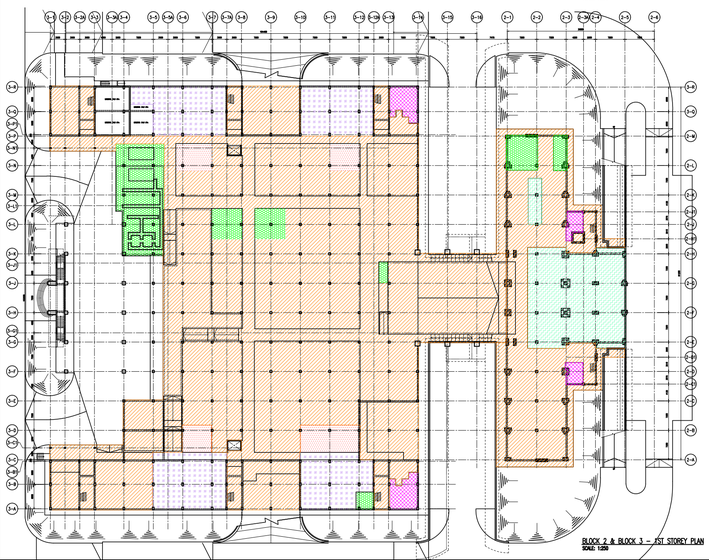
BLOCK 2 – LOWER ROOF PLAN
BLOCK 3 – 4TH STOREY PLAN
SCALE: 1:250



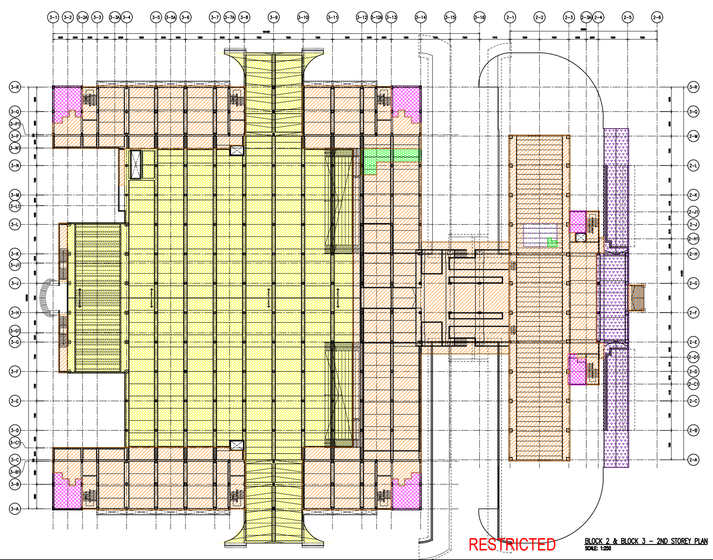
BLOCK 2 – UPPER ROOF PLAN
BLOCK 3 – 5TH STOREY PLAN
SCALE: 1:250



BLOCK 3 – 6TH STOREY PLAN
SCALE: 1:250

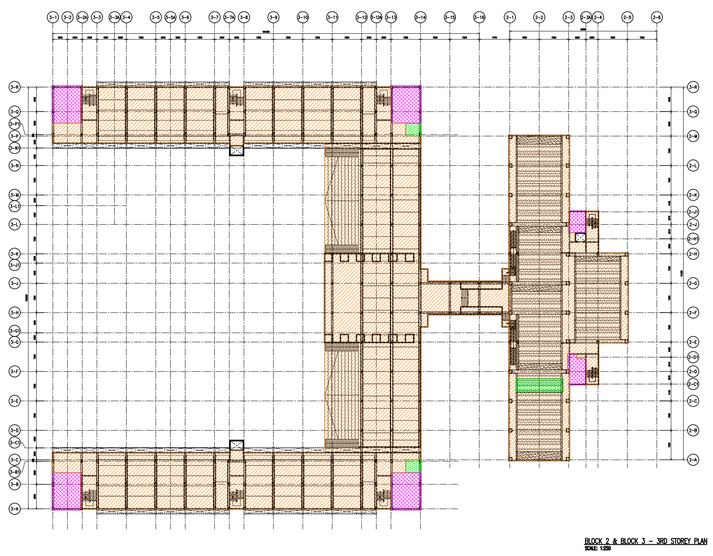


BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
SCALE: 1:250



RESTRICTED

BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN
SCALE: 1:250



BLOCK 2 & BLOCK 3 – 3RD STOREY PLAN
SCALE: 1:250

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

20 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

.....

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AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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AC ENDORSEMENT

ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT


TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196


PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
LOADING PLAN

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
| Scale | AS SHOWN | | Sources | |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_LOAD_ST09


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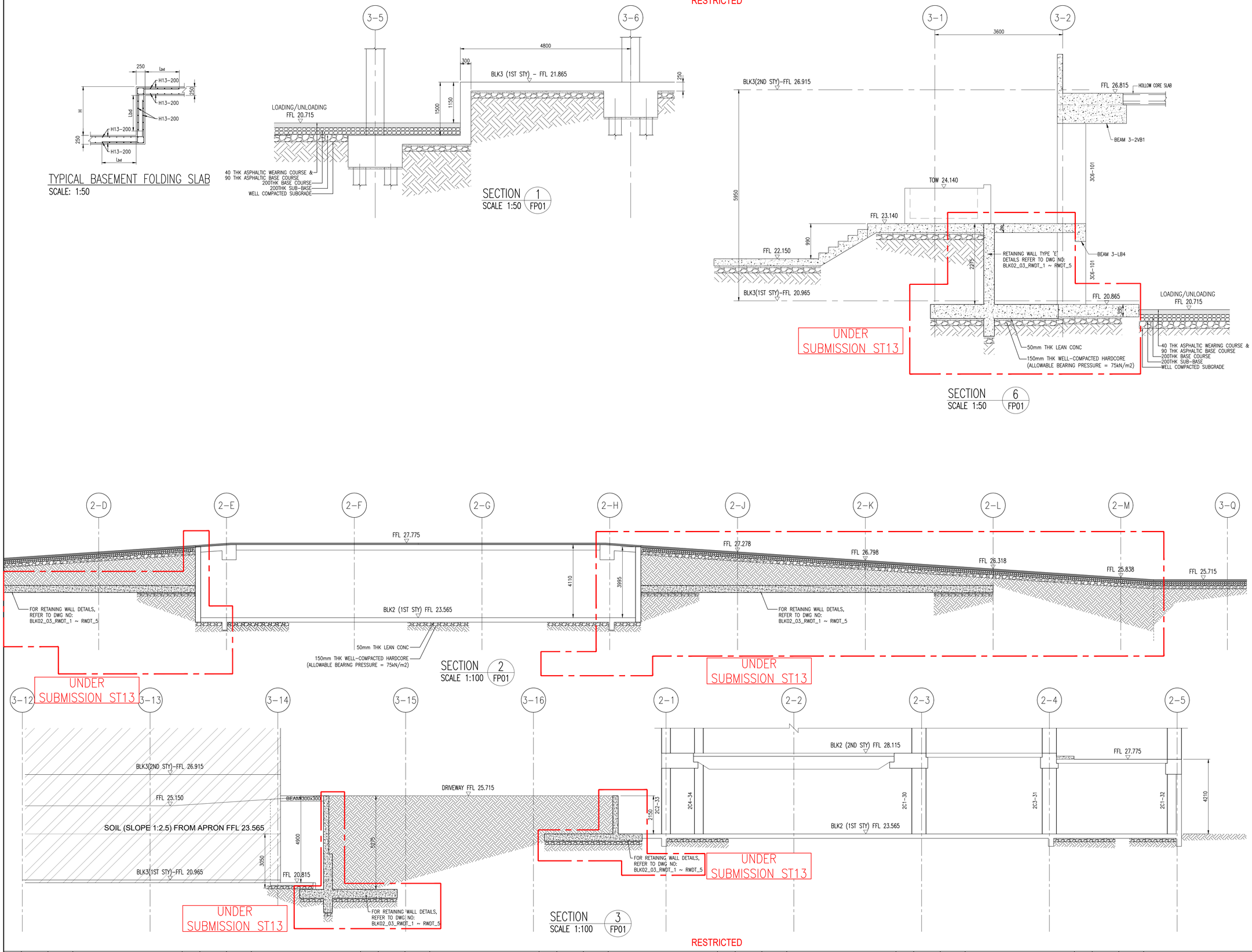


RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C1 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 03/03/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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(name & signature)

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SENIOR PROGRAMME MANAGER
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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
SECTIONS – 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_SECT_1_ST06

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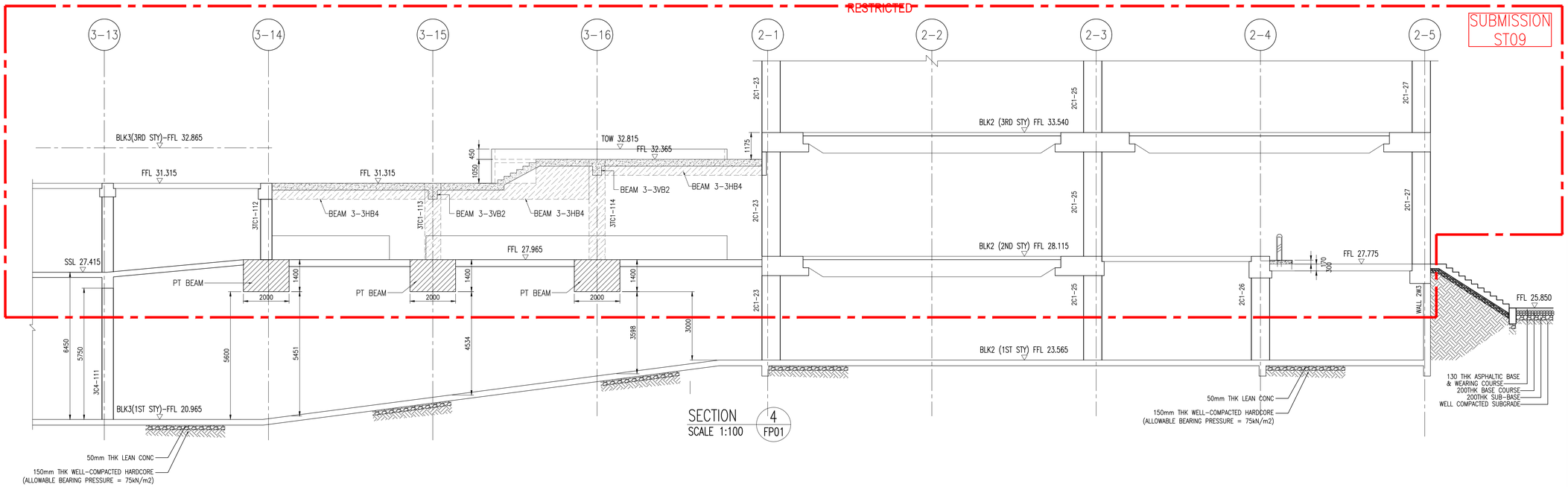
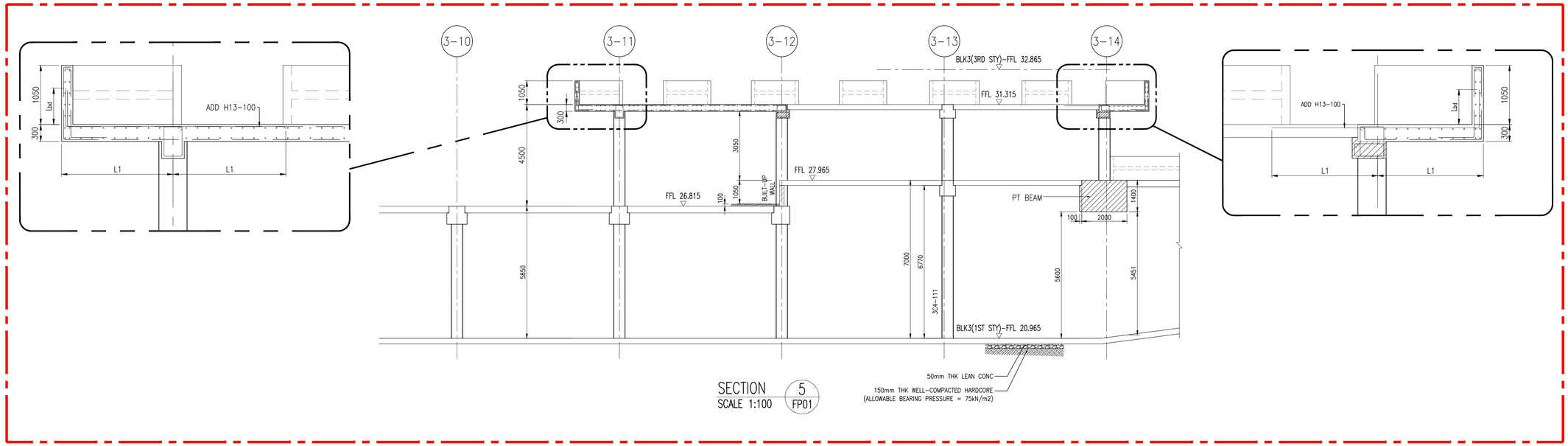
SUBMISSION ST09

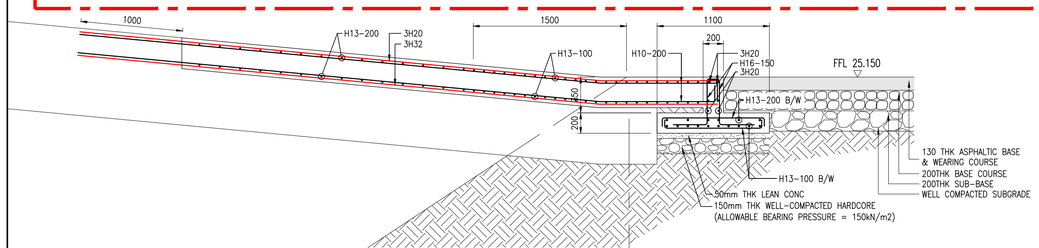



SECTION 4 FP01
SCALE 1:100




SECTION 5 FP01
SCALE 1:100

SUBMISSION ST09




TYPICAL FOOTING DETAILS (TYPE F3)
SCALE: 1:30

C

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |

22 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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DRAWING TITLE
BLOCK 2 & BLOCK 3
SECTIONS – 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_SECT_2_ST09

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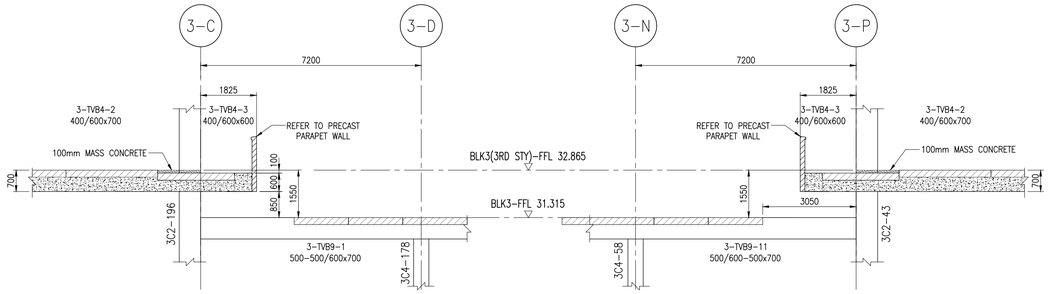
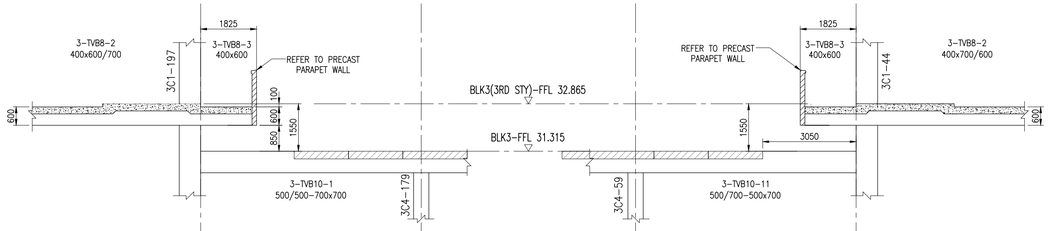
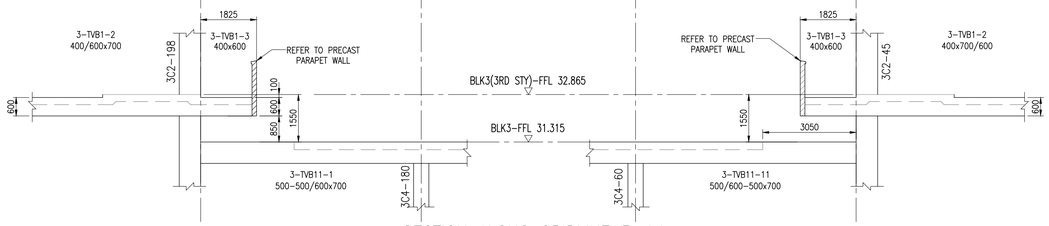


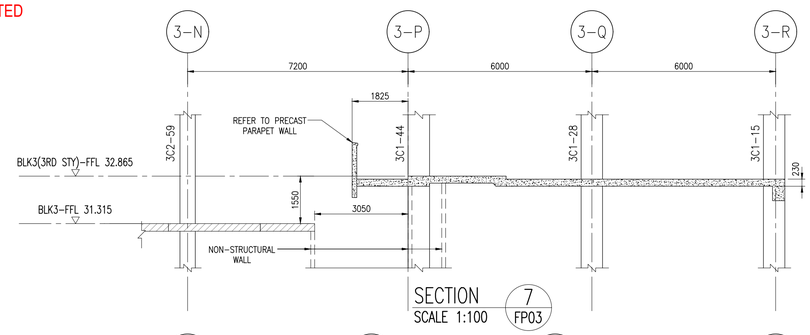

SECTION ALONG GRIDLINE 3-12
SCALE: 1:100



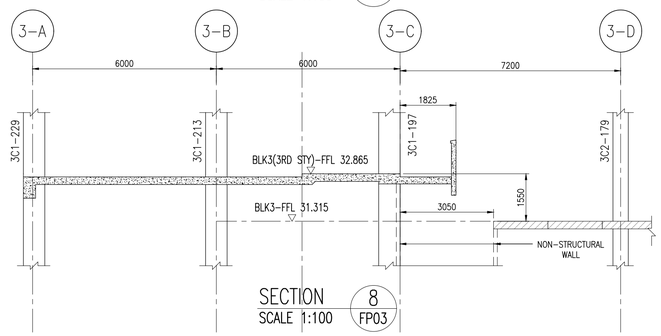

SECTION ALONG GRIDLINE 3-13
SCALE: 1:100



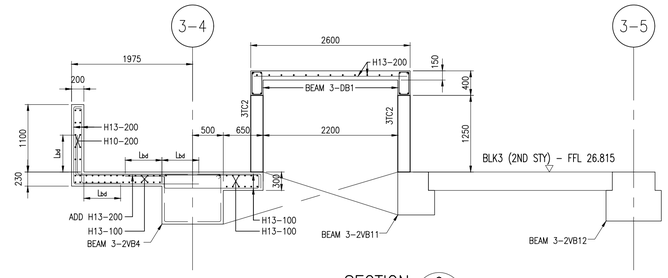

SECTION ALONG GRIDLINE 3-14
SCALE: 1:100



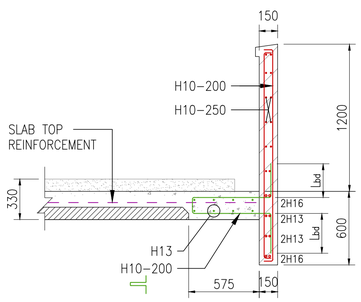

SECTION 7 FP03
SCALE 1:100



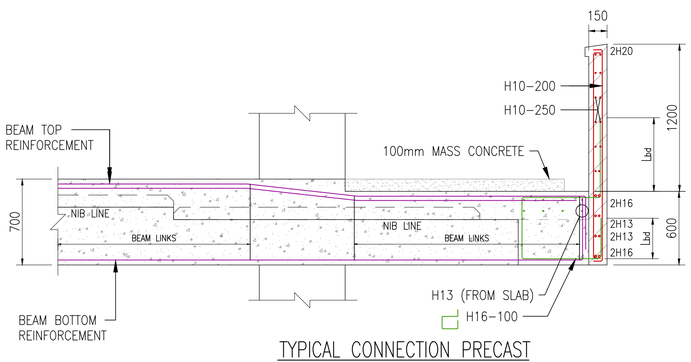

SECTION 8 FP03
SCALE 1:100



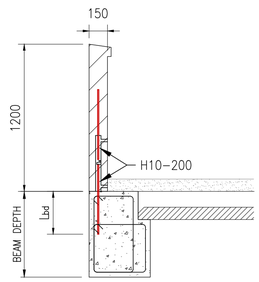

SECTION 9 FP01
SCALE 1:50



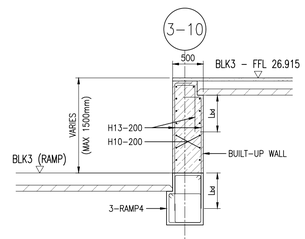

TYPICAL CONNECTION PRECAST PARAPET WALL AND SLAB
SCALE: 1:25



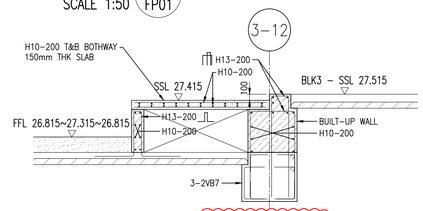

TYPICAL CONNECTION PRECAST PARAPET WALL AND BEAM
SCALE: 1:25



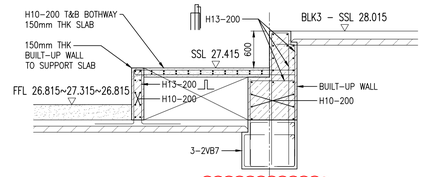

TYPICAL CONNECTION PRECAST PARAPET WALL AND BEAM
SCALE: 1:25



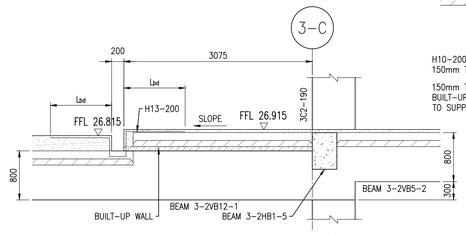

SECTION 10 FP01 TYPICAL
SCALE 1:50



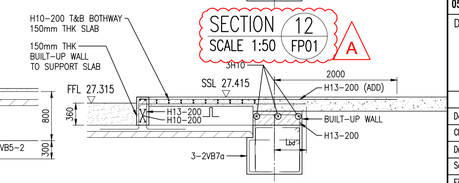

SECTION 11 FP01 A
SCALE 1:50




SECTION 12 FP01 A
SCALE 1:50




SECTION 14 FP01
SCALE 1:50




SECTION 13 FP01 A
SCALE 1:50

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 04/10/2023 | TWA | BLK 3-2ND STY GL 3-12 ADDED BUILT UP WALL TO SUPPORT SLAB | | | | | | | | | | | | | | | | | | | | | | | | |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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EDMUND TEO
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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
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DRAWING TITLE
BLOCK 2 & BLOCK 3
SECTIONS - 3

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | - |
| Scale | AS SHOWN | | Sources | |
| Filename | S_WS1416_BLK02_03_FP | | | |

Drawing no.
S_WS1416_BLK02_03_SECT_3_ST09

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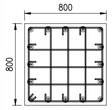
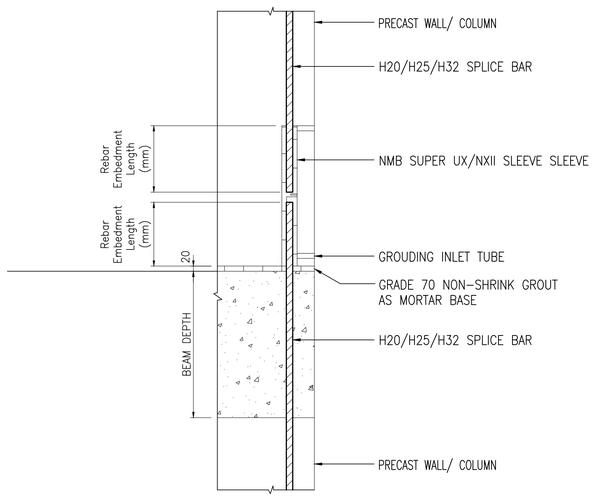
NOTES:
1) REFER TO PILING PLAN FOR ALL COLUMNS SETTING OUT.

## BLOCK 2 COLUMN

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| UPPER ROOF TO LOWER ROOF | | | | | AS BELOW | | CAST-IN SITU |
| VERTICAL BARS | | | | | | | 6H13 |
| LINKS | | | | | | | 1H10-100 |
| OPEN LINKS | | | | | | | – |
| CONC. GRADE | | | | | | | C40/50 |
| LOWER ROOF TO 3RD STY | AS BELOW | AS BELOW | | | CAST-IN SITU | | |
| VERTICAL BARS | | | | | 6H13 | | |
| LINKS | | | | | 1H10-100 | | |
| OPEN LINKS | | | | | – | | |
| CONC. GRADE | | | | | C40/50 | | |
| 3RD STY TO 2ND STY | AS BELOW | AS BELOW | | AS BELOW | CAST-IN SITU | | |
| VERTICAL BARS | | | | | 6H16 | | |
| LINKS | | | | | 1H10-100 | | |
| OPEN LINKS | | | | | – | | |
| CONC. GRADE | | | | | C40/50 | | |
| 2ND STY TO 1ST STY | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | | |
| VERTICAL BARS | | | | | | | |
| LINKS | | | | | | | |
| OPEN LINKS | | | | | | | |
| CONC. GRADE | | | | | | | |
| 1ST STY TO PILECAP |  | | | | CAST-IN SITU | | |
| VERTICAL BARS | 16H16 | 8H32 | 8H32 | 8H32 | 6H25 | 8H20 | |
| LINKS | 1H10-200 | 1H10-150 | 1H10-150 | 1H10-150 | 1H10-100 | 1H10-150 | |
| OPEN LINKS | 6H10-200 | 2H10-150 | 2H10-150 | 2H10-150 | – | 2H10-150 | |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | |

| LEVEL / COLUMN MARKING | GRIDLINE | COLUMN | GRIDLINE | COLUMN | GRIDLINE | COLUMN | GRIDLINE | COLUMN | GRIDLINE | COLUMN | GRIDLINE | COLUMN | GRIDLINE | COLUMN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-M | 1,3 | 2-M | – | 2-M | – | 2-M | – | 2-M | – | 2-M | – | 2-M | – |
| | 2-L | 4,6 | 2-L | – | 2-L | – | 2-L | – | 2-L | – | 2-L | 5 | 2-L | – |
| | 2-K | 7,9 | 2-K | – | 2-K | – | 2-K | – | 2-K | – | 2-K | 8 | 2-K | – |
| | 2-J1 | – | 2-J1 | – | 2-J1 | – | 2-J1 | – | 2-J1 | 10,11 | 2-J1 | – | 2-J1 | – |
| | 2-J | 12,14 | 2-J | – | 2-J | – | 2-J | – | 2-J | – | 2-J | 13 | 2-J | – |
| | 2-H1 | – | 2-H1 | | 2-H1 | | 2-H1 | | 2-H1 | | 2-H1 | – | 2-H1 | |
| | 2-H | 20,22 | 2-H | 17,21 | 2-H | – | 2-H | 18 | 2-H | – | 2-H | 19 | 2-H | – |
| | 2-G | 23,25,27 | 2-G | – | 2-G | 26 | 2-G | – | 2-G | – | 2-G | 24 | 2-G | – |
| | 2-F | 28,30,32 | 2-F | – | 2-F | 31 | 2-F | – | 2-F | – | 2-F | 29 | 2-F | – |
| | 2-E | 36,38 | 2-E | 33,37 | 2-E | – | 2-E | 34 | 2-E | – | 2-E | 35 | 2-E | – |
| | 2-D1 | – | 2-D1 | – | 2-D1 | – | 2-D1 | – | 2-D1 | – | 2-D1 | – | 2-D1 | 54 |
| | 2-D | 40,42 | 2-D | – | 2-D | – | 2-D | – | 2-D | – | 2-D | 41 | 2-D | – |
| | 2-C1 | – | 2-C1 | – | 2-C1 | – | 2-C1 | – | 2-C1 | 43,44 | 2-C1 | – | 2-C1 | – |
| | 2-C | 45,47 | 2-C | – | 2-C | – | 2-C | – | 2-C | – | 2-C | 46 | 2-C | – |
| | 2-B | 48,50 | 2-B | – | 2-B | – | 2-B | – | 2-B | – | 2-B | 49 | 2-B | – |
| | 2-A | 51,53 | 2-A | – | 2-A | – | 2-A | – | 2-A | – | 2-A | – | 2-A | – |
| COLUMN TYPE | 2C1 | | 2C2 | | 2C3 | | 2C4 | | 2C5 | | 2SP | | 2TC6 | |

SUBMISSION ST09




TYPICAL GROUT SLEEVE DETAIL
SCALE: 1:30

| SPLICE BAR PROTRUSION LENGTH INTO SPLICE SLEEVE | | |
|---|---|---|
| REBAR | SLEEVE LENGTH (mm) | REBAR EMBEDMENT (mm) |
| H16 | 220 | 100 |
| H20 | 250 | 115 |
| H25 | 370 | 170 |
| H32 | 455 | 215 |
| H40 | 620 | 295 |



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| CO | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JIJ-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

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PE ENDORSEMENT
PROFESSIONAL ENGINEER
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4072
SINGAPORE

AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
COLUMN DETAILS

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale 1:30 | | | Sources |

Filename S_WS1416_BLK02_03_CLDT

Drawing no.
S_WS1416_BLK02_03_CLDT_1_ST09

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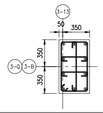
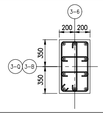
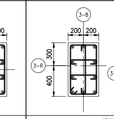
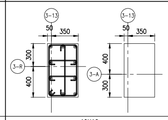
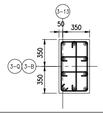
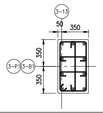
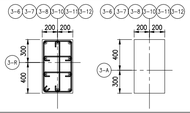
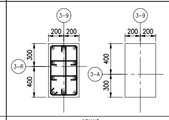
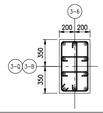
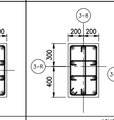
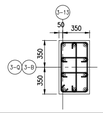
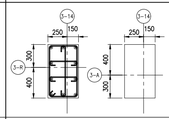
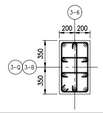
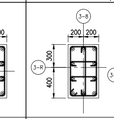
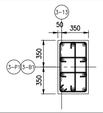
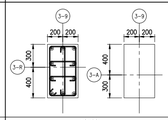
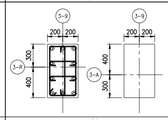
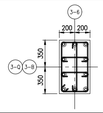
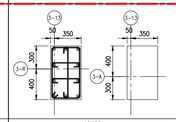
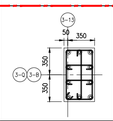
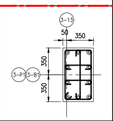
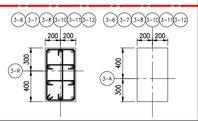
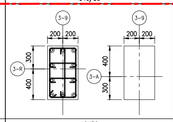
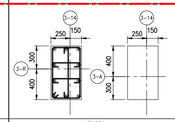
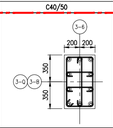
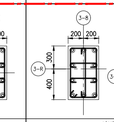
RESTRICTED

NOTES:
1) REFER TO PILING PLAN FOR ALL COLUMNS SETTING OUT.

## BLOCK 3 COLUMN

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| UPPER ROOF TO LOWER ROOF | AS BELOW | AS BELOW | AS BELOW | | | | | | |
| VERTICAL BARS | | | | | | | | | |
| LINKS | | | | | | | | | |
| OPEN LINKS | | | | | | | | | |
| CONC. GRADE | | | | | | | | | |
| LOWER ROOF TO 6TH STY | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW |
| VERTICAL BARS | | | | | | | | | |
| LINKS | | | | | | | | | |
| OPEN LINKS | | | | | | | | | |
| CONC. GRADE | | | | | | | | | |
| 6TH STY TO 5TH STY | AS BELOW |  | AS BELOW | AS BELOW | AS BELOW | AS BELOW |  |  |  |
| VERTICAL BARS | | 10H16 | | | | | 10H16 | 10H16 | 10H16 |
| LINKS | | 1H10-175 | | | | | 1H10-175 | 1H10-175 | 1H10-175 |
| OPEN LINKS | | 3H10-175 | | | | | 3H10-175 | 3H10-175 | 3H10-175 |
| CONC. GRADE | | C40/50 | | | | | C40/50 | C40/50 | C40/50 |
| 5TH STY TO 4TH STY |  |  |  |  |  | AS BELOW |  |  |  |
| VERTICAL BARS | 10H16 | 10H20 | 10H16 | 10H16 | 10H16 | | 10H20 | 10H20 | 10H20 |
| LINKS | 1H10-175 | 1H10-225 | 1H10-175 | 1H10-175 | 1H10-175 | | 1H10-225 | 1H10-225 | 1H10-225 |
| OPEN LINKS | 3H10-175 | 3H10-225 | 3H10-175 | 3H10-175 | 3H10-175 | | 3H10-225 | 3H10-225 | 3H10-225 |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | | C40/50 | C40/50 | C40/50 |
| 4TH STY TO 3RD STY | AS BELOW |  | AS BELOW | AS BELOW | AS BELOW |  |  |  |  |
| VERTICAL BARS | | 10H25 | | | | 10H16 | 10H25 | 10H25 | 10H25 |
| LINKS | | 1H10-225 | | | | 1H10-175 | 1H10-225 | 1H10-225 | 1H10-225 |
| OPEN LINKS | | 3H10-225 | | | | 3H10-175 | 3H10-225 | 3H10-225 | 3H10-225 |
| CONC. GRADE | | C40/50 | | | | C40/50 | C40/50 | C40/50 | C40/50 |
| 3RD STY TO 2ND STY | AS BELOW | AS BELOW |  | AS BELOW |  | AS BELOW | AS BELOW | AS BELOW | AS BELOW |
| VERTICAL BARS | | | 10H20 | | 10H20 | | | | |
| LINKS | | | 1H10-225 | | 1H10-225 | | | | |
| OPEN LINKS | | | 3H10-225 | | 3H10-225 | | | | |
| CONC. GRADE | | | C40/50 | | C40/50 | | | | |
| 2ND STY TO 1ST STY | AS BELOW | AS BELOW | AS BELOW | AS BELOW |  | AS BELOW |  | AS BELOW | AS BELOW |
| VERTICAL BARS | | | | | 10H32 | | 10H32 | | |
| LINKS | | | | | 1H10-225 | | 1H10-225 | | |
| OPEN LINKS | | | | | 3H10-225 | | 3H10-225 | | |
| CONC. GRADE | | | | | C40/50 | | C40/50 | | |
| 1ST STY TO PILECAP (STARTER BAR FROM PILECAP) |  |  |  |  |  |  |  |  |  |
| VERTICAL BARS | 10H20 | 10H32 | 10H32 | 10H20 | 10H32 | 10H20 | 10H32 | 10H32 | 10H32 |
| LINKS | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 |
| OPEN LINKS | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | C40/50 | C50/60 | C40/50 | C50/60 | C40/50 | C40/50 |

| LEVEL | GRIDLINE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3-R | 3C1-15 | – | – | 3C2-6, 3C2-7, 3C2-9, 3C2-11, 3C2-12, 3C2-13 | 3C2-10 | 3C2-16 | – | – |
| | 3-Q | – | 3C1-28 | – | – | – | – | 3C2-21, 3C2-26 | 3C2-22 | 3C2-23, 3C2-27 |
| | 3-P1 | – | – | 3C1-44 | – | – | – | – | – | – |
| | 3-P | – | – | – | – | – | – | – | – | – |
| | 3-N1 | – | – | – | – | – | – | – | – | – |
| | 3-N | – | – | – | – | – | – | – | – | – |
| | 3-M | – | – | – | – | – | – | – | – | – |
| | 3-L1 | – | – | – | – | – | – | – | – | – |
| | 3-L | – | – | – | – | – | – | – | – | – |
| | 3-K | – | – | – | – | – | – | – | – | – |
| | 3-J | – | – | – | – | – | – | – | – | – |
| | 3-H | – | – | – | – | – | – | – | – | – |
| | 3-G | – | – | – | – | – | – | – | – | – |
| | 3-F | – | – | – | – | – | – | – | – | – |
| | 3-E | – | – | – | – | – | – | – | – | – |
| | 3-D | – | – | – | – | – | – | – | – | – |
| | 3-C1 | – | – | – | – | – | – | – | – | – |
| | 3-C | – | – | – | – | – | – | – | – | – |
| COLUMN MARKING | 3-B1 | – | – | 3C1-197 | – | – | – | – | – | – |
| | 3-B | – | 3C1-213 | – | – | – | – | 3C2-206, 3C2-211 | 3C2-207 | 3C2-208, 3C2-212 |
| | 3-A | 3C1-229 | – | – | 3C2-220, 3C2-221, 3C2-223, 3C2-225, 3C2-226, 3C2-227 | 3C2-224 | 3C2-230 | – | – | – |
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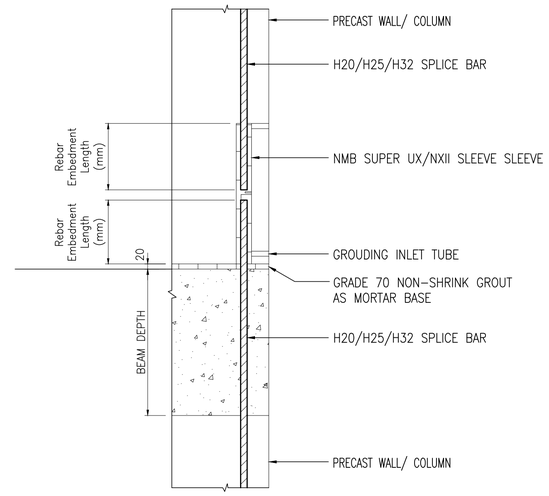
| COLUMN TYPE | | 3C1 | | | 3C2 | | | | |

RESTRICTED




TYPICAL GROUT SLEEVE DETAIL
SCALE: 1:30

SUBMISSION ST09

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

25 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

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PE ENDORSEMENT
PROFESSIONAL ENGINEER
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LEOW GEOK MUI
4072
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AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
COLUMN DETAILS – 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale 1:40 | | | Sources |

Filename S_WS1416_BLK02_03_CLDT

Drawing no.
S_WS1416_BLK02_03_CLDT_2_ST09

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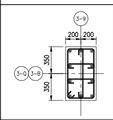
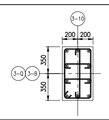
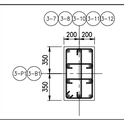
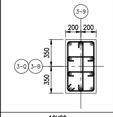
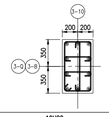
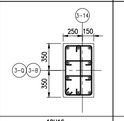
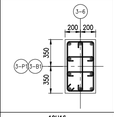
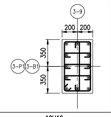
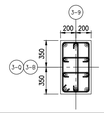
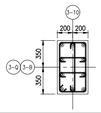
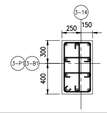
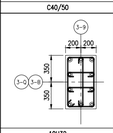
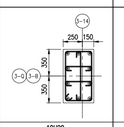
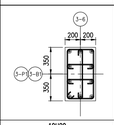
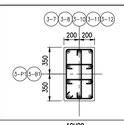
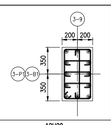
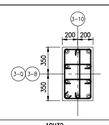
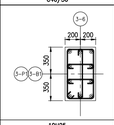
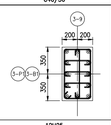
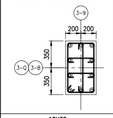
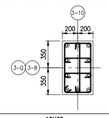
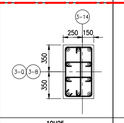
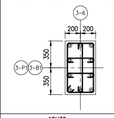
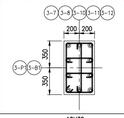
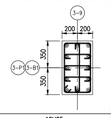
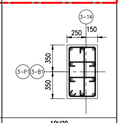
RESTRICTED

NOTES:
1) REFER TO PILING PLAN FOR ALL COLUMNS SETTING OUT.

## BLOCK 3 COLUMN

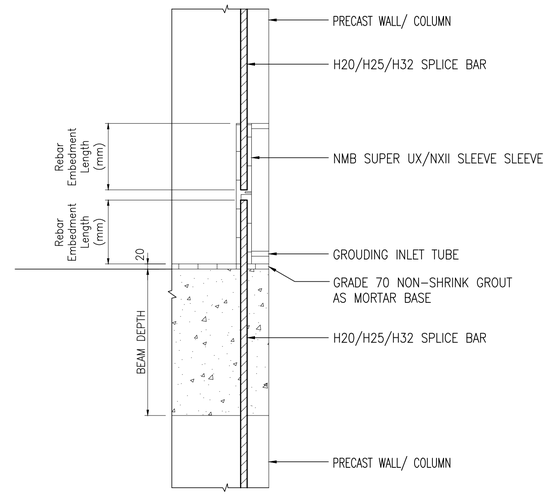
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| UPPER ROOF TO LOWER ROOF | | | | | | | |
| VERTICAL BARS | | | | | | | |
| LINKS | | | | | | | |
| OPEN LINKS | | | | | | | |
| CONC. GRADE | | | | | | | |
| LOWER ROOF TO 6TH STY | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW |
| VERTICAL BARS | | | | | | | |
| LINKS | | | | | | | |
| OPEN LINKS | | | | | | | |
| CONC. GRADE | | | | | | | |
| 6TH STY TO 5TH STY |  |  | AS BELOW | AS BELOW |  | AS BELOW | AS BELOW |
| VERTICAL BARS | 10H16 | 10H16 | | | 10H16 | | |
| LINKS | 1H10-175 | 1H10-175 | | | 1H10-175 | | |
| OPEN LINKS | 3H10-175 | 3H10-175 | | | 3H10-175 | | |
| CONC. GRADE | C40/50 | C40/50 | | | C40/50 | | |
| 5TH STY TO 4TH STY |  |  |  |  | AS BELOW |  | AS BELOW |
| VERTICAL BARS | 10H20 | 10H20 | 10H16 | 10H16 | | 12H16 | |
| LINKS | 1H10-225 | 1H10-225 | 1H10-175 | 1H10-175 | | 1H10-225 | |
| OPEN LINKS | 3H10-225 | 3H10-225 | 3H10-175 | 3H10-175 | | 3H10-225 | |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | C40/50 | | C40/50 | |
| 4TH STY TO 3RD STY |  |  | AS BELOW | AS BELOW | AS BELOW | AS BELOW |  |
| VERTICAL BARS | 10H25 | 10H25 | | | | | 10H16 |
| LINKS | 1H10-225 | 1H10-225 | | | | | 1H10-175 |
| OPEN LINKS | 3H10-225 | 3H10-225 | | | | | 3H10-175 |
| CONC. GRADE | C40/50 | C40/50 | | | | | C40/50 |
| 3RD STY TO 2ND STY |  | AS BELOW |  |  |  |  | AS BELOW |
| VERTICAL BARS | 10H32 | | 10H20 | 10H20 | 10H20 | 12H20 | |
| LINKS | 1H10-225 | | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | |
| OPEN LINKS | 3H10-225 | | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | |
| CONC. GRADE | C40/50 | | C40/50 | C40/50 | C40/50 | C40/50 | |
| 2ND STY TO 1ST STY | AS BELOW |  | AS BELOW |  | AS BELOW |  | AS BELOW |
| VERTICAL BARS | | 10H32 | | 10H25 | | 12H25 | |
| LINKS | | 1H10-225 | | 1H10-225 | | 1H10-225 | |
| OPEN LINKS | | 3H10-225 | | 3H10-225 | | 3H10-225 | |
| CONC. GRADE | | C40/50 | | C40/50 | | C50/60 | |
| 1ST STY TO PILECAP (STARTER BAR FROM PILECAP) |  |  |  |  |  |  |  |
| VERTICAL BARS | 10H32 | 10H32 | 10H25 | 10H32 | 10H32 | 12H25 | 10H20 |
| LINKS | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 | 1H10-225 |
| OPEN LINKS | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 | 3H10-225 |
| CONC. GRADE | C50/60 | C50/60 | C40/50 | C40/50 | C40/50 | C50/60 | C40/50 |

| LEVEL | GRIDLINE | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3-R | – | – | – | – | – | – | – |
| | 3-Q | 3C2-24 | 3C2-25 | 3C2-29 | – | – | – | – |
| | 3-P1 | – | – | – | 3C2-37 | 3C2-38, 3C2-39, 3C2-41, 3C2-42, 3C2-43 | 3C2-40 | 3C2-45 |
| | 3-P | – | – | – | – | – | – | – |
| | 3-N1 | – | – | – | – | – | – | – |
| | 3-N | – | – | – | – | – | – | – |
| | 3-M | – | – | – | – | – | – | – |
| | 3-L1 | – | – | – | – | – | – | – |
| | 3-L | – | – | – | – | – | – | – |
| | 3-K | – | – | – | – | – | – | – |
| | 3-J | – | – | – | – | – | – | – |
| | 3-H | – | – | – | – | – | – | – |
| | 3-G | – | – | – | – | – | – | – |
| | 3-F | – | – | – | – | – | – | – |
| | 3-E | – | – | – | – | – | – | – |
| | 3-D | – | – | – | – | – | – | – |
| | 3-C1 | – | – | – | – | – | – | – |
| | 3-C | – | – | – | – | – | – | – |
| | 3-B1 | – | – | – | 3C2-190 | 3C2-191, 3C2-192, 3C2-194, 3C2-195, 3C2-196 | 3C2-193 | 3C2-198 |
| | 3-B | 3C2-209 | 3C2-210 | 3C2-214 | – | – | – | – |
| | 3-A | – | – | – | – | – | – | – |
| | – | – | – | – | – | – | – | – |
| COLUMN TYPE | | 3C2 | | | | | | |

COLUMN MARKING

SUBMISSION ST09

RESTRICTED




TYPICAL GROUT SLEEVE DETAIL
SCALE: 1:30

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

26 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT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SINGAPORE

AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
COLUMN DETAILS – 3

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale 1:40 | | | Sources |

Filename S_WS1416_BLK02_03_CLDT

Drawing no.
S_WS1416_BLK02_03_CLDT_3_ST09


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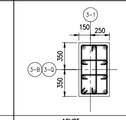
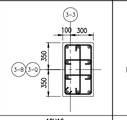
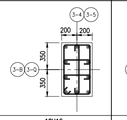
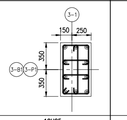
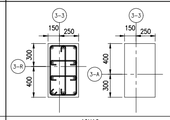
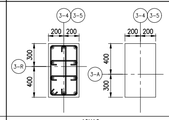
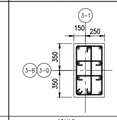
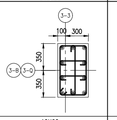
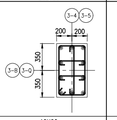
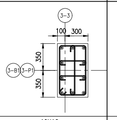
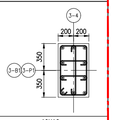
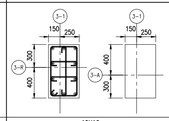
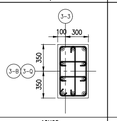
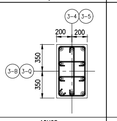
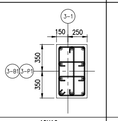
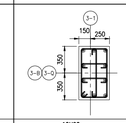
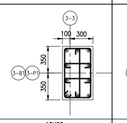
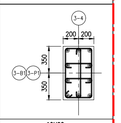
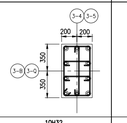
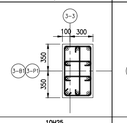
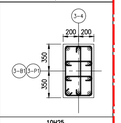
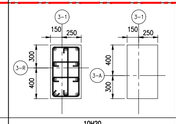
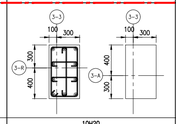
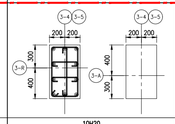
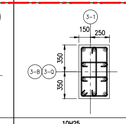
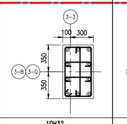
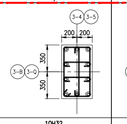
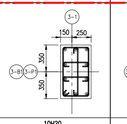
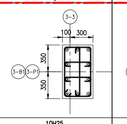
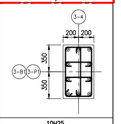
RESTRICTED

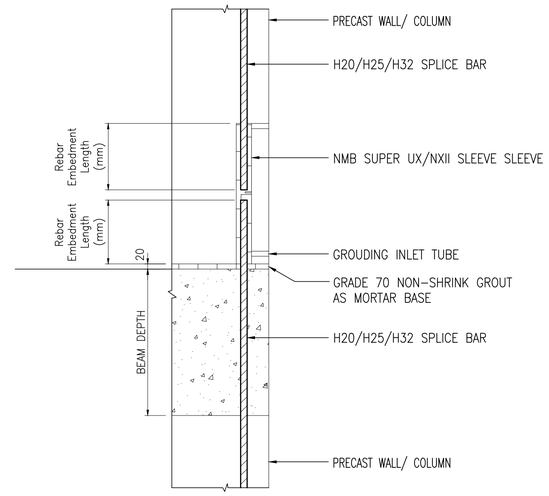
NOTES:
1) REFER TO PILING PLAN FOR ALL COLUMNS SETTING OUT.

## BLOCK 3 COLUMN

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| UPPER ROOF TO LOWER ROOF | | | | | | | | | |
| VERTICAL BARS | | | | | | | | | |
| LINKS | | | | | | | | | |
| OPEN LINKS | | | | | | | | | |
| CONC. GRADE | | | | | | | | | |
| LOWER ROOF TO 6TH STY | | | | | | | | | |
| VERTICAL BARS | | | | | | | | | |
| LINKS | | | | | | | | | |
| OPEN LINKS | | | | | | | | | |
| CONC. GRADE | | | | | | | | | |
| 6TH STY TO 5TH STY | AS BELOW | AS BELOW | AS BELOW |  |  |  |  | AS BELOW | AS BELOW |
| VERTICAL BARS | | | | 10H25 | 10H16 | 10H16 | 10H25 | | |
| LINKS | | | | 1H10–225 | 1H10–175 | 1H10–175 | 1H10–225 | | |
| OPEN LINKS | | | | 3H10–225 | 3H10–175 | 3H10–175 | 3H10–225 | | |
| CONC. GRADE | | | | C40/50 | C40/50 | C40/50 | C40/50 | | |
| 5TH STY TO 4TH STY | AS BELOW |  |  |  |  |  | AS BELOW |  |  |
| VERTICAL BARS | | 10H16 | 10H16 | 10H16 | 10H20 | 10H20 | | 10H16 | 10H16 |
| LINKS | | 1H10–175 | 1H10–175 | 1H10–175 | 1H10–225 | 1H10–225 | | 1H10–175 | 1H10–175 |
| OPEN LINKS | | 3H10–175 | 3H10–175 | 3H10–175 | 3H10–225 | 3H10–225 | | 3H10–175 | 3H10–175 |
| CONC. GRADE | | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | | C40/50 | C40/50 |
| 4TH STY TO 3RD STY |  | AS BELOW | AS BELOW | AS BELOW |  |  |  | AS BELOW | AS BELOW |
| VERTICAL BARS | 10H16 | | | | 10H25 | 10H25 | 10H16 | | |
| LINKS | 1H10–175 | | | | 1H10–225 | 1H10–225 | 1H10–175 | | |
| OPEN LINKS | 3H10–175 | | | | 3H10–225 | 3H10–225 | 3H10–175 | | |
| CONC. GRADE | C40/50 | | | | C40/50 | C40/50 | C40/50 | | |
| 3RD STY TO 2ND STY | AS BELOW | AS BELOW | AS BELOW |  | AS BELOW | AS BELOW | AS BELOW |  |  |
| VERTICAL BARS | | | | 10H20 | | | | 10H20 | 10H20 |
| LINKS | | | | 1H10–225 | | | | 1H10–225 | 1H10–225 |
| OPEN LINKS | | | | 3H10–225 | | | | 3H10–225 | 3H10–225 |
| CONC. GRADE | | | | C40/50 | | | | C40/50 | C40/50 |
| 2ND STY TO 1ST STY | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW |  | AS BELOW |  |  |
| VERTICAL BARS | | | | | | 10H32 | | 10H25 | 10H25 |
| LINKS | | | | | | 1H10–225 | | 1H10–225 | 1H10–225 |
| OPEN LINKS | | | | | | 3H10–225 | | 3H10–225 | 3H10–225 |
| CONC. GRADE | | | | | | C40/50 | | C40/50 | C40/50 |
| 1ST STY TO PILECAP (STARTER BAR FROM PILECAP) |  |  |  |  |  |  |  |  |  |
| VERTICAL BARS | 10H20 | 10H20 | 10H20 | 10H25 | 10H32 | 10H32 | 10H20 | 10H25 | 10H25 |
| LINKS | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 |
| OPEN LINKS | 3H10–225 | 3H10–225 | 3H10–225 | 3H10–225 | 3H10–225 | 3H10–225 | 3H10–225 | 3H10–225 | 3H10–225 |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | C50/60 | C40/50 | C40/50 | C40/50 |
| LEVEL / GRIDLINE | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING |
| 3–R | 3C3–1 | 3C3–3 | 3C3–4, 3C3–5 | – | – | – | – | – | – |
| 3–Q | – | – | – | 3C3–17 | 3C3–18 | 3C3–19, 3C3–20 | – | – | – |
| 3–P1 | – | – | – | – | – | – | 3C3–33 | 3C3–34 | 3C3–35, 3C3–36 |
| 3–P | – | – | – | – | – | – | – | – | – |
| 3–N1 | – | – | – | – | – | – | – | – | – |
| 3–N | – | – | – | – | – | – | – | – | – |
| 3–M | – | – | – | – | – | – | – | – | – |
| 3–L1 | – | – | – | – | – | – | – | – | – |
| 3–L | – | – | – | – | – | – | – | – | – |
| 3–K | – | – | – | – | – | – | – | – | – |
| 3–J | – | – | – | – | – | – | – | – | – |
| 3–H | – | – | – | – | – | – | – | – | – |
| 3–G | – | – | – | – | – | – | – | – | – |
| 3–F | – | – | – | – | – | – | – | – | – |
| 3–E | – | – | – | – | – | – | – | – | – |
| 3–D | – | – | – | – | – | – | – | – | – |
| 3–C1 | – | – | – | – | – | – | – | – | – |
| 3–C | – | – | – | – | – | – | – | – | – |
| 3–B1 | – | – | – | – | – | – | 3C3–185 | 3C3–187 | 3C3–188, 3C3–189 |
| 3–B | – | – | – | 3C3–202 | 3C3–203 | 3C3–204, 3C3–205 | – | – | – |
| 3–A | 3C3–215 | 3C3–217 | 3C3–218, 3C3–219 | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – |
| COLUMN TYPE | 3C3 | | | | | | | | |

RESTRICTED

SUBMISSION ST09




TYPICAL GROUT SLEEVE DETAIL
SCALE: 1:30

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

FOR OFFICIAL USE

AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

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4072
SINGAPORE

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ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
COLUMN DETAILS – 4

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale 1:40 | | | Sources |

Filename S_WS1416_BLK02_03_CLDT

Drawing no.
S_WS1416_BLK02_03_CLDT_4_ST09

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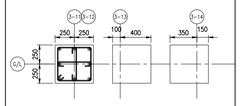
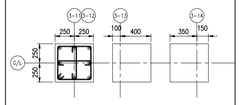
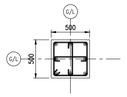
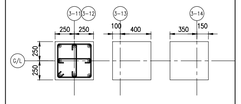
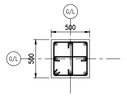
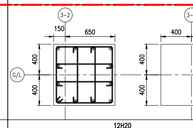
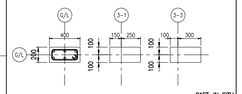
RESTRICTED

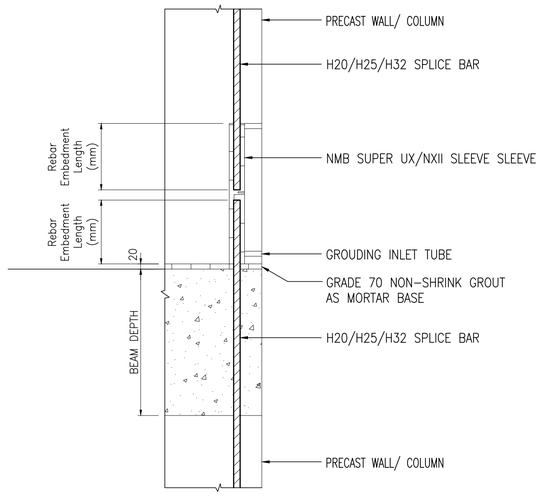
NOTES:
1) REFER TO PILING PLAN FOR ALL COLUMNS SETTING OUT.

## BLOCK 3 COLUMN

| | | | | |
|---|---|---|---|---|
| UPPER ROOF TO LOWER ROOF | | | | |
| VERTICAL BARS | | | | |
| LINKS | | | | |
| OPEN LINKS | | | | |
| CONC. GRADE | | | | |
| LOWER ROOF TO 6TH STY | | | | |
| VERTICAL BARS | | | | |
| LINKS | | | | |
| OPEN LINKS | | | | |
| CONC. GRADE | | | | |
| 6TH STY TO 5TH STY | | | | |
| VERTICAL BARS | | | | |
| LINKS | | | | |
| OPEN LINKS | | | | |
| CONC. GRADE | | | | |
| 5TH STY TO 4TH STY | | | | |
| VERTICAL BARS | | | | |
| LINKS | | | | |
| OPEN LINKS | | | | |
| CONC. GRADE | | | | |
| 4TH STY TO 3RD STY | | | | |
| VERTICAL BARS | | | | |
| LINKS | | | | |
| OPEN LINKS | | | | |
| CONC. GRADE | | | | |
| 3RD STY TO 2ND STY |  | | | |
| VERTICAL BARS | 8H16 | | | |
| LINKS | 1H10–175 | | | |
| OPEN LINKS | 2H10–175 | | | |
| CONC. GRADE | C40/50 | | | |
| 2ND STY TO 1ST STY |  |  | AS BELOW | |
| VERTICAL BARS | 8H20 | 8H20 | | |
| LINKS | 1H10–225 | 1H10–225 | | |
| OPEN LINKS | 2H10–225 | 2H10–225 | | |
| CONC. GRADE | C40/50 | C40/50 | | |
| 1ST STY TO PILECAP (STARTER BAR FROM PILECAP) |  |  |  CAST–IN SITU |  CAST–IN SITU |
| VERTICAL BARS | 8H20 | 8H20 | 12H20 | 6H25 |
| LINKS | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–100 |
| OPEN LINKS | 2H10–225 | 2H10–225 | 4H10–225 | – |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | C40/50 |

| LEVEL / COLUMN MARKING / GRIDLINE | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING | COLUMN MARKING |
|---|---|---|---|---|
| 3–R | – | – | – | – |
| 3–Q | – | – | – | – |
| 3–P1 | – | – | – | – |
| 3–P | – | – | – | – |
| 3–N1 | – | – | – | 3C7–46, 3C7–47, 3C7–49 |
| 3–N | 3C4–58, 3C4–59, 3C4–60 | 3C5–50, 3C5–51, 3C5–52, 3C5–53, 3C5–54, 3C5–55, 3C5–56, 3C5–57 | – | – |
| 3–M | 3C4–69, 3C4–70, 3C4–71 | 3C5–61, 3C5–62, 3C5–63, 3C5–64, 3C5–65, 3C5–66, 3C5–67, 3C5–68 | – | – |
| 3–L1 | – | – | – | – |
| 3–L | 3C4–82, 3C4–83, 3C4–84 | 3C5–75, 3C5–76, 3C5–77, 3C5–78, 3C5–79, 3C5–80, 3C5–81 | 3C6–73, 3C6–74 | – |
| 3–K | 3C4–93, 3C4–94, 3C4–95 | 3C5–87, 3C5–88, 3C5–89, 3C5–90, 3C5–91, 3C5–92 | 3C6–85, 3C6–86 | – |
| 3–J | 3C4–109, 3C4–110, 3C4–111 | 3C5–103, 3C5–104, 3C5–105, 3C5–106, 3C5–107, 3C5–108 | 3C6–101, 3C6–102 | – |
| 3–H | 3C4–124, 3C4–125, 3C4–126 | 3C5–118, 3C5–119, 3C5–120, 3C5–121, 3C5–122, 3C5–123 | 3C6–116, 3C6–117 | – |
| 3–G | 3C4–139, 3C4–140, 3C4–141 | 3C5–133, 3C5–134, 3C5–135, 3C5–136, 3C5–137, 3C5–138 | 3C6–131, 3C6–132 | – |
| 3–F | 3C4–156, 3C4–157, 3C4–158 | 3C5–149, 3C5–150, 3C5–151, 3C5–152, 3C5–153, 3C5–154, 3C5–155 | 3C6–147, 3C6–148 | – |
| 3–E | 3C4–167, 3C4–168, 3C4–169 | 3C5–159, 3C5–160, 3C5–161, 3C5–162, 3C5–163, 3C5–164, 3C5–165, 3C5–166 | – | – |
| 3–D | 3C4–178, 3C4–179, 3C4–180 | 3C5–170, 3C5–171, 3C5–172, 3C5–173, 3C5–174, 3C5–175, 3C5–176, 3C5–177 | – | – |
| 3–C1 | – | – | – | 3C7–181, 3C7–182, 3C7–183 |
| 3–C | – | – | – | – |
| 3–B1 | – | – | – | – |
| 3–B | – | – | – | – |
| 3–A | – | – | – | – |
| – | – | – | – | – |
| COLUMN TYPE | 3C4 | 3C5 | 3C6 | 3C7 |

SUBMISSION ST09

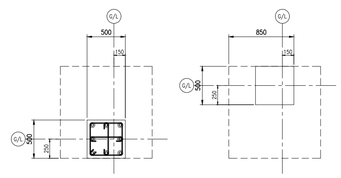
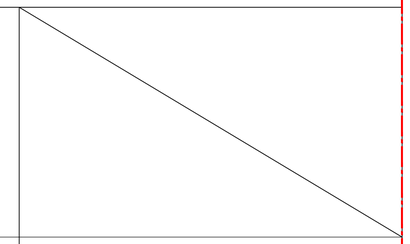
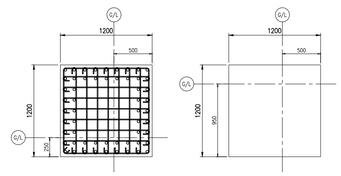
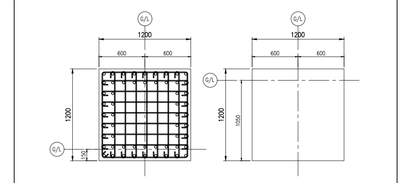



TYPICAL GROUT SLEEVE DETAIL
SCALE: 1:30

SUBMISSION ST09

NOTES:
1) REFER TO PILING PLAN FOR ALL COLUMNS SETTING OUT.

## BLOCK 3 COLUMN

| | | | |
|---|---|---|---|
| 3RD STY TO 2ND STY |  |  | |
| VERTICAL BARS | 8H32 | | |
| LINKS | 1H10–200 | | |
| OPEN LINKS | 2H10–200 | | |
| CONC. GRADE | C40/50 | | |
| 2ND STY TO 1ST STY | AS BELOW | AS BELOW | |
| VERTICAL BARS | | | |
| LINKS | | | |
| OPEN LINKS | | | |
| CONC. GRADE | | | |
| 1ST STY TO PILECAP (STARTER BAR FROM PILECAP) |  CAST–IN SITU |  CAST–IN SITU | |
| VERTICAL BARS | 56H32 | 56H32 | |
| LINKS | 1H10–200 | 1H10–200 | |
| OPEN LINKS | 14H10–200 | 14H10–200 | |
| CONC. GRADE | C50/60 | C50/60 | |
| LEVEL / COLUMN MARKING / GRIDLINE | COLUMN MARKING | GRIDLINE | COLUMN MARKING |
| 3–K | 96 | 3–K | 97,98 |
| 3–G | 142 | 3–G | 143,144 |
| COLUMN TYPE | 3C4a | 3C8 | |

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

28 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

FOR OFFICIAL USE

AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT
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www.idarchitects.com.sg

PE ENDORSEMENT
PROFESSIONAL ENGINEER
CIVIL
LEOW GEOK MUI
4072
SINGAPORE

AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
COLUMN DETAILS – 5

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale 1:40 | | | Sources |

Filename S_WS1416_BLK02_03_CLDT

Drawing no.
S_WS1416_BLK02_03_CLDT_5_ST09

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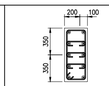
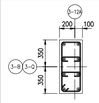
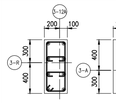
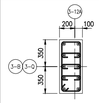
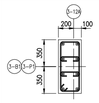
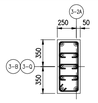
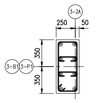
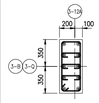
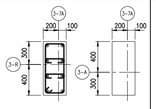
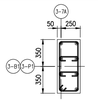
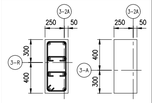
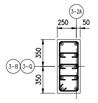
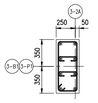
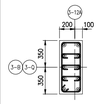
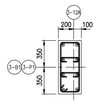
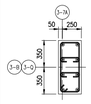
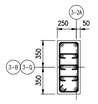
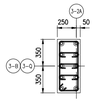
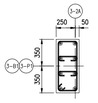
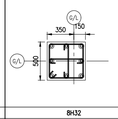
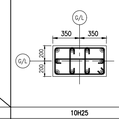
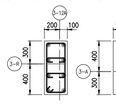
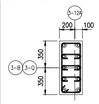
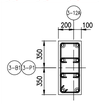
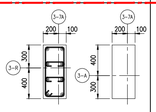
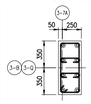
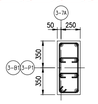
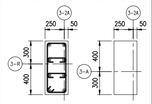
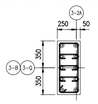
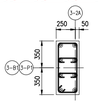
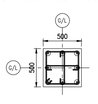
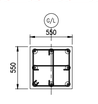
RESTRICTED

NOTES:
1) REFER TO PILING PLAN FOR ALL COLUMNS SETTING OUT.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UPPER ROOF TO LOWER ROOF | AS BELOW |  | AS BELOW | | | | | | | | | | | |
| VERTICAL BARS | | 10H16 | | | | | | | | | | | | |
| LINKS | | 1H10–175 | | | | | | | | | | | | |
| OPEN LINKS | | 2H10–175 | | | | | | | | | | | | |
| CONC. GRADE | | C40/50 | | | | | | | | | | | | |
| LOWER ROOF TO 6TH STY | AS BELOW |  | AS BELOW | AS BELOW | AS BELOW | AS BELOW | | | | | | | | |
| VERTICAL BARS | | 8H16 | | | | | | | | | | | | |
| LINKS | | 1H10–175 | | | | | | | | | | | | |
| OPEN LINKS | | 2H10–175 | | | | | | | | | | | | |
| CONC. GRADE | | C40/50 | | | | | | | | | | | | |
| 6TH STY TO 5TH STY |  |  |  | AS BELOW | AS BELOW | AS BELOW | AS BELOW |  |  | | | | | |
| VERTICAL BARS | 8H16 | 10H16 | 8H16 | | | | | 10H25 | 8H25 | | | | | |
| LINKS | 1H10–175 | 1H10–175 | 1H10–175 | | | | | 1H10–225 | 1H10–175 | | | | | |
| OPEN LINKS | 2H10–175 | 2H10–175 | 2H10–175 | | | | | 2H10–225 | 2H10–175 | | | | | |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | | | | | C40/50 | C40/50 | | | | | |
| 5TH STY TO 4TH STY | AS BELOW |  | AS BELOW |  | AS BELOW |  |  |  |  | | | | | |
| VERTICAL BARS | | 10H20 | | 8H16 | | 8H16 | 8H16 | 10H20 | 8H16 | | | | | |
| LINKS | | 1H10–225 | | 1H10–175 | | 1H10–175 | 1H10–175 | 1H10–225 | 1H10–175 | | | | | |
| OPEN LINKS | | 2H10–225 | | 2H10–175 | | 2H10–175 | 2H10–175 | 2H10–225 | 2H10–175 | | | | | |
| CONC. GRADE | | C40/50 | | C40/50 | | C40/50 | C40/50 | C40/50 | C40/50 | | | | | |
| 4TH STY TO 3RD STY | AS BELOW |  |  | AS BELOW |  | AS BELOW | AS BELOW |  | AS BELOW | | | | | |
| VERTICAL BARS | | 10H25 | 8H20 | | 8H16 | | | 10H25 | | | | | | |
| LINKS | | 1H10–225 | 1H10–225 | | 1H10–175 | | | 1H10–225 | | | | | | |
| OPEN LINKS | | 2H10–225 | 2H10–225 | | 2H10–175 | | | 2H10–225 | | | | | | |
| CONC. GRADE | | C40/50 | C40/50 | | C40/50 | | | C40/50 | | | | | | |
| 3RD STY TO 2ND STY | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW |  |  |  | |  | | |
| VERTICAL BARS | | | | | | | | 10H32 | 8H20 | 8H32 | | 10H25 | | |
| LINKS | | | | | | | | 1H10–225 | 1H10–225 | 1H10–200 | | 1H10–200 | | |
| OPEN LINKS | | | | | | | | 2H10–225 | 2H10–225 | 2H10–200 | | 3H10–200 | | |
| CONC. GRADE | | | | | | | | C40/50 | C40/50 | C40/50 | | C40/50 | | |
| 2ND STY TO 1ST STY | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | AS BELOW | | CAST–IN SITU | | | |
| VERTICAL BARS | | | | | | | | | | | 4H20 | | | |
| LINKS | | | | | | | | | | | 1H10–200 | | | |
| OPEN LINKS | | | | | | | | | | | – | | | |
| CONC. GRADE | | | | | | | | | | | C40/50 | | | |
| 1ST STY TO PILECAP (STARTER BAR FROM PILECAP) |  |  |  |  |  |  |  |  |  | | |  |  | |
| VERTICAL BARS | 8H20 | 10H32 | 8H32 | 8H20 | 8H32 | 8H20 | 8H20 | 10H32 | 8H25 | | | 8H20 | 8H20 | |
| LINKS | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | 1H10–225 | | | 1H10–150 | 1H10–150 | |
| OPEN LINKS | 2H10–225 | 2H10–225 | 2H10–225 | 2H10–225 | 2H10–225 | 2H10–225 | 2H10–225 | 2H10–225 | 2H10–225 | | | 2H10–150 | 2H10–150 | |
| CONC. GRADE | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | C40/50 | C50/60 | C40/50 | | | C40/50 | C40/50 | |

| LEVEL / COLUMN MARKING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GRIDLINE | COLUMN MARKING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3–R | 3C9–14 | – | – | – | 3C10–8 | – | – | – | 3C11–2 | – | – | – | 3–R | – | 3–R | – | 3–R | – | 3–R | – | 3–R | – | | | | | | | | | |
| 3–Q | – | 3C9–32 | – | – | – | 3C10–31 | – | – | – | 3C11–30 | – | – | 3–Q | – | 3–Q | – | 3–Q | – | 3–Q | – | 3–Q | – | | | | | | | | | |
| 3–P1 | – | – | 3C9–43a | – | – | – | 3C10–38a | – | – | – | 3C11–33a | – | 3–P1 | – | 3–P1 | – | 3–P1 | – | 3–P1 | – | 3–P1 | – | | | | | | | | | |
| 3–P | – | – | – | – | – | – | – | – | – | – | – | – | 3–P | – | 3–P | – | 3–P | – | 3–P | – | 3–P | – | | | | | | | | | |
| 3–N1 | – | – | – | – | – | – | – | – | – | – | – | – | 3–N1 | – | 3–N1 | – | 3–N1 | – | 3–N1 | – | 3–N1 | – | | | | | | | | | |
| 3–N | – | – | – | – | – | – | – | – | – | – | – | – | 3–N | – | 3–N | – | 3–N | – | 3–N | – | 3–N | – | | | | | | | | | |
| 3–M | – | – | – | – | – | – | – | – | – | – | – | – | 3–M | – | 3–M | – | 3–M | – | 3–M | – | 3–M | – | | | | | | | | | |
| 3–L1 | – | – | – | – | – | – | – | – | – | – | – | – | 3–L1 | – | 3–L1 | – | 3–L1 | – | 3–L1 | – | 3–L1 | – | | | | | | | | | |
| 3–L | – | – | – | – | – | – | – | – | – | – | – | – | 3–L | – | 3–L | – | 3–L | – | 3–L | – | 3–L | – | | | | | | | | | |
| 3–K | – | – | – | – | – | – | – | – | – | – | – | – | 3–K | – | 3–K | – | 3–K | – | 3–K | – | 3–K | – | | | | | | | | | |
| 3–J | – | – | – | – | – | – | – | – | – | – | – | – | 3–J | 112 | 3–J | – | 3–J | 113,114 | 3–J | 112,113,114 | 3–J | – | | | | | | | | | |
| 3–H | – | – | – | – | – | – | – | – | – | – | – | – | 3–H | 127 | 3–H | – | 3–H | 128,129 | 3–H | 127,128,129 | 3–H | – | | | | | | | | | |
| 3–G | – | – | – | – | – | – | – | – | – | – | – | – | 3–G | – | 3–G | – | 3–G | – | 3–G | – | 3–G | – | | | | | | | | | |
| 3–F | – | – | – | – | – | – | – | – | – | – | – | – | 3–F | – | 3–F | – | 3–F | – | 3–F | – | 3–F | – | | | | | | | | | |
| 3–E | – | – | – | – | – | – | – | – | – | – | – | – | 3–E | – | 3–E | – | 3–E | – | 3–E | – | 3–E | – | | | | | | | | | |
| 3–D | – | – | – | – | – | – | – | – | – | – | – | – | 3–D | – | 3–D | – | 3–D | – | 3–D | – | 3–D | – | | | | | | | | | |
| 3–C1 | – | – | – | – | – | – | – | – | – | – | – | – | 3–C1 | – | 3–C1 | – | 3–C1 | – | 3–C1 | – | 3–C1 | – | | | | | | | | | |
| 3–C | – | – | – | – | – | – | – | – | – | – | – | – | 3–C | – | 3–C | – | 3–C | – | 3–C | – | 3–C | – | | | | | | | | | |
| 3–B1 | – | – | 3C9–196a | – | – | – | 3C10–200 | – | – | 3C11–186 | – | – | 3–B1 | – | 3–B1 | – | 3–B1 | – | 3–B1 | – | 3–B1 | – | | | | | | | | | |
| 3–B | – | 3C9–201 | – | – | 3C10–207a | – | – | – | 3C11–199 | – | – | – | 3–B | – | 3–B | – | 3–B | – | 3–B | – | 3–B | – | | | | | | | | | |
| 3–A | 3C9–228 | – | – | 3C10–222 | – | – | – | 3C11–216 | – | – | – | – | 3–A | – | 3–A | – | 3–A | – | 3–A | – | 3–A | – | | | | | | | | | |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | SUBSTATION DOGHOUSE | – | – | – | – | RAMP | 231,232,233,234,235,236 | | | | | | | | | |
| COLUMN TYPE | 3C9 | | | 3C10 | | | | 3C11 | | | | | 3TC1 | | 3TC2 | | 3TC3 | | 3SP1 | | 3SP2 | | | | | | | | | | |

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

29 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
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(name & signature)

HCD ( Architecture )
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No: 1078
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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
COLUMN DETAILS – 6

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale 1:40 | | | Sources |

Filename S_WS1416_BLK02_03_CLDT

Drawing no.
S_WS1416_BLK02_03_CLDT_6_ST09

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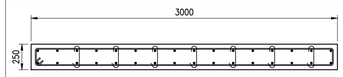
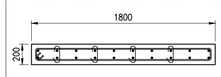
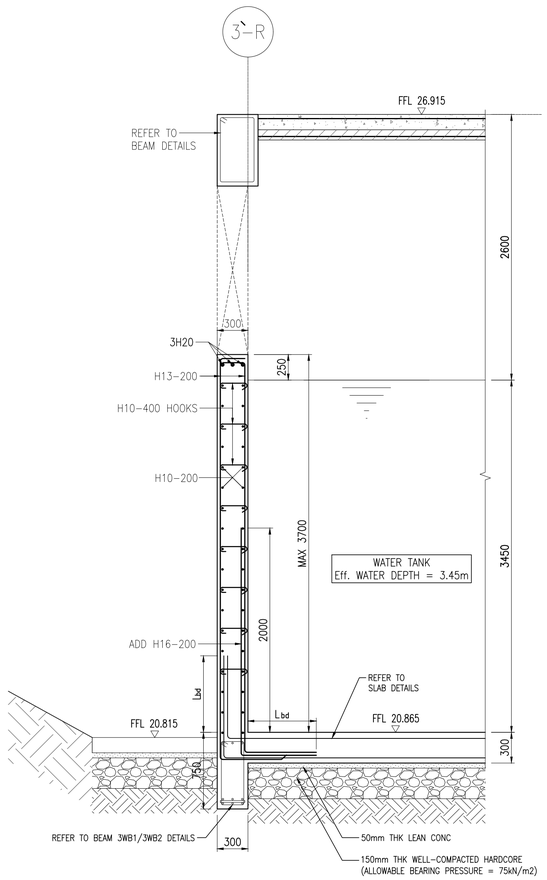
## BLOCK 2 WALL

| | | |
|---|---|---|
| UPPER ROOF TO LOWER ROOF | | AS BELOW |
| VERTICAL BARS | | |
| HORIZONTAL BARS | | |
| HOOKS (HORZ. SPACING) | | |
| HOOKS (VERT. SPACING) | | |
| CONC. GRADE | | |
| LOWER ROOF TO 3RD STY | AS BELOW | AS BELOW |
| VERTICAL BARS | | |
| HORIZONTAL BARS | | |
| HOOKS (HORZ. SPACING) | | |
| HOOKS (VERT. SPACING) | | |
| CONC. GRADE | | |
| 3RD STY TO 2ND STY | AS BELOW | AS BELOW |
| VERTICAL BARS | | |
| HORIZONTAL BARS | | |
| HOOKS (HORZ. SPACING) | | |
| HOOKS (VERT. SPACING) | | |
| CONC. GRADE | | |
| 2ND STY TO 1ST STY | AS BELOW | AS BELOW |
| VERTICAL BARS | | |
| HORIZONTAL BARS | | |
| HOOKS (HORZ. SPACING) | | |
| HOOKS (VERT. SPACING) | | |
| CONC. GRADE | | |
| 1ST STY TO PILECAP |  CAST-IN SITU |  CAST-IN SITU |
| VERTICAL BARS | H20-200 | H20-200 |
| HORIZONTAL BARS | H13-200 | H13-200 |
| HOOKS (HORZ. SPACING) | H10-400 | H10-400 |
| HOOKS (VERT. SPACING) | H10-400 | H10-400 |
| CONC. GRADE | C28/35 | C28/35 |

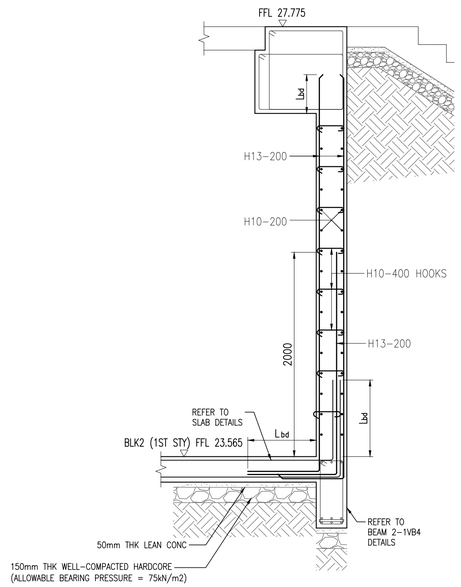
| LEVEL / COLUMN MARKING | GRIDLINE | WALL | GRIDLINE | WALL |
|---|---|---|---|---|
| | 2-M | 2 | 2-M | – |
| | 2-H1 | – | 2-H1 | 16 |
| | 2-D1 | – | 2-D1 | 39 |
| | 2-A | 52 | 2-A | – |
| COLUMN TYPE | | 2W1 | | 2W2 |




### TYPICAL WALL 3W1 DETAILS

SCALE: 1:30

NOTES:
1) CONCRETE GRADE C28/35




### TYPICAL WALL 2W3 DETAILS

SCALE: 1:30

NOTES:
1) CONCRETE GRADE C28/35

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30 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

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AC ENDORSEMENT
ACCREDITED CHECKER
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CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
WALL DETAILS

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

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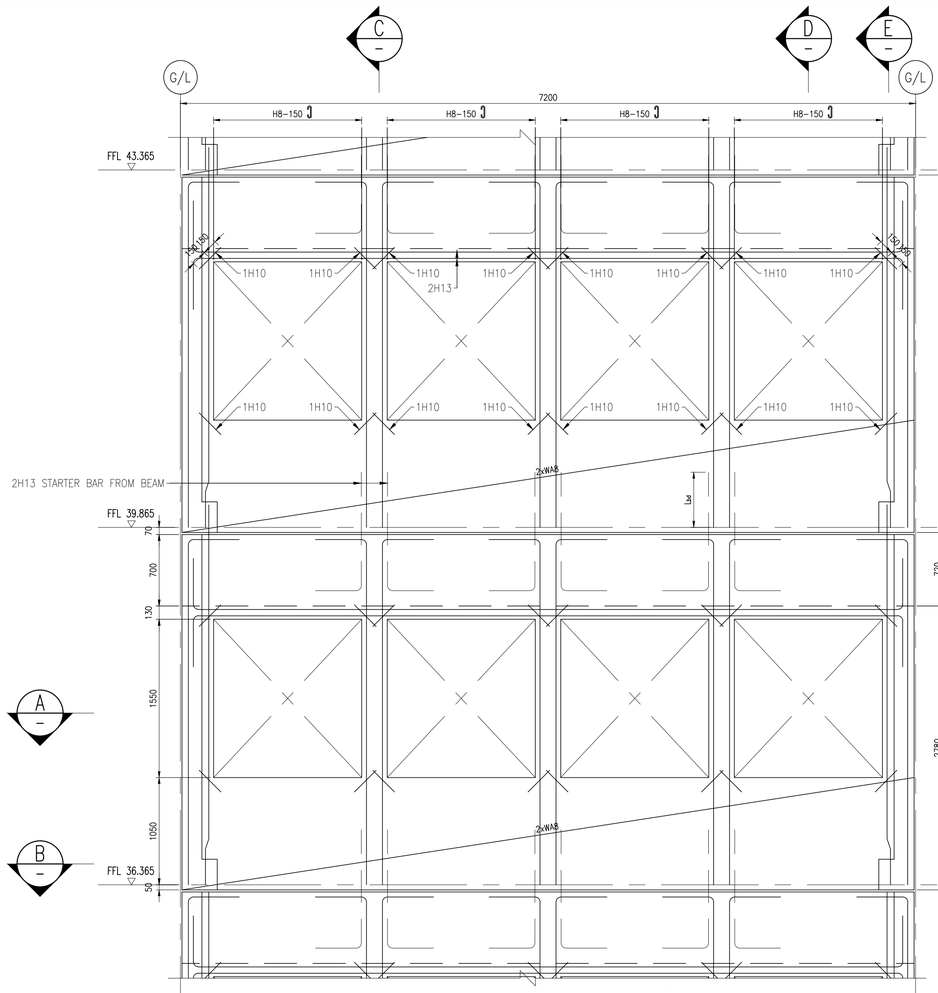
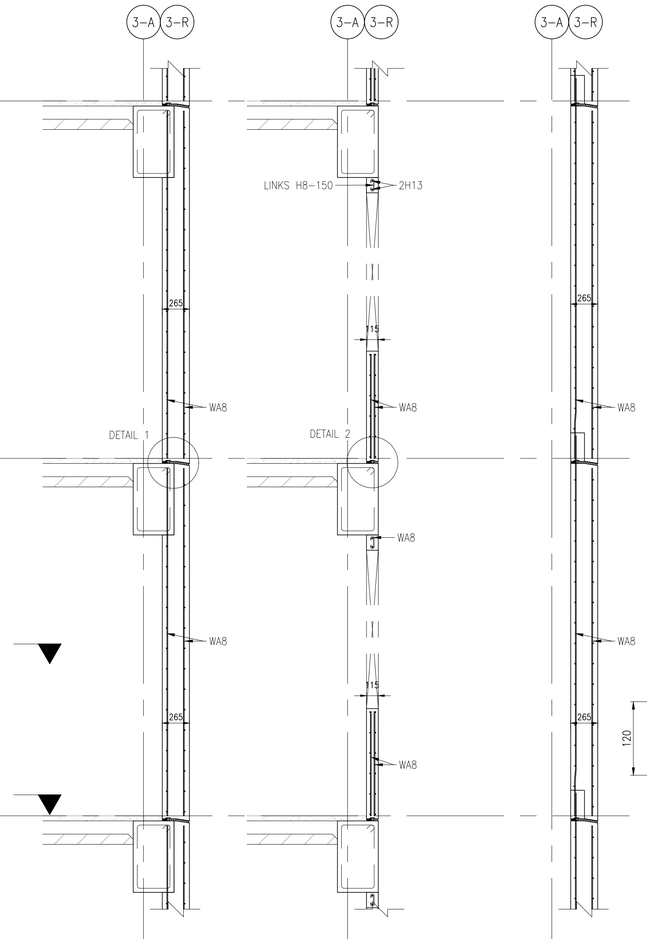


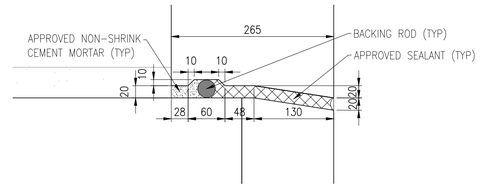

TYPICAL PRECAST FACADE ELEVATION
SCALE: 1:30



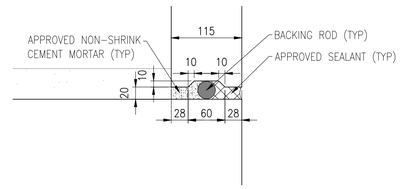

SECTION C
SCALE 1:30

SECTION D
SCALE 1:30

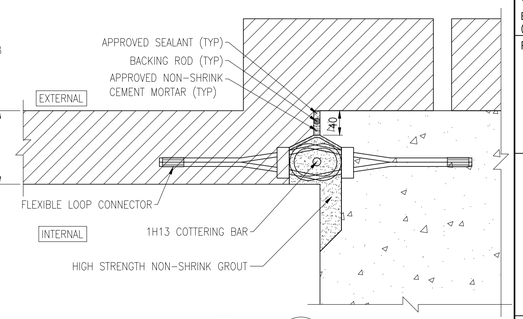
SECTION E
SCALE 1:30



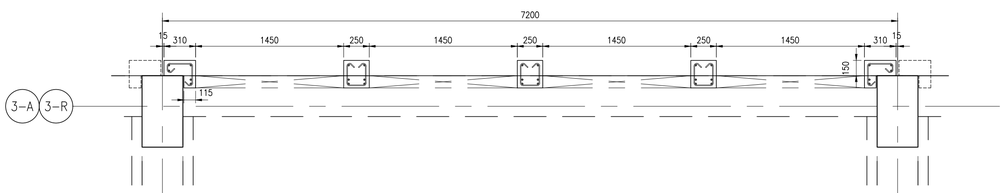

DETAIL 1
SCALE 1:5



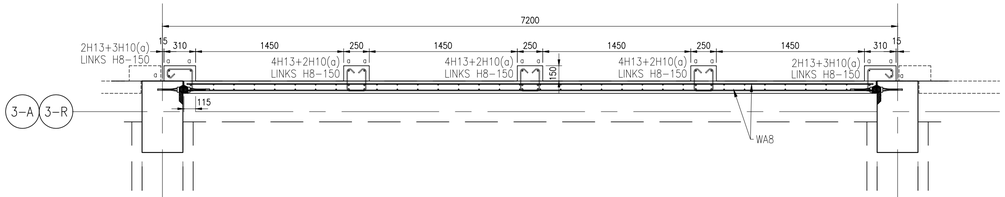

DETAIL 2
SCALE 1:5



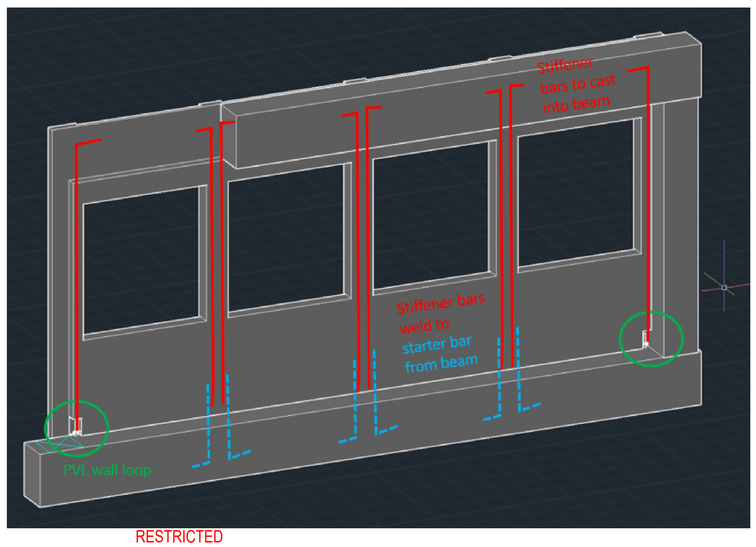

DETAIL 3
SCALE 1:5




SECTION A
SCALE 1:30




SECTION B
SCALE 1:30

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## CONCEPT OF FAÇADE WALL CONNECTION

1. TYPICALLY 7.18M WIDE X 3.48M DEEP.
2. BASE DESIGN OF WALL IS 150MM THICK WITH 100MM SITTING ON BEAM AND 50MM HANGING OUTWARD (REFER TO HDB STANDARD DESIGN).
3. ECTIVELY DUE TO THE SIZES OF WINDOWS, ONLY THE STIFFENERS BETWEEN WINDOWS AND THE LOW WALL OF 1.1M HEIGHT NEEDS TO BE DESIGNED FOR PROPER CONNECTION AS THE TOP HALF OF THE FAÇADE ABOVE THE WINDOW OPENINGS WOULD BE SERVING AS A TEMPORARY SIDE FORM FOR UPPER FLOOR BEAM CASTING.

STIFFENER CONNECTION:

1. TOP HALF WILL HAVE REINFORCEMENT CAST INTO THE UPPER FLOOR BEAMS.
2. BOTTOM HALF TO HAVE WELDING JOINT, IF NOT PRECAST LOOP AS TRYING TO AVOID LAPPING CONNECTION AS THE REBAR WOULD BE TOO LONG.

END CONNECTION OF WALL AGAINST PC COLUMN:

1. THE 2 ENDS WILL HAVE REINF. TO BE CAST INTO UPPER FLOOR BEAM.
2. BOTTOM EDGE TO HAVE PVL 80 WALL LOOP.

| REV. | DATE | APPR. | DESCRIPTION |
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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

FOR OFFICIAL USE

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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(name & signature)

HCD ( Architecture )
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ACCREDITED CHECKER
No: 1078
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C&S CONSULTANT


TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196


PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

TYPICAL
NON- STRUCTURE FACADE WALL DETAILS

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_FWDT

Drawing no.
S_WS1416_BLK02_03_FWDT_ST09


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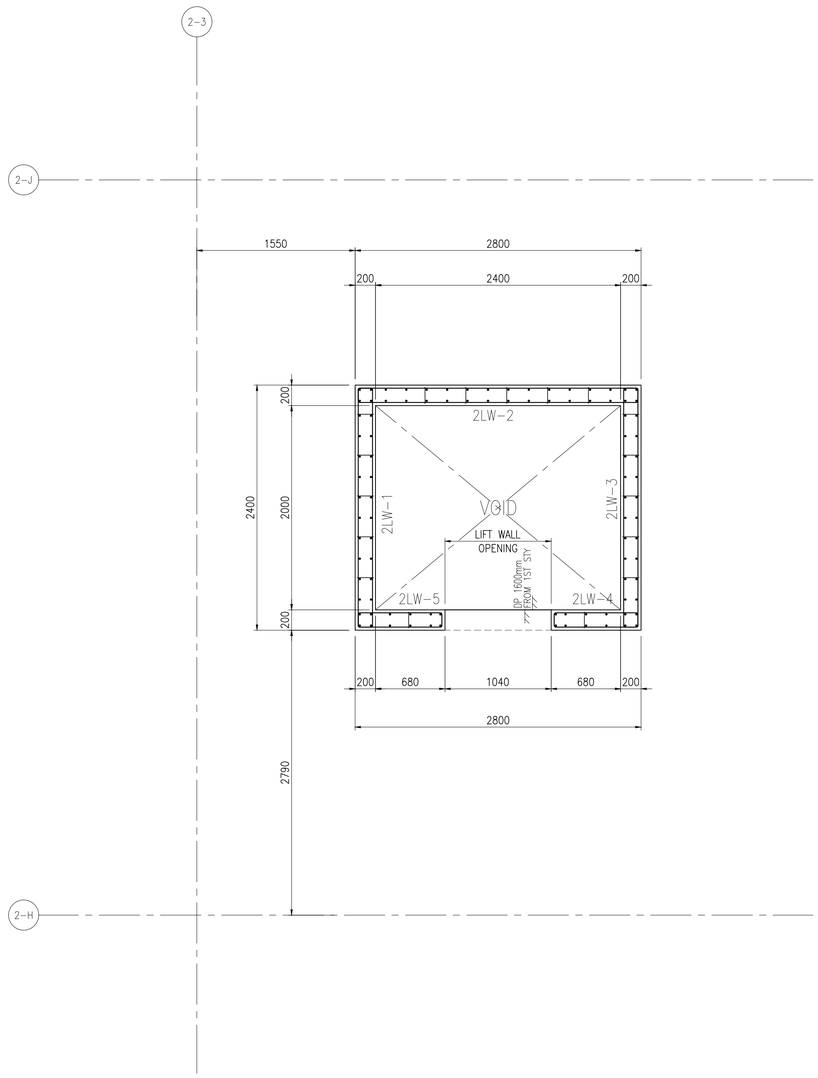
# LIFT WALL LAYOUT – BLOCK 2

## LIFT 2LW–15




| LEVEL | CONC. GRADE | REINFORCEMENT | | | | |
|---|---|---|---|---|---|---|
| | | VERT. BAR | HORIZ. BAR | VERT. HOOK | HORIZ.HOOK | |
| UPPER ROOF TO LOWER ROOF | C28/35 | H13–200 | H10–200 | H10–400 | H10–400 | |
| LOWER ROOF TO 3RD STOREY | C28/35 | H13–200 | H10–200 | H10–400 | H10–400 | |
| 3RD STOREY TO 2ND STOREY | C28/35 | H13–200 | H10–200 | H10–400 | H10–400 | |
| 2ND STOREY TO 1ST STOREY | C28/35 | H13–200 | H10–200 | H10–400 | H10–400 | |
| 1ST STOREY TO PILECAP | C28/35 | H13–200 | H10–200 | H10–400 | H10–400 | |

SUBMISSION ST09

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

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(name & signature)

HCD ( Architecture )
LOH JIJ–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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DRAWING TITLE

BLOCK 2 & BLOCK 3
LIFT WALL DETAILS – 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

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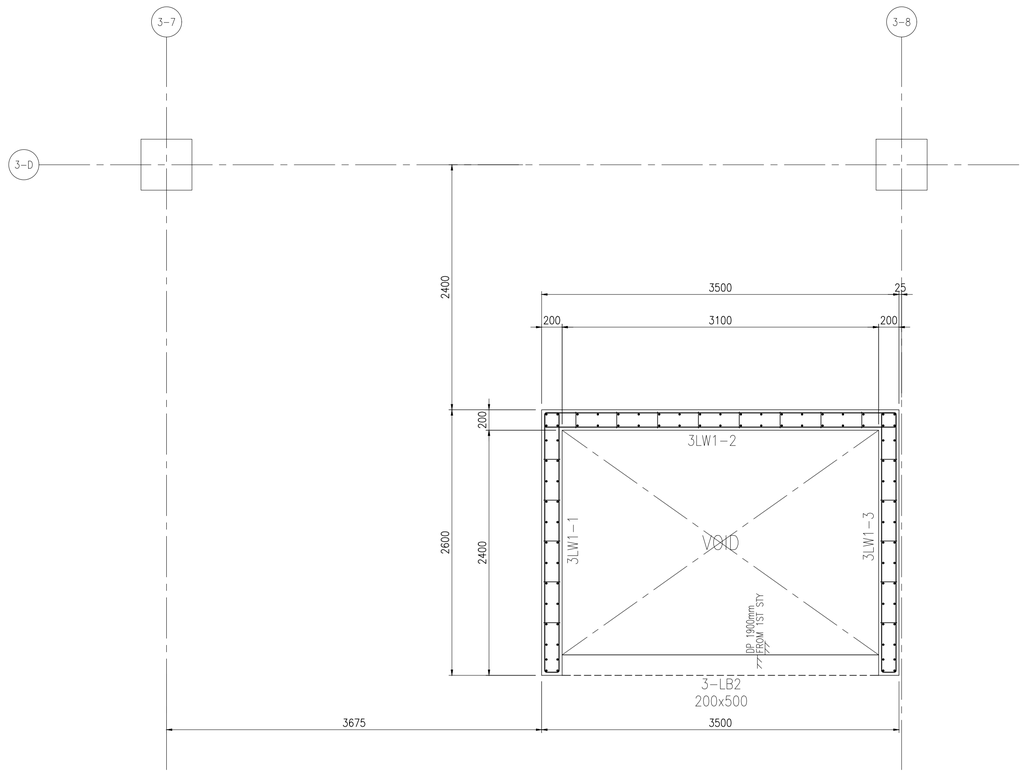
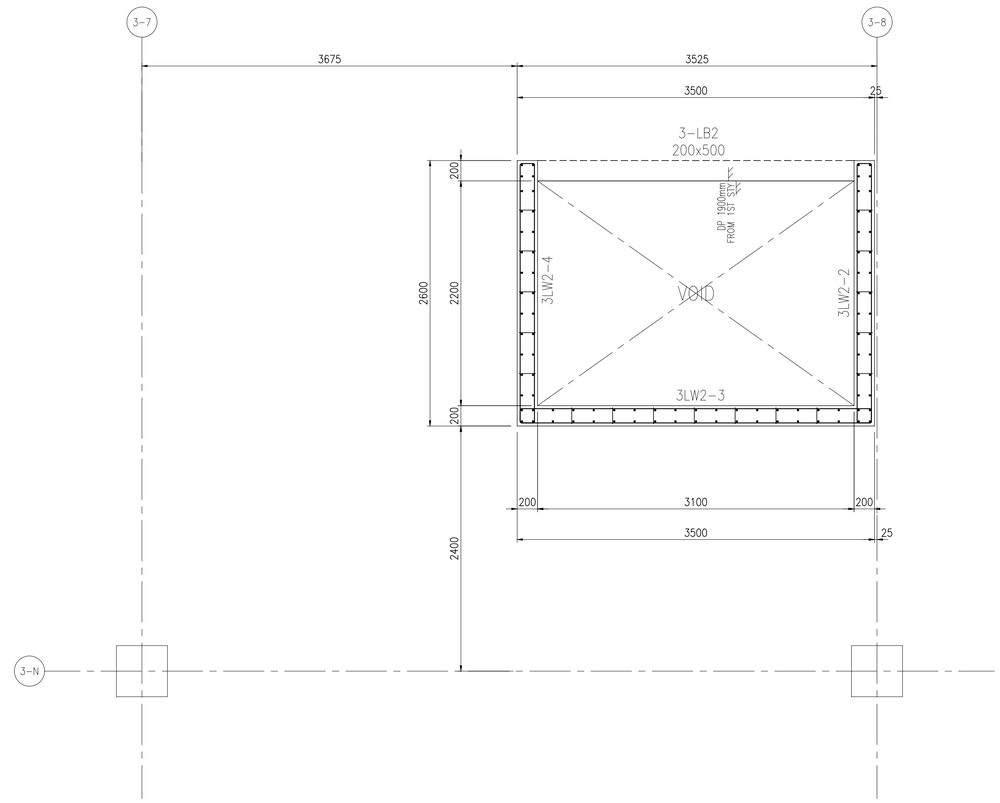
# LIFT WALL LAYOUT – BLOCK 3

## LIFT 3LW–48




## LIFT 3LW–184




SUBMISSION ST09

| LEVEL | CONC. GRADE | REINFORCEMENT | | | | |
|---|---|---|---|---|---|---|
| | | VERT. BAR | HORIZ. BAR | VERT. HOOK | HORIZ.HOOK | |
| UPPER ROOF TO LOWER ROOF | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| LOWER ROOF TO 3RD STOREY | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| 3RD STOREY TO 2ND STOREY | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| 2ND STOREY TO 1ST STOREY | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| 1ST STOREY TO PILECAP | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |

| LEVEL | CONC. GRADE | REINFORCEMENT | | | | |
|---|---|---|---|---|---|---|
| | | VERT. BAR | HORIZ. BAR | VERT. HOOK | HORIZ.HOOK | |
| UPPER ROOF TO LOWER ROOF | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| LOWER ROOF TO 3RD STOREY | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| 3RD STOREY TO 2ND STOREY | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| 2ND STOREY TO 1ST STOREY | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |
| 1ST STOREY TO PILECAP | C28/35 | H13–200 | H10–200 | H10–600 | H10–600 | |

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(name & signature)

HCD ( Architecture )
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(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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DRAWING TITLE
BLOCK 2 & BLOCK 3
LIFT WALL DETAILS – 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
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| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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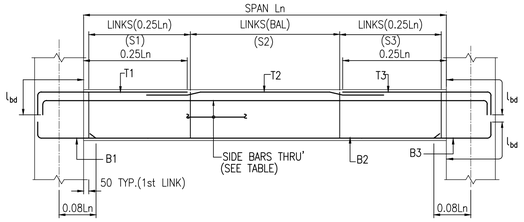
## RECOMMENDED SIDE BARS FOR BEAMS OF VARIOUS DEPTH & WIDTH

| WIDTH OF BEAM (bw) | ø OF SIDE BARS |
|---|---|
| bw ⩽ 200 | 10 |
| 200 < bw ⩽ 300 | 13 |
| bw > 300 | 16 |

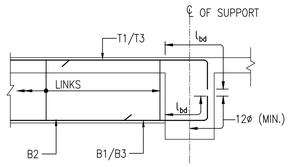
| DEPTH OF BEAM (h) | NOS OF SIDE BARS AT EACH FACES |
|---|---|
| 1000 ⩽ h < 1200 | 3 |
| 1200 ⩽ h < 1400 | 4 |
| 1400 ⩽ h < 1600 | 5 |
| 1600 ⩽ h < 1800 | 6 |
| 1800 ⩽ h < 2000 | 7 |
| 2000 ⩽ h | BARS SPACING AT 250 C/C |

## NOTES

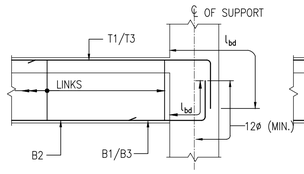
1. BEAM DIMENSIONS ARE GIVEN AS WIDTH x DEPTH. (W x D)
2. NOS. AND DIRECTION OF BEAM SPANS TO BE READ IN THE DIRECTION OF BEAM MARKING ON PLAN.
3. ACTUAL LENGTH OF SPAN REFER TO FLOOR PLAN.
4. WHEN BAR LENGTH EXCEEDS 12m, LOCATION OF LAPPING TO BE PROVIDED AS SHOWN IN TYPICAL BEAM ELEVATIONS.
5. BEAM REINFORCEMENT SHOWN IN BEAM SCHEDULE ARE NOTED AS BELOW:
   a) 12H32+12H32+4H32 — 3RD LAYER OF REINF. / 2ND LAYER OF REINF. / 1ST LAYER OF REINF.
   b) 2x5H32 DENOTES 5H32+5H32 TO BE BUNDLED VERTICALLY ' ⁚ '
   c) (5H25+2H20) IN SCHEDULE DENOTES BARS IN SAME LAYER.
7. TORSIONAL LINK SHALL BE PROVIDED TO ALL CURVED BEAMS.



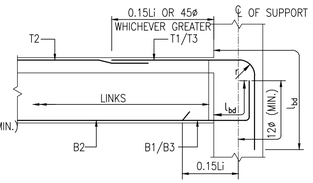

TYPICAL ELEVATION OF SINGLE SPAN BEAM
N.T.S.




END CONDITION 'E1'
(BEAM TO BEAM)

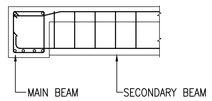



END CONDITION 'E2'
(BEAM TO COLUMN/ WALL)

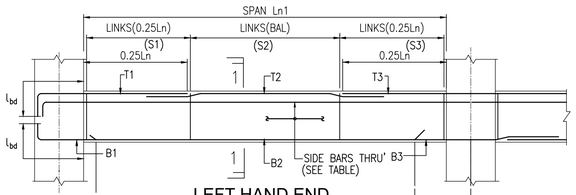



END CONDITION 'E3'
(BEAM TO COREWALL)

TYPICAL BEAM SUPPORT CONDITIONS
(APPLICABLE TO ALL BEAMS UNLESS OTHERWISE STATED)

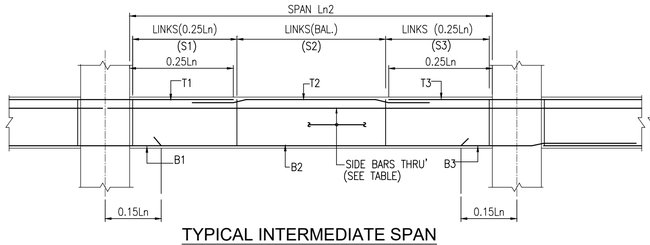



CONNECTION
MAIN BEAM TO SECONDARY BEAM

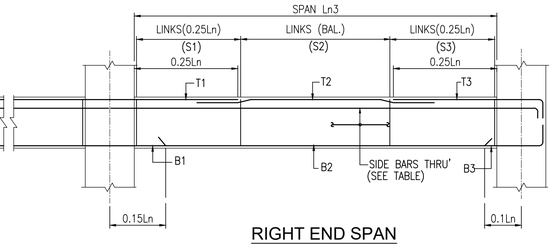



LEFT HAND END
(Ln IS GREATER OF Ln1 & Ln2)

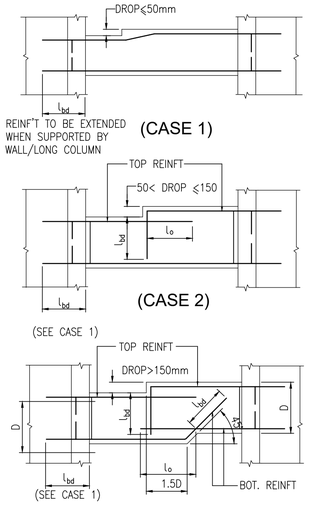
TYPICAL ELEVATION OF CONTINUOUS BEAM
(APPLICABLE TO ALL BEAMS UNLESS OTHERWISE STATED)



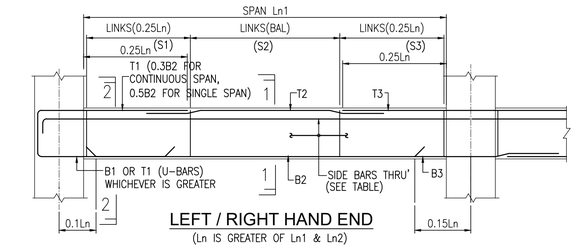

TYPICAL INTERMEDIATE SPAN
(Ln IS GREATER OF Ln1, Ln2 & Ln3)




RIGHT END SPAN
(Ln IS GREATER OF Ln3 & Ln2)

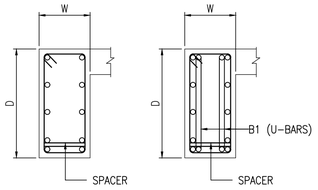



TYPICAL DROP IN BEAM DETAILS
(BEAM ELEVATION OF SHOWING REINFORCEMENT)

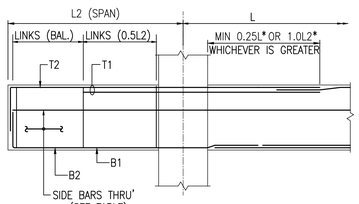



LEFT / RIGHT HAND END
(Ln IS GREATER OF Ln1 & Ln2)

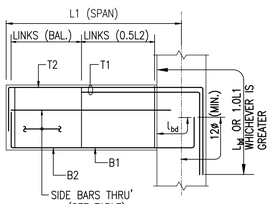
CONNECTION USING U-BARS (ALTERNATIVE)




SECT 1-1 SECT 2-2

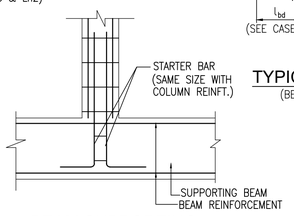



CONTINUOUS BEAM
( * OR Lo WHICHEVER IS THE GREATER)

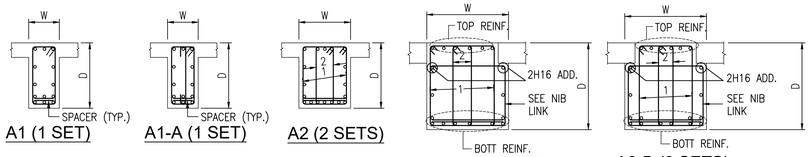



BEAM FIX INTO COLUMN
( * OR Lo WHICHEVER IS THE GREATER)

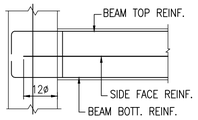
TYPICAL DETAILS FOR CANTILEVER BEAMS ONLY



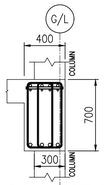

BEAM SUPPORTING
COLUMN POINT LOAD



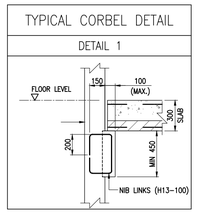

A1 (1 SET) A1-A (1 SET) A2 (2 SETS) A2-A (2 SETS) A2-B (2 SETS)

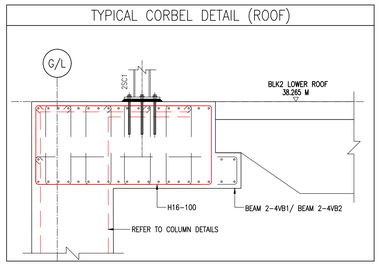


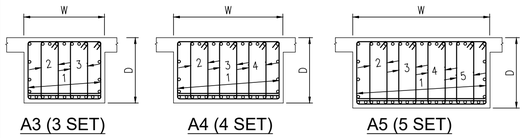

DETAIL-1



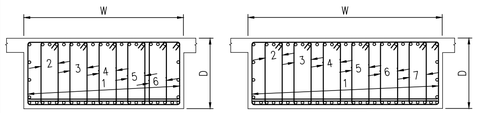

TYPICAL BEAM CONNECTION (DETAIL X)
(CONNECTION BETWEEN COLUMN WIDTH 300 & BEAM WIDTH 400)



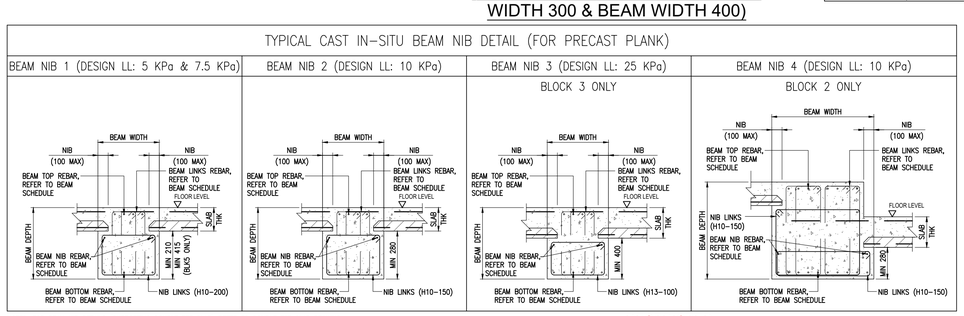




A3 (3 SET) A4 (4 SET) A5 (5 SET)

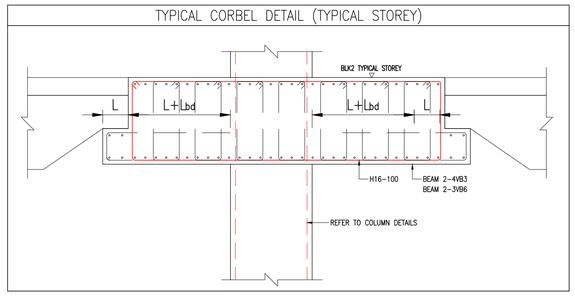



A6 (6 SET) A7 (7 SET)

TYPES OF LINKS (NTS)




NOTES: FOR BEAM NIB DETAILS (SUPPORTING DOUBLE TEE SLAB) REFER TO DOUBLE TEE SLAB DRAWING.




RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| CO | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

34 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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SINGAPORE

AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS – 1

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
| Scale | AS SHOWN | | Sources | |
| Filename | S_WS1416_BLK02_03_BMDT | | | |

Drawing no.
S_WS1416_BLK02_03_BMDT_1_ST09

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NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-1HB1 | 300x700 | 3H16 | 3H16 | 3H16 | 2x3H25 | 2x3H25 | 2x3H25 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1HB2-1 | 300x700 | 3H16 | 3H16 | 3H20 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1HB2-2 | 300x700 | 3H20 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1HB3-1 | 400x700 | 4H20 | 4H20 | 4H32+4H25 | 4H25+2H25 | 4H25+2H25 | 4H25+2H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 2-1HB3-2 | 400x700 | 4H32+4H25 | 4H20 | 4H20 | 4H25+2H25 | 4H25+2H25 | 4H25+2H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 2-1HB4 | 300x700 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-1 | 300x700 | 3H20 | 3H20 | 2x3H20 | 2x3H20+3H13 | 2x3H20+3H13 | 2x3H20+3H13 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-2 | 300x700 | 2x3H20 | 3H20 | 2x3H20 | 2x3H20+3H13 | 2x3H20+3H13 | 2x3H20+3H13 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-3 | 300x700 | 2x3H20 | 3H20 | 2x3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-4 | 300x700 | 2x3H20 | 3H20 | 2x3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-5 | 300x700 | 2x3H20 | 3H20 | 2x3H20+3H16 | 2x3H20 | 2x3H20 | 2x3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-6 | 300x700 | 2x3H20+3H16 | 3H20 | 2x3H20+3H16 | 2x3H20 | 2x3H20 | 2x3H20 | – | – | A1 | H10-150 | H10-200 | H10-150 | |
| 2-1VB1-7 | 300x700 | 2x3H20+3H16 | 3H20 | 2x3H20 | 2x3H20 | 2x3H20 | 2x3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-8 | 300x700 | 2x3H20 | 3H20 | 2x3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-9 | 300x700 | 2x3H20 | 3H20 | 2x3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-10 | 300x700 | 2x3H20 | 3H20 | 3H25+3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB1-11 | 300x700 | 3H25+3H20 | 3H20 | 3H20 | 3H25 | 3H25+3H20 | 3H25 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB2-1 | 300x700 | 3H20 | 3H20 | 3H25+3H20 | 3H20+2H20 | 3H25+2H25 | 3H20+2H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB2-2 | 300x700 | 3H25+3H20 | 3H20 | 3H25+3H20 | 3H20 | 3H25 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB2-3 | 300x700 | 3H25+3H20 | 3H20 | 3H20 | 3H20+2H20 | 3H25+2H25 | 3H20+2H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB3 | 300x700 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB4-1 | 300x700 | 3H25+3H20 | 3H25+3H20 | 3H25+3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | CANTILEVER |
| 2-1VB4-2 | 300x700 | 3H25+3H20 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB4-3 | 300x700 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB4-4 | 300x700 | 3H20 | 3H20 | 3H25+3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-1VB4-5 | 300x700 | 3H25+3H20 | 3H25+3H20 | 3H25+3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | CANTILEVER |

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-2HB1 | 500x850 | 5H16 | 5H16 | 5H16 | 5H16 | 5H16 | 5H16 | – | – | A2 | 2H10-200 | 2H10-250 | 2H10-200 | |
| 2-2HB2 | 800x850 | 8H16 | 8H16 | 8H16 | 8H20 | 8H20 | 8H20 | – | – | A2 | 2H10-200 | 2H10-250 | 2H10-200 | |
| 2-2HB3 | 800x850 | 8H20 | 8H20 | 8H20 | 8H20 | 8H25+8H25 | 8H20 | – | – | A2 | 2H10-200 | 2H10-250 | 2H10-200 | |
| 2-2VB1-1 | 1800/2050x850 | 18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-2 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-3 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-4 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16+2H20 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-5 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-6 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-2VB1-7 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16+2H20 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-8 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-9 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-10 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB1-11 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-1 | 1800/2050x850 | 18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-2 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-3 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-4 | 1800/2050x750/850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-5 | 1800/2150x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 21H16 | 21H16 | 21H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-6 | 1800/2150x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 21H16 | 21H16 | 21H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-2VB2-7 | 1800/2150x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 21H16 | 21H16 | 21H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-8 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-9 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-10 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H20+18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB2-11 | 1800/2050x850 | 18H20+18H16 | 18H16 | 18H16 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-2VB3-1 | 800/1000x950 | 8H16 | 8H16 | 8H20+8H16 | 10H20 | 10H20 | 10H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 2-2VB3-2 | 800/1000x950 | 8H20+8H16 | 8H20 | 8H20+8H16 | 10H16 | 10H16 | 10H16 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 4 DETAIL |
| 2-2VB3-3 | 800/1000x950 | 8H20+8H16 | 8H20 | 8H20 | 10H20 | 10H20 | 10H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 2-2VB4-1 | 800/900x850 | 8H16 | 8H16 | 8H20+8H16 | 9H20 | 9H20 | 9H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 2-2VB4-2 | 800/900x850 | 8H20+8H16 | 8H20 | 8H20+8H16 | 9H20 | 9H20 | 9H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 2-2VB4-3 | 800/900x850 | 8H20+8H16 | 8H20 | 8H20 | 9H20 | 9H20 | 9H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 2-2VB5 | 300x500 | 3H13 | 3H13 | 3H13 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | TOB 27.775 |
| 2-RHB1 | 200x400 | 2H13 | 2H13 | 2H13 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 2-RVB1 | 200x400 | 2H13 | 2H13 | 2H13 | 2H20 | 2H20 | 2H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 2-RVB1a | 200x400 | 2H13 | 2H13 | 2H13 | 2H32+2H16 | 2H32+2H16 | 2H32+2H16 | – | – | A1 | H10-175 | H10-175 | H10-175 | |

RESTRICTED

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-3HB1 | 800x1200 | 8H20 | 8H20 | 8H20 | 8H32 | 8H32+8H32 | 8H32 | – | REFER TO TABLE | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 2-3HB2-1 | 200x500 | 2H25 | 2H25 | 2H25 | 2H13 | 2H13 | 2H13 | – | – | A1 | H10-200 | H10-200 | H10-200 | CANTILEVER |
| 2-3HB2-2 | 200x500 | 2H25 | 2H25 | 2H16 | 2H13 | 2H13 | 2H13 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 2-3VB1-1 | 1800/2050x850 | 18H16 | 18H16 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-3VB1-2 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-3VB1-3 | 1800/2050x850 | 18H20 | 18H16 | 18H16 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-3VB2-1 | 300x850 | 3H16 | 3H16 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 2-3VB2-2 | 300x850 | 3H20 | 3H16 | 3H16 | 3H20 | 3H25 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 2-3VB3 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H25 | 20H25 | 20H25 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-3VB4-1 | 500/750x1000 | 5H20 | 5H20 | 2x5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-3VB4-2 | 500/750x1000 | 2x5H25 | 5H20 | 5H20 | 7H25 | 7H25 | 7H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 2-3VB5-1 | 1800/2050x850 | 18H16 | 18H16 | 18H20 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-3VB5-2 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-3VB5-3 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H16 | 20H16 | 20H16 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-3VB5-4 | 1800/2050x850 | 18H20 | 18H16 | 18H16 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-3VB6-1 | 3100/3600x850 | 30H16 | 30H16 | 30H20 | 34H16 | 34H16 | 34H16 | 4H16 | – | A8 | 8H10-200 | 8H10-200 | 8H10-200 | |
| 2-3VB6-2 | 3100/3600x1000 | 30H20 | 30H16 | 30H20 | 34H16 | 34H16 | 34H16 | 4H16 | REFER TO TABLE | A8 | 8H10-200 | 8H10-200 | 8H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-3VB6-3 | 3100/3600x1000 | 30H20 | 30H16 | 30H16 | 34H16 | 34H16 | 34H16 | 4H16 | REFER TO TABLE | A8 | 8H10-200 | 8H10-200 | 8H10-200 | |
| 2-4VB1-1 | 1800/2050x850 | 18H16 | 18H16 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-2 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-3 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-4 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-5 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-6 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-4VB1-7 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-8 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-9 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-10 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB1-11 | 1800/2050x850 | 18H20 | 18H16 | 18H16 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB2-1 | 1800/2050x850 | 18H16 | 18H16 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB2-2 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB2-3 | 1800/2050x850 | 18H20 | 18H20 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-4VB2-4 | 1800/2050x850 | 18H20 | 18H16 | 18H16 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-4VB3-1 | 3100/3600x850 | 30H16 | 30H16 | 30H20 | 34H20 | 34H20 | 34H20 | 4H16 | – | A8 | 8H10-200 | 8H10-200 | 8H10-200 | |
| 2-4VB3-2 | 3100/3600x850 | 30H20 | 30H16 | 30H20 | 34H20 | 34H20 | 34H20 | 4H16 | – | A8 | 8H10-200 | 8H10-200 | 8H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-4VB3-3 | 3100/3600x850 | 30H20 | 30H16 | 30H16 | 34H20 | 34H20 | 34H20 | 4H16 | – | A8 | 8H10-200 | 8H10-200 | 8H10-200 | |
| 2-THB1 | 250x850 | 2H16 | 2H16 | 2H16 | 2H20 | 2H20 | 2H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-THB2 | 200x850 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-THB3 | 200x500 | 2H13 | 2H13 | 2H13 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-THB4 | 400x850 | 4H20+4H20 | 4H20+4H20 | 4H20+4H20 | 4H32+4H25 | 4H32+4H25 | 4H32+4H25 | – | – | A2 | 2H10-250 | 2H10-250 | 2H10-250 | |
| 2-THB5-1 | 500x850 | 5H16 | 5H16 | 5H25 | 5H16 | 5H16 | 5H16 | – | – | A2 | 2H10-250 | 2H10-250 | 2H10-250 | |
| 2-THB5-2 | 500x850 | 5H25 | 5H16 | 5H16 | 5H16 | 5H16 | 5H16 | – | – | A2 | 2H10-250 | 2H10-250 | 2H10-250 | |
| 2-TVB1 | 200X850 | 2H20 | 2H20 | 2H20 | 2H32+2H25 | 2H32+2H25 | 2H32+2H25 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-TVB2 | 200x500 | 2H16 | 2H16 | 2H16 | 2H16+2H20 | 2H16+2H20 | 2H16+2H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-TVB3 | 200x850 | 2H16 | 2H16 | 2H16 | 2H20 | 2H20 | 2H20 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-TVB4-1 | 1800/2050x850 | 18H16 | 18H16 | 18H25 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-TVB4-2 | 1800/2050x850 | 18H25 | 18H16 | 18H25 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-TVB4-3 | 1800/2050x850 | 18H25 | 18H16 | 18H16 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-LB1 | 200x500 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 2-LB2 | 325x500 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | TOB 30.565 |
| 2-STB1 | 200x500 | 2H13 | 2H13 | 2H13 | 2H20+2H16 | 2H20+2H16 | 2H20+2H16 | – | – | A1 | H10-300 | H10-300 | H10-300 | |
| 2-THB2a | 200x750 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-THB4a | 400x750/850 | 4H20+4H20 | 4H20+4H20 | 4H20+4H20 | 4H32+4H25 | 4H32+4H25 | 4H32+4H25 | – | – | A2 | 2H10-250 | 2H10-250 | 2H10-250 | |
| 2-TVB1a | 200x750 | 2H20 | 2H20 | 2H20 | 2H32+2H25 | 2H32+2H25 | 2H32+2H25 | – | – | A1 | H10-250 | H10-250 | H10-250 | |
| 2-TVB4a-1 | 1800/2050x850 | 18H16 | 18H16 | 18H25 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-TVB4a-2 | 1800/2050x1000 | 18H25 | 18H16 | 18H25 | 20H20 | 20H20 | 20H20 | 3H16 | REFER TO TABLE | A5 | 5H10-200 | 5H10-250 | 5H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 2-TVB4a-3 | 1800/2050x1000 | 18H25 | 18H16 | 18H16 | 20H20 | 20H20 | 20H20 | 3H16 | REFER TO TABLE | A5 | 5H10-200 | 5H10-250 | 5H10-200 | |
| 2-THB5a-1 | 500x1000 | 5H16 | 5H16 | 5H25 | 5H16 | 5H16 | 5H16 | – | REFER TO TABLE | A2 | 2H10-250 | 2H10-250 | 2H10-250 | |
| 2-THB5a-2 | 500x1000 | 5H25 | 5H16 | 5H16 | 5H16 | 5H16 | 5H16 | – | REFER TO TABLE | A2 | 2H10-250 | 2H10-250 | 2H10-250 | |

RESTRICTED

SUBMISSION ST09

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| F | 17/11/2023 | TWA | 2-THB5a-1 increase beam depth 1000 from 850 |
| C | 30/10/2023 | TWA | 2-THB2a reduce beam 750 depth from 850 depth |
| C | 30/10/2023 | TWA | 2-2VB2-4 reduce beam 750 depth partially from 850depth |
| C | 04/10/2023 | TWA | 2-TVB1a reduce beam 750 depth from 850 depth |
| G | 17/11/2023 | TWA | 2-3VB6-2-3 increase beam depth 1000 from 850 in span 2 and 3 |

35 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
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ACCREDITED CHECKER
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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

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PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS - 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |
| Filename | S_WS1416_BLK02_03_BMDT | | |

Drawing no.
S_WS1416_BLK02_03_BMDT_2_ST09

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NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-1HB1-1 | 300x750 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB1-2 | 300x750 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB2-1 | 300x750 | 3H16 | 3H16 | 2X3H25 | 2x3H25 | 2x3H25 | 2x3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB2-2 | 300x750 | 2X3H25 | 3H16 | 2x3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB2-3 | 300x750 | 2x3H20 | 3H16 | 2x3H20 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB2-4 | 300x750 | 2x3H20 | 3H13 | 3H13 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB3-1 | 300x750 | 3H16 | 3H16 | 2X3H25 | 3H16+3H25 | 3H16+3H25 | 3H16+3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB3-2 | 300x750 | 2X3H25 | 3H16 | 3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB3-3 | 300x750 | 3H25 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB3-4 | 300x750 | 3H16 | 3H16 | 3H25 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB3-5 | 300x750 | 3H25 | 3H16 | 3H16 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB4 | 300x750 | 3H13 | 3H13 | 3H13 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB5-1 | 300x750 | 3H16 | 3H16 | 3H20+3H25 | 3H16+3H25 | 3H16+3H25 | 3H16+3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB5-2 | 300x750 | 3H20+3H25 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB6-1 | 300x750 | 3H16 | 3H16 | 2x3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB6-2 | 300x750 | 2x3H20 | 3H16 | 3H20+2x3H25 | 2x3H20 | 2x3H20 | 2x3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB6-3 | 300x750 | 3H20+2x3H25 | 3H16 | 3H16 | 2x3H25 | 2x3H25 | 2x3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB7-1 | 300x750 | 3H25 | 3H25 | 2X4H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB7-2 | 300x1645/750 | 2X4H25 | 3H25 | 3H25 | 2x4H25 | 2x4H25 | 2x4H25 | – | REFER TO TABLE | A1 | H10-200 | H10-200 | H10-200 | TOB 21.760 |
| 3-1HB8-1 | 300x750 | 3H16 | 3H16 | 2x3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB8-2 | 300x750 | 2x3H25 | 3H16 | 3H16 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB9-1 | 400x750 | 4H20 | 4H20 | 2X5H25 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-1HB9-2 | 400x750 | 2X5H25 | 2X4H20 | 2X4H20 | 2x4H25 | 2x4H25 | 2x4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | TOB 20.815 |
| 3-1HB10 | 400x750 | 4H16 | 4H16 | 4H16 | 2X5H25 | 2X5H25 | 2X5H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-1HB11-1 | 300x750 | 3H16 | 3H16 | 2X3H20 | 2x3H20 | 2x3H20 | 2x3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB11-2 | 300x750 | 2X3H20 | 2X3H20 | 2X3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB11-3 | 300x750 | 2X3H20 | 3H20 | 2X3H20 | 2x3H20 | 2x3H20 | 2x3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB11-4 | 300x750 | 2X3H20 | 3H20 | 3H20+2x3H25 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB11-5 | 300x750 | 3H20+2x3H25 | 3H16 | 3H16 | 2x3H25 | 2x3H25 | 2x3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-1 | 300x750 | 3H16 | 3H16 | 3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-2 | 300x750 | 3H25 | 3H25 | 3H25 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-3 | 300x750 | 3H25 | 3H16 | 3H25 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-4 | 300x750 | 3H25 | 3H25 | 2X3H25 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-5 | 300x750 | 2X3H25 | 3H16 | 2X3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-6 | 300x750 | 2X3H25 | 3H16 | 3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-7 | 300x750 | 3H25 | 3H16 | 3H20 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB12-8 | 300x750 | 3H20 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB13-1 | 300x750 | 3H16 | 3H16 | 2x3H25 | 3H16+3H25 | 3H16+3H25 | 3H16+3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB13-2 | 300x750 | 2x3H25 | 3H16 | 3H16+3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB13-3 | 300x750 | 3H16+3H25 | 3H16 | 3H16+3H25 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB13-4 | 300x750 | 3H16+3H20 | 3H16 | 3H25 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1HB13-5 | 300x750 | 3H25 | 3H16 | 3H16 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |

RESTRICTED

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-1VB1-1 | 300x750 | 3H16 | 3H16 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB1-2 | 300x750 | 3H20 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB2-1 | 300x750 | 3H16 | 3H16 | 2X3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB2-2 | 300x850/750 | 2X3H20 | 3H16 | 3H16 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB3-1 | 300x750 | 3H20 | 3H20 | 3H25 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB3-2 | 300x750 | 3H25 | 3H20 | 3H20+3H25 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB4-1 | 300x750 | 3H16 | 3H16 | 3H16+3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB4-2 | 300x750 | 3H16+3H25 | 3H16 | 3H25 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB4-3 | 300x750 | 3H25 | 3H16 | 3H16+3H25 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB4-4 | 300x750 | 3H16+3H25 | 3H16 | 3H16+3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB4-5 | 300x850/750 | 3H16+3H20 | 3H16 | 3H20 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB4-6 | 300x750 | 3H20 | 3H16 | 3H16 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB5-1 | 300x750 | 3H20 | 3H20 | 2X3H25 | 2X3H25 | 3H16+2X3H25 | 2X3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB5-2 | 300x750 | 2X3H25 | 3H20 | 3H20 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB6-1 | 300x750 | 3H20 | 3H20 | 3H16+2X3H25 | 3H16+2X3H25 | 3H16+2X3H25 | 3H16+2X3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB6-2 | 300x750 | 3H16+2X3H25 | 3H20 | 3H20 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB7-1 | 300x750 | 3H20 | 3H20 | 2x3H25 | 2x3H20 | 2x3H25 | 2x3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB7-2 | 300x750 | 2x3H25 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB8-1 | 300x750 | 3H16 | 3H16 | 3H16+3H25 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-1VB8-2 | 300x750 | 3H16+3H25 | 3H16 | 3H16 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-200 | H10-200 | H10-200 | |

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-WB1-1 | 300x750 | 3H16 | 3H16 | 3X3H25 | 2X3H25 | 2X3H25 | 2X3H25 | – | – | A1 | H10-100 | H10-200 | H10-100 | |
| 3-WB1-2 | 300x750 | 3X3H25 | 3H16 | 3H16 | 3H25 | 3H25 | 3H25 | – | – | A1 | H10-100 | H10-200 | H10-100 | |
| 3-WB2-1 | 300x750 | 3H16 | 3H16 | 2X3H25 | 2X3H20 | 2X3H20 | 2X3H20 | – | – | A1 | H10-100 | H10-200 | H10-100 | |
| 3-WB2-2 | 300x750 | 2X3H25 | 3H16 | 3H16 | 2X3H20 | 2X3H20 | 2X3H20 | – | – | A1 | H10-100 | H10-200 | H10-100 | |

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-RWB1 | 300x300 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | TOB 25.715 |

NOTES:
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2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-LB1 | 200x500 | 2H20 | 2H20 | 2H20 | 2H20 | 2H20 | 2H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| 3-LB2 | 200x500 | 2H20 | 2H20 | 2H20 | 2H20 | 2H20 | 2H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | LIFT BEAM |
| 3-LB3 | 400x500 | 4H20 | 2x4H20 | 2x4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| 3-LB4 | 300x500 | 3H16 | 3H16 | 3H16 | 3H20 | 3H20 | 3H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | TOB 23.140 (G/L: 2/J&H) |
| 3-STB1-1 | 200x500 | 2H20 | 2H20 | 2H32 | 2H13 | 2H13 | 2H13 | – | – | A1 | H10-300 | H10-300 | H10-300 | CANTILEVER |
| 3-STB1-2 | 200x500 | 2H32 | 2H16 | 2H16 | 2H20+2H16 | 2H20+2H16 | 2H20+2H16 | – | – | A1 | H10-300 | H10-300 | H10-300 | |
| 3MB1 | 800x600 | 8H20 | 8H20 | 8H20 | 8H16 | 8H16 | 8H16 | – | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | CANTILEVER |
| 3DB1 | 200x400 | 2H13 | 2H13 | 2H13 | 2H13 | 2H13 | 2H13 | – | – | A1 | H10-200 | H10-200 | H10-200 | 2ND STOREY (G/L: 3-N/3-4~5) |
| 3DB2 | 200x400 | 2H13 | 2H13 | 2H13 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |

SUBMISSION ST09

SIDE BARS FOR BEAMS OF VARIOUS DEPTH & WIDTH

| WIDTH OF BEAM (bw) | ø OF SIDE BARS |
|---|---|
| bw < 200 | 10 |
| 200 < bw < 300 | 13 |
| bw > 300 | 16 |

| DEPTH OF BEAM (h) | NOS OF SIDE BARS AT EACH FACES |
|---|---|
| 1000 < h < 1200 | 3 |
| 1200 < h < 1400 | 4 |
| 1400 < h < 1600 | 5 |
| 1600 < h < 1800 | 6 |
| 1800 < h < 2000 | 7 |
| 2000 < h | BARS SPACING AT 250 C/C |

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

36 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS – 3

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_BMDT

Drawing no.
S_WS1416_BLK02_03_BMDT_3_ST09

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NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-2HB1-1 | 400x600 | 4H16 | 4H16 | 4H20 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB1-2 | 400x600 | 4H20 | 4H16 | 4H25 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB1-3 | 400x600 | 4H25 | 4H16 | 4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB1-4 | 400x600 | 4H20 | 4H16 | 4H32 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB1-5 | 400x600 | 4H32 | 4H16 | 4H32 | 4H20 | 4H20+4H25 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB1-6 | 400x600 | 4H32 | 4H16 | 4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB1-7 | 400x600 | 4H20 | 4H16 | 4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB1-8 | 400x600 | 4H20 | 4H16 | 4H16 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2HB2-1 | 400x600 | 4H16 | 4H16 | 4H25 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB2-2 | 400x600 | 4H25 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB2-3 | 400x600 | 4H32 | 4H16 | 4H25 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB2-4 | 400x600 | 4H25 | 4H16 | 4H32 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB2-5 | 400x600 | 4H32 | 4H16 | 4H16 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2HB3 | 400x850 | 4H16 | 4H16 | 4H16 | 4H25 | 4H32+4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2HB3a-1 | 400x600 | 4H16 | 4H16 | 4H20+4H16 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB3a-2 | 400x600 | 4H20+4H16 | 4H16 | 4H20+4H16 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2HB3a-3 | 400x600 | 4H20+4H16 | 4H16 | 4H16 | 4H32 | 4H32 | 4H32 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2HB4 | 500x800 | 5H16 | 5H25 | 5H16 | 5H32+5H32 | 5H32+5H32 | 5H32+5H32 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2HB5 | 300x700 | 3H32 | 3H16 | 3H16 | 3H16 | 3H16 | 3H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | TOB 27.965 |
| | | | | | | | | | | | | | | |
| 3-2HB6-1 | 1000x850 | 10H16 | 10H16 | 10H16 | 10H16 | 10H16 | 10H16 | – | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| 3-2HB6-2 | 1000x850 | 10H16 | 10H16 | 10H16 | 10H16 | 10H16 | 10H16 | – | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |

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2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-2VB1-1 | 1850/2100x850 | 18H16 | 18H16 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| 3-2VB1-2 | 1850/2100x850 | 18H20 | 18H16 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| 3-2VB1-3 | 1850/2100x850 | 18H20 | 18H16 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB1-4 | 1850/2100x850 | 18H20 | 18H16 | 18H20 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| 3-2VB1-5 | 1850/2100x850 | 18H20 | 18H16 | 18H16 | 20H20 | 20H20 | 20H20 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB2-1 | 1000/1200x800 | 10H16 | 10H16 | 10H20 | 12H16 | 12H16 | 12H16 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB2-2 | 1000/1200x800 | 10H20 | 10H16 | 10H20 | 12H16 | 12H16 | 12H16 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB2a-1 | 1000/1200-1000/1100x850 | 10H16 | 10H16 | 10H25 | 12H20 | 12H20 | 12H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 3-2VB2a-2 | 1000/1100x850 | 10H25 | 10H25 | 10H20 | 11H16 | 11H16 | 11H16 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB2a-3 | 1000/1100x850 | 10H20 | 10H16 | 10H16 | 11H20 | 11H20 | 11H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB3-1 | 1900/2250x850 | 19H16 | 19H16 | 19H32 | 22H25 | 22H25 | 22H25 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| 3-2VB3-2 | 1900/2250x850 | 19H32 | 19H16 | 19H32 | 22H25 | 22H25 | 22H25 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB3-3 | 1900/2250x850 | 19H32 | 19H16 | 19H32 | 22H25 | 22H25 | 22H25 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | REFER TO CONTINUOUS SLOPING BEAM SECTION |
| 3-2VB3-4 | 1900/2250x850 | 19H32 | 19H16 | 19H32 | 22H25 | 22H25 | 22H25 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| 3-2VB3-5 | 1900/2250x850 | 19H32 | 19H16 | 19H16 | 22H25 | 22H25 | 22H25 | 3H16 | – | A5 | 5H10-200 | 5H10-200 | 5H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB4-1 | 1000x850-1000/1200x850 | 10H16 | 10H16 | 10H20+10H16 | 10H20 | 12H20 | 12H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 3-2VB4-2 | 1000/1100-1000x850 | 10H20+10H16 | 10H16 | 10H20+10H16 | 12H20 | 12H20 | 12H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB4-3 | 1000/1100x850 | 10H20+10H16 | 10H16 | 10H16 | 12H25 | 12H25 | 12H25 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB5-1 | 700/900x800 | 7H16 | 7H16 | 7H20 | 9H20 | 9H20 | 9H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB5-2 | 700/900x800 | 7H20 | 7H20 | 2x7H25 | 9H20 | 9H20 | 9H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB6-1 | 700/900-375/475-700/900x800 | 7H16 | 7H16 | 7H32+7H20 | 9H25 | 9H25 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-2 | 700/900x800 | 7H32+7H20 | 7H25 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-3 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-4 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-5 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB6-6 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | REFER TO CONTINUOUS SLOPING BEAM SECTION |
| 3-2VB6-7 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-8 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-9 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-10 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB6-11 | 700/900-375/475-700/900x800 | 7H32+7H20 | 7H16 | 7H16 | 9H25 | 9H25 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |

SIDE BARS FOR BEAMS OF VARIOUS DEPTH & WIDTH

| WIDTH OF BEAM (bw) | ø OF SIDE BARS |
|---|---|
| bw < 200 | 10 |
| 200 < bw < 300 | 13 |
| bw > 300 | 16 |

| DEPTH OF BEAM (h) | NOS OF SIDE BARS AT EACH FACES |
|---|---|
| 1000 < h < 1200 | 3 |
| 1200 < h < 1400 | 4 |
| 1400 < h < 1600 | 5 |
| 1600 < h < 1800 | 6 |
| 1800 < h < 2000 | 7 |
| 2000 < h | BARS SPACING AT 250 C/C |

RESTRICTED

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-2VB7-1 | 800/900x800 | 8H16 | 8H16 | 8H25 | 9H25 | 9H25 | 9H25 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| 3-2VB7-2 | 800/900x800 | 8H25 | 8H25 | 8H20+8H16 | 9H16 | 9H16 | 9H16 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB7-3 | 800/900x800 | 8H20+8H16 | 8H25 | 8H20+8H16 | 9H16 | 9H16 | 9H16 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO CONTINUOUS SLOPING BEAM SECTION |
| 3-2VB7-4 | 800/900x800 | 8H20+8H16 | 8H25 | 8H16 | 9H20 | 9H20 | 9H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB7a | 800/900x800 | 8H20 | 8H20 | 8H20 | 9H20 | 9H20+9H16 | 9H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 3 DETAIL REFER TO CONTINUOUS SLOPING BEAM SECTION |
| | | | | | | | | | | | | | | |
| 3-2VB7b | 800/900x800 | 8H25 | 8H20 | 8H20 | 9H20 | 9H20+9H16 | 9H20 | 2H16 | – | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 3 DETAIL REFER TO CONTINUOUS SLOPING BEAM SECTION |
| | | | | | | | | | | | | | | |
| 3-2VB8-1 | 400x700 | 4H16 | 4H16 | 4H32 | 4H20 | 4H20+4H16 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2VB8-2 | 400x800/700 | 4H32 | 4H16 | 4H16 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB9-1 | 500/700x800 | 5H20 | 5H20 | 5H25+5H25 | 7H25 | 7H25+7H13 | 7H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB9-2 | 500/700x800 | 5H25+5H25 | 5H20 | 5H25+5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB9-3 | 500/700x800 | 5H25+5H25 | 5H20 | 5H25+5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB9-4 | 500/700x800 | 5H25+5H25 | 5H20 | 5H20 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| 3-2VB9a | 500x800 | 5H20 | 5H20 | 5H20 | 5H20+5H20 | 5H20+5H20 | 5H20+5H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | TOB 27.415 |
| | | | | | | | | | | | | | | |
| 3-2VB9b | 500/700x800 | 5H25 | 5H25 | 5H25 | 7H25 | 7H25 | 7H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | TOB 27.965 REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| 3-2VB10-1 | 500/600x800 | 5H20 | 5H20 | 5H20+5H16 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB10-2 | 500/600x800 | 5H20+5H16 | 5H20 | 5H20+5H16 | 6H20 | 6H20+6H16 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB10-3 | 500/600x800 | 5H20+5H16 | 5H20 | 5H20+5H16 | 6H20 | 6H20+6H16 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB10-4 | 500/600x800 | 5H20+5H16 | 5H20 | 5H20 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| 3-2VB11 | 500/600x800 | 5H16 | 5H20 | 5H16 | 6H32+6H32 | 6H32+6H32 | 6H32+6H32 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 3 DETAIL |
| | | | | | | | | | | | | | | |
| 3-2VB12-1 | 700/900x800 | 7H16 | 7H16 | 7H32+7H20 | 9H25+9H16 | 9H25+9H16 | 9H25+9H16 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-2 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-3 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-4 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-5 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB12-6 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | REFER TO CONTINUOUS SLOPING BEAM SECTION |
| 3-2VB12-7 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-8 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-9 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-10 | 700/900x800 | 7H32+7H20 | 7H20 | 7H32+7H20 | 9H25 | 9H25+9H13 | 9H25 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12-11 | 700/900x800 | 7H32+7H20 | 7H16 | 7H16 | 9H25+9H16 | 9H25+9H16 | 9H25+9H16 | 2H16 | – | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| | | | | | | | | | | | | | | |
| 3-2VB12a-1 | 700/900x800 | 7H16 | 7H16 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-2 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-3 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-4 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-5 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | REFER TO BEAM NIB 3 DETAIL |
| 3-2VB12a-6 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | REFER TO CONTINUOUS SLOPING BEAM SECTION |
| 3-2VB12a-7 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-8 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-9 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-10 | 700/900x800 | 7H32+7H32 | 7H20 | 7H32+7H32 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| 3-2VB12a-11 | 700/900x800 | 7H32+7H32 | 7H16 | 7H16 | 9H32+9H16 | 9H32+9H16 | 9H32+9H16 | 2H16 | 2H16 EF | A2 | 2H10-150 | 2H10-200 | 2H10-150 | |
| | | | | | | | | | | | | | | |
| 3-2VB13-1 | 400x700 | 4H20 | 4H20 | 4H25+2H16 | 4H25 | 4H25+4H16 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2VB13-2 | 400x800/700 | 4H25+2H16 | 4H20 | 4H32 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-150 | |
| 3-2VB13-3 | 400/500x800 | 4H32 | 4H20 | 4H20 | 5H25 | 5H25 | 5H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| 3-2VB14-1 | 400x700 | 4H16 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO DETAIL X |
| 3-2VB14-2 | 400x800/700 | 4H32 | 4H16 | 4H20+4H16 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO DETAIL X |
| 3-2VB14-3 | 400/600x800 | 4H20+4H16 | 4H20+4H16 | 4H16 | 6H16 | 6H16 | 6H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL & DETAIL X |
| | | | | | | | | | | | | | | |
| 3-2VB15-1 | 400/500x800 | 4H16 | 4H16 | 4H25+4H16 | 5H32 | 5H32 | 5H32 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-2VB15-2 | 400/500x800 | 4H25+4H16 | 4H16 | 4H25+4H16 | 5H25 | 5H25 | 5H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-2VB15-3 | 400/600x800 | 4H25+4H16 | 4H25+4H16 | 4H16 | 6H16 | 6H16 | 6H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-2VB16-1 | 400/500x800 | 4H20 | 4H20 | 4H20 | 5H20 | 5H20 | 5H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL & DETAIL X |
| 3-2VB16-2 | 400/500x800 | 4H20 | 4H20 | 4H20 | 5H20 | 5H20 | 5H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

37 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
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PROJECT ARCHITECT

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No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

C&S CONSULTANT
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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS – 4

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_BMDT

Drawing no.
S_WS1416_BLK02_03_BMDT_4_ST09

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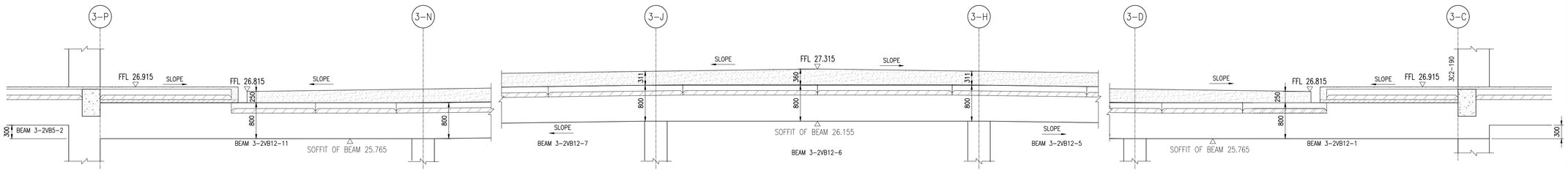
NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT | | | | | | NIB BARS | SIDE BARS | LINK TYPE | LINK | | | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOP BAR | | | BOTTOM BAR | | | | | | | | | |
| | | T1 | T2 | T3 | B1 | B2 | B3 | | | | S1 | S2 | S3 | |
| 3-3HB1-1 | 200x1300 U/S | 2H20 | 2H20 | 2H32+2H32+2H32+2H32 | 2H16 | 2H16 | 2H16 | - | REFER TO TABLE | A1 | H10-200 | H10-200 | H10-200 | CANTILEVER |
| 3-3HB1-2 | 200x1300 U/S | 2H32+2H32+2H32+2H32 | 2H20 | 2H20 | 2H32+2H25 | 2H32+2H25 | 2H32+2H25 | - | REFER TO TABLE | A1 | H10-200 | H10-200 | H10-200 | |
| ~~3-3HB2~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H20+4H20~~ | ~~4H20+4H20~~ | ~~-~~ | ~~-~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~TOB 31.315~~ |
| ~~3-3HB3~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H20+4H20~~ | ~~4H20+4H20~~ | ~~-~~ | ~~-~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | |
| 3-3HB4 | 400x700 | 4H20 | 4H20 | 4H20 | 4H32 | 4H32+4H13 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | FOR TOB, REFER TO PLAN |
| 3-3VB1-1 | 400x700 | 4H20 | 4H20 | 4H32 | 4H32 | 4H32 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-3VB1-2 | 400x700 | 4H32 | 4H20 | 4H32 | 4H25 | 4H25 | 4H25 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-3VB1-3 | 400x700 | 4H32 | 4H20 | 4H20 | 4H32 | 4H32 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-3VB2 | 400x700 | 4H20 | 4H20 | 4H20 | 4H32 | 4H32+4H13 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |

E




BLOCK 3 – CONTINUOUS SLOPING BEAM 3-2VB12
SIMILAR TO BEAM 3-2VB3, BEAM 3-2VB6 & 3-2VB12a
SIMILAR TO BEAM 3-2VB7, 3-2VB7a & 3-2VB7b
SCALE: 1:50

SIDE BARS FOR BEAMS OF VARIOUS DEPTH & WIDTH

| WIDTH OF BEAM (bw) | ø OF SIDE BARS |
|---|---|
| bw < 200 | 10 |
| 200 < bw < 300 | 13 |
| bw > 300 | 16 |

| DEPTH OF BEAM (h) | NOS OF SIDE BARS AT EACH FACES |
|---|---|
| 1000 < h < 1200 | 3 |
| 1200 < h < 1400 | 4 |
| 1400 < h < 1600 | 5 |
| 1600 < h < 1800 | 6 |
| 1800 < h < 2000 | 7 |
| 2000 < h | BARS SPACING AT 250 C/C |



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| E | 04/10/2023 | TWA | 3-3HB4 revise to single span |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JIJ-HON
(name & signature)

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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS – 5

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_BMDT

Drawing no.
S_WS1416_BLK02_03_BMDT_5_ST09

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NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT | | | | | | NIB BARS | SIDE BARS | LINK TYPE | LINK | | | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOP BAR | | | BOTTOM BAR | | | | | | | | | |
| | | T1 | T2 | T3 | B1 | B2 | B3 | | | | S1 | S2 | S3 | |
| 3-THB1-1 | 400x700 | 4H16 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB1-2 | 400x700 | 4H32 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB1-3 | 400x700 | 4H32 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB1-4 | 400x700 | 4H32 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB1-5 | 400x700 | 4H32 | 4H16 | 4H16 | 4H16 | 4H16 | 4H16 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-THB1a-1 | 400x700 | 4H16 | 4H16 | 4H20 | 4H16 | 4H16 | 4H16 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB1a-2 | 400x700 | 4H20 | 4H16 | 4H20 | 4H20 | 4H20 | 4H20+2H16 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB1a-3 | 400x700 | 4H20 | 4H16 | 4H16 | 4H20+2H16 | 4H20 | 4H20 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-THB2 | 400x600 | 4H16 | 4H16 | 4H16 | 4H20+4H20 | 4H20+4H20 | 4H20+4H20 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-THB3 | 200x500 | 2H16 | 2H16 | 2H16 | 2H20 | 2H20 | 2H20 | - | - | A1 | H10-200 | H10-200 | H10-200 | |
| | | | | | | | | | | | | | | |
| 3-THB3a | 400x600 | 4H16 | 4H16 | 4H16 | 4H20 | 4H20 | 4H20 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-THB4-1 | 400x700 | 4H16 | 4H16 | 4H20 | 4H16 | 4H16 | 4H16 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB4-2 | 400x700 | 4H20 | 4H16 | 4H20+2H16 | 4H16 | 4H16 | 4H16 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-THB4-3 | 400x700 | 4H20+2H16 | 4H16 | 4H16 | 4H16 | 4H16 | 4H16 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-THB5 | 400x700 | 4H16 | 4H16 | 4H16 | 4H20+4H20 | 4H20+4H20 | 4H20+4H20 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT | | | | | | NIB BARS | SIDE BARS | LINK TYPE | LINK | | | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOP BAR | | | BOTTOM BAR | | | | | | | | | |
| | | T1 | T2 | T3 | B1 | B2 | B3 | | | | S1 | S2 | S3 | |
| 3-RAMB1-1 | 700/900x850 | 7H20 | 7H20 | 7H32+5H32 | 9H32+9H20 | 9H32+9H20 | 9H32+9H20 | 2H16 | - | A3 | 3H10-150 | 3H10-200 | 3H10-150 | |
| 3-RAMB1-2 | 700/900x850 | 7H32+5H32 | 7H20 | 7H32+7H32 | 9H20 | 9H20 | 9H20 | 2H16 | - | A3 | 3H10-200 | 3H10-200 | 3H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 3-RAMB1-3 | 700/900x850 | 7H32+7H32 | 7H20 | 7H20 | 9H32+9H20 | 9H32+9H20 | 9H32+9H20 | 2H16 | - | A3 | 3H10-200 | 3H10-200 | 3H10-200 | |
| | | | | | | | | | | | | | | |
| 3-RAMB2-1 | 550x850 | 5H20 | 5H20 | 5H20 | 5H20 | 5H20 | 5H20 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RAMB2-1 | 550x850 | 5H20 | 5H20 | 5H20 | 5H20 | 5H20 | 5H20 | - | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-RAMB3-1 | 300/400x850 | 3H20 | 3H20 | 3H32+3H32+3H20 | 4H25+4H25 | 4H25+4H25 | 4H25+4H25 | 2H16 | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RAMB3-2 | 300/400x850 | 3H32+3H32+3H20 | 3H20 | 4H25+4H25 | 4H25 | 4H25 | 4H25 | 2H16 | - | A2 | 2H10-150 | 2H10-150 | 2H10-150 | REFER TO BEAM NIB 3 DETAIL |
| 3-RAMB3-3 | 400/500x850 | 4H25+4H25 | 4H20 | 4H20 | 5H20 | 5H25+5H20 | 5H20 | 2H16 | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-RAMB4-1 | 400/600x850 | 4H20 | 4H20 | 4H25+4H25+4H16 | 6H25+6H25 | 6H25+6H25 | 6H25+6H25 | 2H16 | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RAMB4-2 | 400/600x850 | 4H25+4H25+4H16 | 4H20 | 4H25+4H25+4H16 | 6H20 | 6H20 | 6H20 | 2H16 | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 3 DETAIL |
| 3-RAMB4-3 | 400/500x850 | 4H25+4H25+4H16 | 4H20 | 4H20 | 5H20 | 5H20+5H25 | 5H20 | 2H16 | - | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |

SIDE BARS FOR BEAMS OF VARIOUS DEPTH & WIDTH

| WIDTH OF BEAM (bw) | ø OF SIDE BARS |
|---|---|
| bw < 200 | 10 |
| 200 < bw < 300 | 13 |
| bw > 300 | 16 |

| DEPTH OF BEAM (h) | NOS OF SIDE BARS AT EACH FACES |
|---|---|
| 1000 < h < 1200 | 3 |
| 1200 < h < 1400 | 4 |
| 1400 < h < 1600 | 5 |
| 1600 < h < 1800 | 6 |
| 1800 < h < 2000 | 7 |
| 2000 < h | BARS SPACING AT 250 C/C |



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| - | 04/10/2023 | TWA | ST09 NOA RECEIVED |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

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VYNNA PEH SEOH CHIN
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HCD ( Architecture )
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No: 1078
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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

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PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS - 6

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision - |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_BMDT

Drawing no.
S_WS1416_BLK02_03_BMDT_6_ST09

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NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-TVB1-1 | 400x600 | 4H16 | 4H16 | 4H20+4H16 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB1-2 | 400x700/600 | 4H20+4H16 | 4H16 | 4H20+4H20 | 4H20 | 4H25 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB1-3 | 400x600 | 4H20+4H20 | 4H16+4H16 | 4H16 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| | | | | | | | | | | | | | | |
| 3-TVB2-1 | 400x600 | 4H16 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO DETAIL X |
| 3-TVB2-2 | 400x700/600 | 4H32 | 4H16 | 4H32 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB2-3 | 400x600 | 4H32 | 4H20+4H16 | 4H16 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO DETAIL X |
| | | | | | | | | | | | | | | |
| 3-TVB3-1 | 400/500x700 | 4H16 | 4H16 | 4H25+4H16 | 5H25 | 5H25 | 5H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL & DETAIL X |
| 3-TVB3-2 | 400/500x700 | 4H25+4H16 | 4H16 | 4H20+4H16 | 5H20 | 5H20 | 5H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB3-3 | 400/500x600 | 4H20+4H16 | 4H20+4H16 | 4H16 | 5H16 | 5H16 | 5H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO BEAM NIB 1 DETAIL & DETAIL X |
| | | | | | | | | | | | | | | |
| 3-TVB4-1 | 400/600x700 | 4H16 | 4H16 | 4H25+4H16 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-TVB4-2 | 400/600x700 | 4H25+4H16 | 4H16 | 4H32 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB4-3 | 400/600x600 | 4H32 | 4H32 | 4H16 | 6H16 | 6H16 | 6H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| 3-TVB5-1 | 400/500x700 | 4H16 | 4H16 | 4H32+4H16 | 5H25 | 5H25 | 5H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL & DETAIL X |
| 3-TVB5-2 | 400/500x700 | 4H32+4H16 | 4H16 | 4H16 | 5H25 | 5H25 | 5H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-TVB6 | 200-200/300x600 | 2H20 | 2H20 | 2H20 | 3H20 | 3H20 | 3H20 | 2H16 | – | A1 | H10-200 | H10-200 | H10-200 | REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| ~~3-TVB7-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| ~~3-TVB7-2~~ | ~~400/500x700~~ | ~~4H20+4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~5H20~~ | ~~5H25~~ | ~~5H20~~ | ~~2H16~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~REFER TO BEAM NIB 1 DETAIL~~ |
| ~~3-TVB7-3~~ | ~~400/500x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~5H20~~ | ~~5H25~~ | ~~5H20~~ | ~~2H16~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | |
| ~~3-TVB7-4~~ | ~~400/500x600~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~5H20~~ | ~~5H20~~ | ~~5H20~~ | ~~2H16~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | |
| | | | | | | | | | | | | | | |
| ~~3-TVB8-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| ~~3-TVB8-2~~ | ~~400/500x700~~ | ~~4H20+4H20~~ | ~~4H20~~ | ~~5H20~~ | ~~5H20~~ | ~~5H20~~ | ~~4H20~~ | ~~2H16~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~REFER TO BEAM NIB 1 DETAIL~~ |
| ~~3-TVB8-3~~ | ~~400/500x700~~ | ~~4H20~~ | ~~4H20~~ | ~~5H20~~ | ~~5H25~~ | ~~5H25~~ | ~~4H20~~ | ~~2H16~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | |
| ~~3-TVB8-4~~ | ~~400/500X600~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~5H20~~ | ~~5H20~~ | ~~5H20~~ | ~~2H16~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| | | | | | | | | | | | | | | |
| 3-TVB9-1 | 500-500/600x700 | 5H20 | 5H20 | 5H32 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | TOB 31.315 REFER TO BEAM NIB 1 DETAIL |
| 3-TVB9-2 | 500/600x700 | 5H32 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-3 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-4 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-5 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-6 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-7 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-8 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-9 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-10 | 500/600x700 | 5H25 | 5H20 | 5H32 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB9-11 | 500/600-500x700 | 5H32 | 5H20 | 5H20 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-TVB10-1 | 500-500/700x700 | 5H20 | 5H20 | 5H32 | 7H25 | 7H25 | 7H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | TOB 31.315 REFER TO BEAM NIB 1 DETAIL |
| 3-TVB10-2 | 500/700x700 | 5H32 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-3 | 500/700x700 | 5H25 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-4 | 500/700x700 | 5H25 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-5 | 500/700x700 | 5H25 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-6 | 500/700x700 | 5H25 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-7 | 500/700x700 | 5H25 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-8 | 500/700x700 | 5H25 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-9 | 500/700x700 | 5H25 | 5H20 | 5H25 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-10 | 500/700x700 | 5H25 | 5H20 | 5H32 | 7H20 | 7H20 | 7H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB10-11 | 500/700-500x700 | 5H32 | 5H20 | 5H20 | 7H25 | 7H25 | 7H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |

H

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT TOP BAR T1 | TOP BAR T2 | TOP BAR T3 | BOTTOM BAR B1 | BOTTOM BAR B2 | BOTTOM BAR B3 | NIB BARS | SIDE BARS | LINK TYPE | LINK S1 | LINK S2 | LINK S3 | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-TVB11-1 | 500-500/600x700 | 5H20 | 5H20 | 5H25 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | TOB 31.315 REFER TO BEAM NIB 1 DETAIL |
| 3-TVB11-2 | 500/600x700 | 5H25 | 5H20 | 5H20 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-3 | 500/600x700 | 5H20 | 5H20 | 5H20 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-4 | 500/600x700 | 5H20 | 5H20 | 5H32+4H32 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-5 | 500/600x700 | 5H32+4H32 | 5H20 | 5H25 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-6 | 500/600x700 | 5H25 | 5H20 | 5H25 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-7 | 500/600x700 | 5H25 | 5H20 | 5H32+4H32 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-8 | 500/600x700 | 5H32+4H32 | 5H20 | 5H20 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-9 | 500/600x700 | 5H20 | 5H20 | 5H20 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-10 | 500/600x700 | 5H20 | 5H20 | 5H25 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB11-11 | 500/600-500x700 | 5H25 | 5H20 | 5H20 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| | | | | | | | | | | | | | | |
| 3-TVB12-1 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| 3-TVB12-2 | 400x700 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB12-3 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB12-4 | 400x600 | 4H20+4H20 | 4H20 | 4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| | | | | | | | | | | | | | | |
| 3-TVB13-1 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO DETAIL X |
| 3-TVB13-2 | 400x700 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO DETAIL X |
| 3-TVB13-3 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB13-4 | 400x600 | 4H20+4H20 | 4H20 | 4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO DETAIL X |
| | | | | | | | | | | | | | | |
| 3-TVB14-1 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| 3-TVB14-2 | 400/500x700 | 4H20+4H20 | 4H20 | 4H20 | 5H20 | 5H20 | 5H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-TVB14-3 | 400/500x700 | 4H20 | 4H20 | 4H32 | 5H20 | 5H20 | 5H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB14-4 | 400/500x600 | 4H32 | 4H20 | 4H20 | 5H16 | 5H16 | 5H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| 3-TVB15-1 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| 3-TVB15-2 | 400/600x700 | 4H20+4H20 | 4H20 | 4H20 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-TVB15-3 | 400/600x700 | 4H20 | 4H20 | 4H32 | 6H20 | 6H20 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB15-4 | 400/600x600 | 4H32 | 4H20 | 4H20 | 6H16 | 6H16 | 6H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| 3-TVB16-1 | 400x700 | 4H20 | 4H20 | 4H32 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| 3-TVB16-2 | 400/600x700 | 4H32 | 4H20 | 4H20+4H16 | 6H20 | 6H25 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-TVB16-3 | 400/600x700 | 4H20+4H16 | 4H20 | 4H32 | 6H20 | 6H25 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-TVB16-4 | 400/600x600 | 4H32 | 4H20 | 4H20 | 6H16 | 6H16 | 6H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER REFER TO BEAM NIB 1 DETAIL |

SIDE BARS FOR BEAMS OF VARIOUS DEPTH & WIDTH

| WIDTH OF BEAM (bw) | ø OF SIDE BARS |
|---|---|
| bw < 200 | 10 |
| 200 < bw < 300 | 13 |
| bw > 300 | 16 |

| DEPTH OF BEAM (h) | NOS OF SIDE BARS AT EACH FACES |
|---|---|
| 1000 < h < 1200 | 3 |
| 1200 < h < 1400 | 4 |
| 1400 < h < 1600 | 5 |
| 1600 < h < 1800 | 6 |
| 1800 < h < 2000 | 7 |
| 2000 < h | BARS SPACING AT 250 C/C |



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| H | 04/10/2023 | TWA | vertical beam span 1 cantilever removed, replaced with the approved 230-A |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT

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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

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NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS – 7

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_BMDT

Drawing no.
S_WS1416_BLK02_03_BMDT_7_ST09

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RESTRICTED

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT | | | | | | NIB BARS | SIDE BARS | LINK TYPE | LINK | | | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOP BAR | | | BOTTOM BAR | | | | | | | | | |
| | | T1 | T2 | T3 | B1 | B2 | B3 | | | | S1 | S2 | S3 | |
| 3-RHB1 | 200x400 | 2H13 | 2H13 | 2H13 | 2H13 | 2H13 | 2H13 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| | | | | | | | | | | | | | | |
| 3-RHB2 | 200x400 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| | | | | | | | | | | | | | | |
| 3-RHB2a | 400x600 | 4H16 | 4H16 | 4H16 | 4H20+4H20 | 4H20+4H20 | 4H20+4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |

NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT | | | | | | NIB BARS | SIDE BARS | LINK TYPE | LINK | | | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOP BAR | | | BOTTOM BAR | | | | | | | | | |
| | | T1 | T2 | T3 | B1 | B2 | B3 | | | | S1 | S2 | S3 | |
| 3-RVB1 | 200x400 | 2H13 | 2H13 | 2H13 | 2H16 | 2H16 | 2H16 | – | – | A1 | H10-200 | H10-200 | H10-200 | |
| | | | | | | | | | | | | | | |
| 3-RVB1a-1 | 400x700 | 4H16 | 4H16 | 4H20+4H16 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB1a-2 | 400x700 | 4H20+4H16 | 4H16 | 4H20+4H20 | 4H20 | 4H25 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB1a-3 | 400x700 | 4H20+4H20 | 4H16+4H16 | 4H16 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| | | | | | | | | | | | | | | |
| 3-RVB2-1 | 200x400 | 2H20 | 2H20 | 2H20+2H16 | 2H20 | 2H20 | 2H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | SIMILAR 3-RVB3-1 |
| 3-RVB2-2 | 200x400 | 2H20+2H16 | 2H20 | 2H20 | 2H20 | 2H20 | 2H20 | – | – | A1 | H10-200 | H10-200 | H10-200 | SIMILAR 3-RVB3-2 |
| | | | | | | | | | | | | | | |
| 3-RVB2a-1 | 400x700 | 4H16 | 4H16 | 4H32 | 4H32 | 4H32 | 4H32 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO DETAIL X |
| 3-RVB2a-2 | 400x700/700 | 4H32 | 4H16 | 4H32 | 4H25 | 4H25 | 4H25 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB2a-3 | 400x700 | 4H32 | 4H20+4H16 | 4H16 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER<br>REFER TO DETAIL X |
| | | | | | | | | | | | | | | |
| 3-RVB6 | 200-200/300x600 | 2H20 | 2H20 | 2H20 | 3H20 | 3H20 | 3H20 | 2H16 | – | A1 | H10-200 | H10-200 | H10-200 | REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| ~~3-RVB8-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| 3-RVB8-2 | 400/500x700 | 4H20+4H20 | 4H20 | 5H20 | 5H20 | 5H20 | 4H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-RVB8-3 | 400/500x700 | 4H20 | 4H20 | 5H20 | 5H25 | 5H25 | 4H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB8-4 | 400/500x600 | 4H20 | 4H20 | 4H20 | 5H20 | 5H20 | 5H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| | | | | | | | | | | | | | | |
| ~~3-RVB12-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H16~~ | ~~4H16~~ | ~~4H16~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| 3-RVB12-2 | 400x700 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB12-3 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB12-4 | 400x600 | 4H20+4H20 | 4H20 | 4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER |
| | | | | | | | | | | | | | | |
| ~~3-RVB13-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H16~~ | ~~4H16~~ | ~~4H16~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | CANTILEVER<br>REFER TO DETAIL X |
| 3-RVB13-2 | 400x700 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO DETAIL X |
| 3-RVB13-3 | 400x700 | 4H20 | 4H20 | 4H20+4H20 | 4H20 | 4H20 | 4H20 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB13-4 | 400x600 | 4H20+4H20 | 4H20 | 4H20 | 4H16 | 4H16 | 4H16 | – | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER<br>REFER TO DETAIL X |
| | | | | | | | | | | | | | | |
| ~~3-RVB14-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H16~~ | ~~4H16~~ | ~~4H16~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| 3-RVB14-2 | 400/500x700 | 4H20+4H20 | 4H20 | 4H20+4H25 | 5H25 | 5H25 | 5H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-RVB14-3 | 400/500x700 | 4H20+4H25 | 4H20 | 4H32 | 5H25 | 5H25 | 5H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB14-4 | 400/500x600 | 4H32 | 4H20 | 4H20 | 5H16 | 5H16 | 5H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER<br>REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| ~~3-RVB15-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H20+4H20~~ | ~~4H16~~ | ~~4H16~~ | ~~4H16~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| 3-RVB15-2 | 400/600x700 | 4H20+4H20 | 4H20 | 4H20+4H25 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-RVB15-3 | 400/600x700 | 4H20+4H25 | 4H20 | 4H32 | 6H25 | 6H25 | 6H25 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB15-4 | 400/600x600 | 4H32 | 4H20 | 4H20 | 6H16 | 6H16 | 6H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER<br>REFER TO BEAM NIB 1 DETAIL |
| | | | | | | | | | | | | | | |
| ~~3-RVB16-1~~ | ~~400x700~~ | ~~4H20~~ | ~~4H20~~ | ~~4H32~~ | ~~4H16~~ | ~~4H16~~ | ~~4H16~~ | ~~–~~ | ~~–~~ | ~~A2~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~2H10-200~~ | ~~CANTILEVER~~ |
| 3-RVB16-2 | 400/600x700 | 4H32 | 4H20 | 4H20+4H16 | 6H20 | 6H25 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | REFER TO BEAM NIB 1 DETAIL |
| 3-RVB16-3 | 400/600x700 | 4H20+4H16 | 4H20 | 4H32 | 6H20 | 6H25 | 6H20 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | |
| 3-RVB16-4 | 400/600x600 | 4H32 | 4H20 | 4H20 | 6H16 | 6H16 | 6H16 | 2H16 | – | A2 | 2H10-200 | 2H10-200 | 2H10-200 | CANTILEVER<br>REFER TO BEAM NIB 1 DETAIL |

H

SIDE BARS FOR BEAMS OF VARIOUS DEPTH & WIDTH

| WIDTH OF BEAM (bw) | ø OF SIDE BARS |
|---|---|
| bw < 200 | 10 |
| 200 < bw < 300 | 13 |
| bw > 300 | 16 |

| DEPTH OF BEAM (h) | NOS OF SIDE BARS AT EACH FACES |
|---|---|
| 1000 < h < 1200 | 3 |
| 1200 < h < 1400 | 4 |
| 1400 < h < 1600 | 5 |
| 1600 < h < 1800 | 6 |
| 1800 < h < 2000 | 7 |
| 2000 < h | BARS SPACING AT 250 C/C |

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| H | 04/10/2023 | TWA | vertical beam span 1 cantilever removed. |

41 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JIJ-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
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No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
BEAM DETAILS – 8

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_BMDT

Drawing no.
S_WS1416_BLK02_03_BMDT_8_ST09

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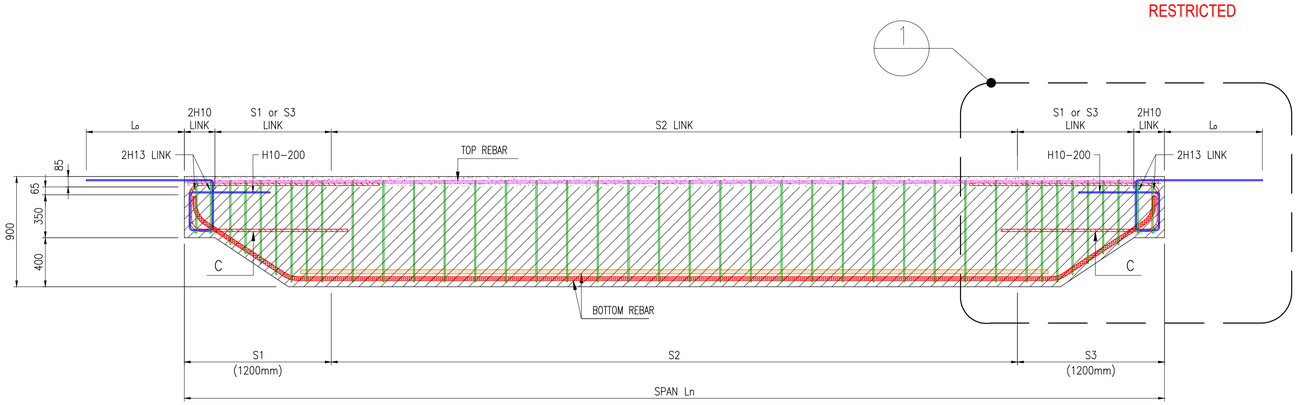
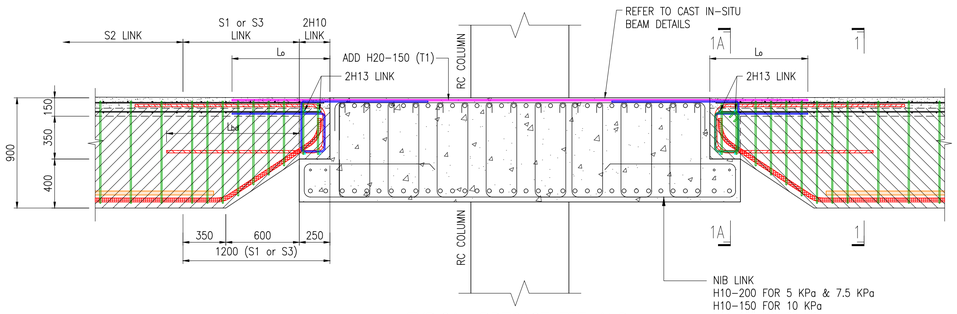



## RC PRECAST TEE
SCALE: 1:25

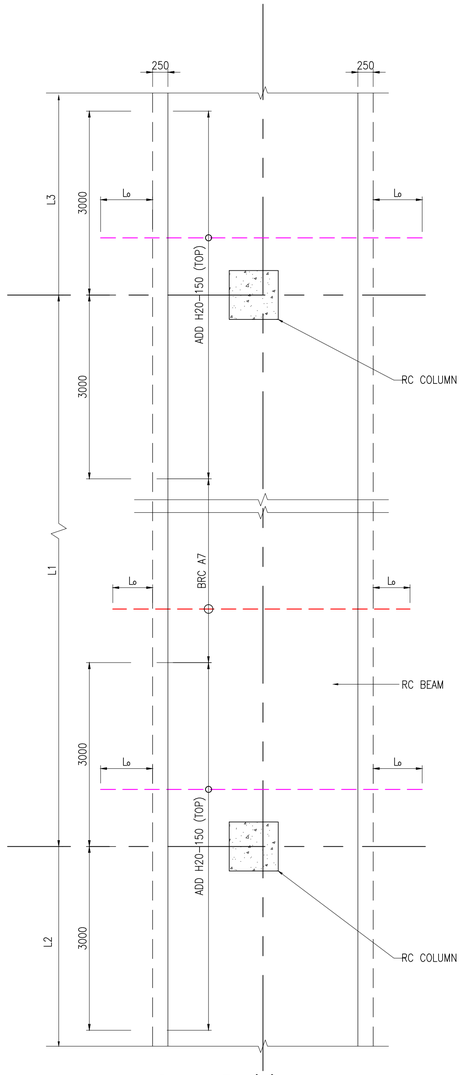
| BLOCK | SLAB MARK | LIVE LOAD (kPa) | REINFORCEMENT | | | | | | | | | | CONCRETE GRADE | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TOP BAR | | | BOTTOM BAR | | | REBAR 'c' | LINKS | | | | |
| | | | T1 | T2 | T3 | B1 | B2 | B3 | | S1 | S2 | S3 | | |
| BLOCK 2 | TT-11300 | 2.5 | 2H16 | 2H16 | 2H16 | 2H25 | 2H25 | 2H25 | 2H20 | H10-125 | H10-250 | H10-125 | C32/40 | – |
| BLOCK 2 | TT-10750 | 5.0 | 2H16 | 2H16 | 2H16 | 2H25 | 2H25+2H16 | 2H25 | 2H20 | H10-125 | H10-250 | H10-125 | C32/40 | – |
| BLOCK 2 | TT-11300 | 5.0 | 2H16 | 2H16 | 2H16 | 2H25 | 2H25+2H16 | 2H25 | 2H20 | H10-125 | H10-250 | H10-125 | C32/40 | – |
| BLOCK 2 | TT-11300 | 7.5 | 2H16 | 2H16 | 2H16 | 2H25 | 2H25+2H20 | 2H25 | 2H20 | H10-125 | H10-250 | H10-125 | C32/40 | – |
| BLOCK 2 | TT-11300 | 12.0 | 2H16 | 2H16 | 2H16 | 2H25 | 2H25+2H25 | 2H25 | 2H20 | H10-125 | H10-250 | H10-125 | C32/40 | – |
| BLOCK 3 | TT-11300 | 25.0 | 2H16 | 2H16 | 2H16 | 2H32+2H32 | 2H32+2H32 | 2H32+2H32 | 2H25 | H10-125 | H10-250 | H10-125 | C32/40 | – |

'X'

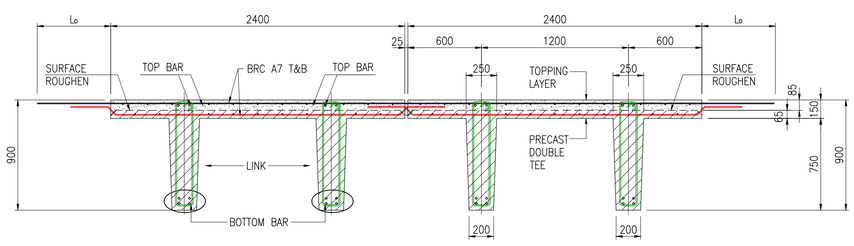


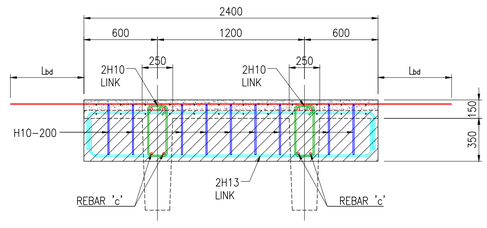

## TYPICAL PRECAST TEE AND RC BEAM JOINTING DETAIL

DETAIL 1 / –
SCALE 1:25




## PLAN VIEW 'X'
## SHOWING SLAB TOP BARS (T1)
SCALE: 1:50




## SECTION 1A

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

42 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

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AC ENDORSEMENT

ACCREDITED CHECKER
No: 1078
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Registration No: A068
BUILDING CONTROL ACT SINGAPORE

C&S CONSULTANT

TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
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PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
TYPICAL SLAB DETAILS – 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_1-2

Drawing no.
S_WS1416_BLK02_03_SLDT_1_ST09

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| PANEL SLAB MARK (BLOCK 2) | LIVE LOAD | SPAN | THICKNESS | | | PROVIDE REBAR | | | | CONCRETE GRADE |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | PRECAST | TOPPING | TOTAL | LONG-DIRECTION | | WIDTH-DIRECTION | | |
| | | | PLANK (E) | LAYER (F) | THICKNESS | TOP LAYER | BOTTOM LAYER | TOP LAYER (g) | BOTTOM LAYER (h) | |
| | kN/m2 | m | mm | mm | mm | BASE (b) | BASE (a) | | | |
| SP-6500 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 |
| SP-6200 | 10.0 | 7.200 | 100 | 200 | 300 | MESH-B10 | H13-125 | H10-200 | H10-200 | C28/35 |

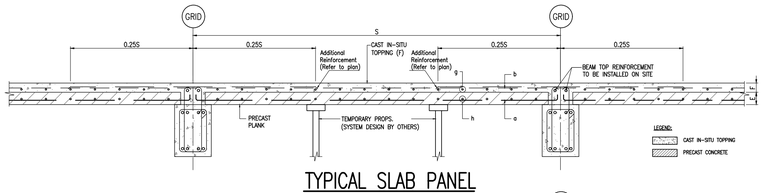
| CAST IN-SITU SLAB MARK (BLOCK 2 & 3) | LIVE LOAD | THICKNESS | BASE TOP REINFORCEMENT | | BASE BOTTOM REINFORCEMENT | | CONCRETE GRADE | REMARKS |
|---|---|---|---|---|---|---|---|---|
| | | | T1 | T2 | B1 | B2 | | |
| | kN/m2 | mm | mm | mm | mm | mm | | |
| S230-A | 5.0 | 230 | H10-200 | H10-200 | H10-200 | H10-200 | C28/35 | CANTILEVER (MAXIMUM LENGTH: 2100MM) |
| S230-B | 5.0 | 230 | H13-125 | H13-125 | H13-125 | H13-125 | C28/35 | MAX LENGTH: 7200MM |
| S230-C | 7.5 | 230 | H13-125 | H13-125 | H13-125 | H13-125 | C28/35 | MAX LENGTH: 3300MM |
| S230-D | 2.5 | 230 | H10-200 | H10-200 | H10-200 | H10-200 | C28/35 | MAX LENGTH: 7200MM |
| S230-E | 7.5 | 230 | H10-200 | H10-200 | H10-200 | H10-200 | C28/35 | CANTILEVER (MAXIMUM LENGTH: 1225MM) |
| S300-A | 5.0 | 300 | H10-200 | H10-200 | H10-200 | H10-200 | C28/35 | MAX LENGTH: 7200MM |
| S300-B | 10 | 300 | H10-200 | H10-200 | H10-200 | H10-200 | C28/35 | MAX LENGTH: 7200MM |
| S300-C | 5.0 | 300 | H16-100 | H10-150 | H20-100 | H10-150 | C28/35 | MAX LENGTH: 7200MM |

D

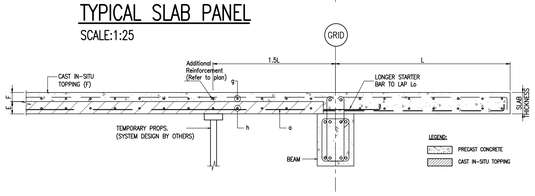
| PANEL SLAB MARK (BLOCK 3) | LIVE LOAD | SPAN | THICKNESS | | | PROVIDE REBAR | | | | CONCRETE GRADE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PRECAST | TOPPING | TOTAL | LONG-DIRECTION | | WIDTH-DIRECTION | | | |
| | | | PLANK (E) | LAYER (F) | THICKNESS | TOP LAYER | BOTTOM LAYER | TOP LAYER (g) | BOTTOM LAYER (h) | | |
| | kN/m2 | m | mm | mm | mm | BASE (b) | BASE (a) | | | | |
| SP-6500 | 25.0 | 7.20 | 100 | 200 | 300 | H16-100 | H20-100 | H10-200 | H10-200 | C28/35 | RAMP G/L:3-8~3-10 ONLY |
| SP-6650 | 25.0 | 7.20 | 100 | 200 | 300 | H16-100 | H20-100 | H10-200 | H10-200 | C28/35 | |

| PANEL SLAB MARK (BLOCK 3) | LIVE LOAD | SPAN | THICKNESS | | | PROVIDE REBAR | | | | CONCRETE GRADE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PRECAST | TOPPING | TOTAL | LONG-DIRECTION | | WIDTH-DIRECTION | | | |
| | | | PLANK (E) | LAYER (F) | THICKNESS | TOP LAYER | BOTTOM LAYER | TOP LAYER (g) | BOTTOM LAYER (h) | | |
| | kN/m2 | m | mm | mm | mm | BASE (b) | BASE (a) | | | | |
| SP-6650 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6700 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6800 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H10-125 | REFER TO (b) | H10-200 | C28/35 | FOR MID SPAN ONLY |
| SP-6800 | 7.5 | 7.200 | 100 | 130 | 230 | MESH-B10 | H10-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-3100 | 5.0 | 3.600 | 100 | 130 | 230 | MESH-B10 | H10-200 | REFER TO (b) | H10-200 | C28/35 | |
| SP-3100 | 7.5 | 3.600 | 100 | 130 | 230 | MESH-B10 | H10-200 | REFER TO (b) | H10-200 | C28/35 | |

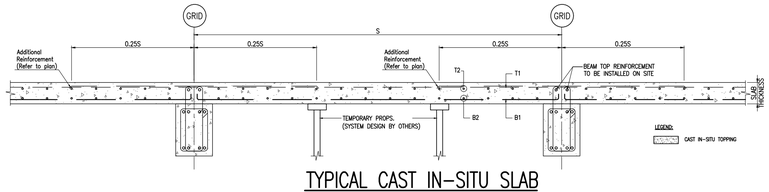
| PANEL SLAB MARK (BLOCK 3) | LIVE LOAD | SPAN | THICKNESS | | | PROVIDE REBAR | | | | CONCRETE GRADE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PRECAST | TOPPING | TOTAL | LONG-DIRECTION | | WIDTH-DIRECTION | | | |
| | | | PLANK (E) | LAYER (F) | THICKNESS | TOP LAYER | BOTTOM LAYER | TOP LAYER (g) | BOTTOM LAYER (h) | | |
| | kN/m2 | m | mm | mm | mm | BASE (b) | BASE (a) | | | | |
| SP-5700 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6450 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6850 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6450 | 7.5 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6850 | 7.5 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6600 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-3450 | 5.0 | 3.850 | 100 | 130 | 230 | MESH-B10 | H10-200 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6400 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H13-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6400 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H10-125 | REFER TO (b) | H10-200 | C28/35 | FOR MID SPAN ONLY |
| SP-6350 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H10-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-6500 | 5.0 | 7.200 | 100 | 130 | 230 | MESH-B10 | H10-125 | REFER TO (b) | H10-200 | C28/35 | |
| SP-2950 | 5.0 | 3.600 | 100 | 130 | 230 | MESH-B10 | H10-200 | REFER TO (b) | H10-200 | C28/35 | |
| SP-3325 | 5.0 | 3.850 | 100 | 130 | 230 | MESH-B10 | H10-200 | REFER TO (b) | H10-200 | C28/35 | |



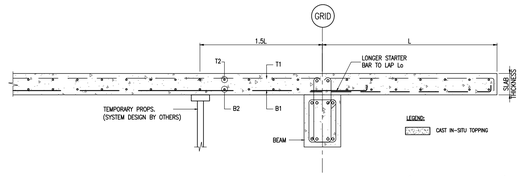

TYPICAL SLAB PANEL
SCALE:1:25



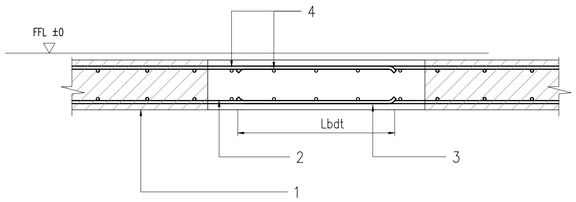

TYPICAL SLAB PANEL (CANTILEVER)
SCALE:1:25




TYPICAL CAST IN-SITU SLAB
SCALE:1:25

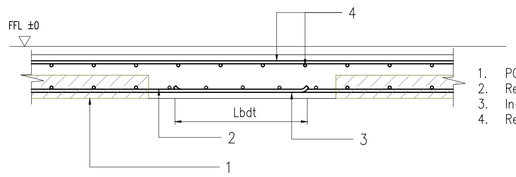



TYPICAL CAST IN-SITU SLAB (CANTILEVER)
SCALE:1:25



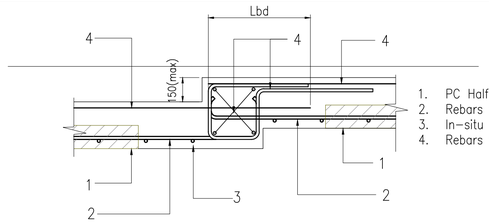

1. PC Full Slab
2. Rebars from PC Slab
3. In-situ Pour Strip
4. Rebars placed on site

Use of Stiffened Cast In-Situ Pour Strip to Connect Precast Full Slabs
(In Slab Spanning Direction)
Scale 1:10



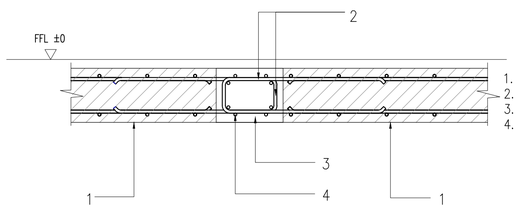

1. PC Half Slab
2. Rebars from PC Slab
3. In-situ Pour Strip
4. Rebars to be placed on site

Use of Stiffened Cast In-Situ Pour Strip to Connect PC Half Slab Panels
(In Slab Spanning Direction)
Scale 1:10



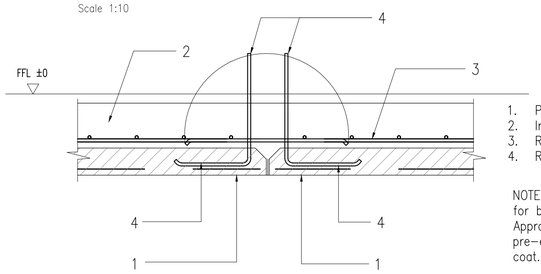

1. PC Half Slab
2. Rebars from PC Slab
3. In-situ Pour Strip
4. Rebars to be placed on site

Use of Cast In-Situ Pour Strip To Cater For Floor Level Difference
(In Slab Spanning Direction)
Scale 1:10




1. PC Full Slab
2. Rebars from PC Slab
3. In-situ Pour Strip
4. Rebars placed on site

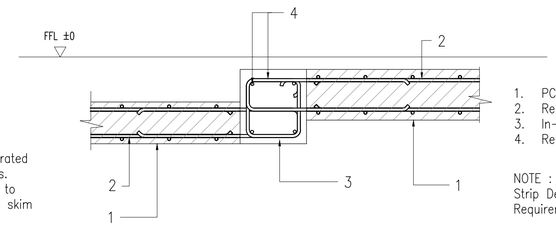
Connection Between Precast Full Slab Panels Using Cast In-Situ Pour Strip
(In Secondary Direction–Applicable for one-way slab)
Scale 1:10




1. PC Half Slab
2. In-situ Structural Topping
3. Rebars placed on site
4. Rebars from PC Slab

NOTE : Recess at join can be incorporated for better panel alignment and finishes. Appropriate fibre mesh can be placed to pre-empt cracks before proceeding to skim coat.

Connection Between Precast Half Slab
(In Secondary Direction– Applicable for one-way slab)
Scale 1:10




1. PC Full Slab
2. Rebars from PC Slab
3. In-situ Pour Strip
4. Rebars placed on site

NOTE : Dimensions of Pour Strip Depends on Design Requirements

Use of Stiffened Cast In-Situ Pour Strip to Cater for Floor Level Difference
(In Secondary Direction Applicable for one-way slab)
Scale 1:10



| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| D | 04/10/2023 | TWA | Blk 3-3rd Sty GL 13-16 slab rebar direction changes |

43 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT
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www.idarchitects.com.sg

PE ENDORSEMENT
PROFESSIONAL ENGINEER
CIVIL
LEOW GEOK MUI
4072
SINGAPORE

AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
TYPICAL SLAB DETAILS – 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_1-2

Drawing no.
S_WS1416_BLK02_03_SLDT_2_ST09

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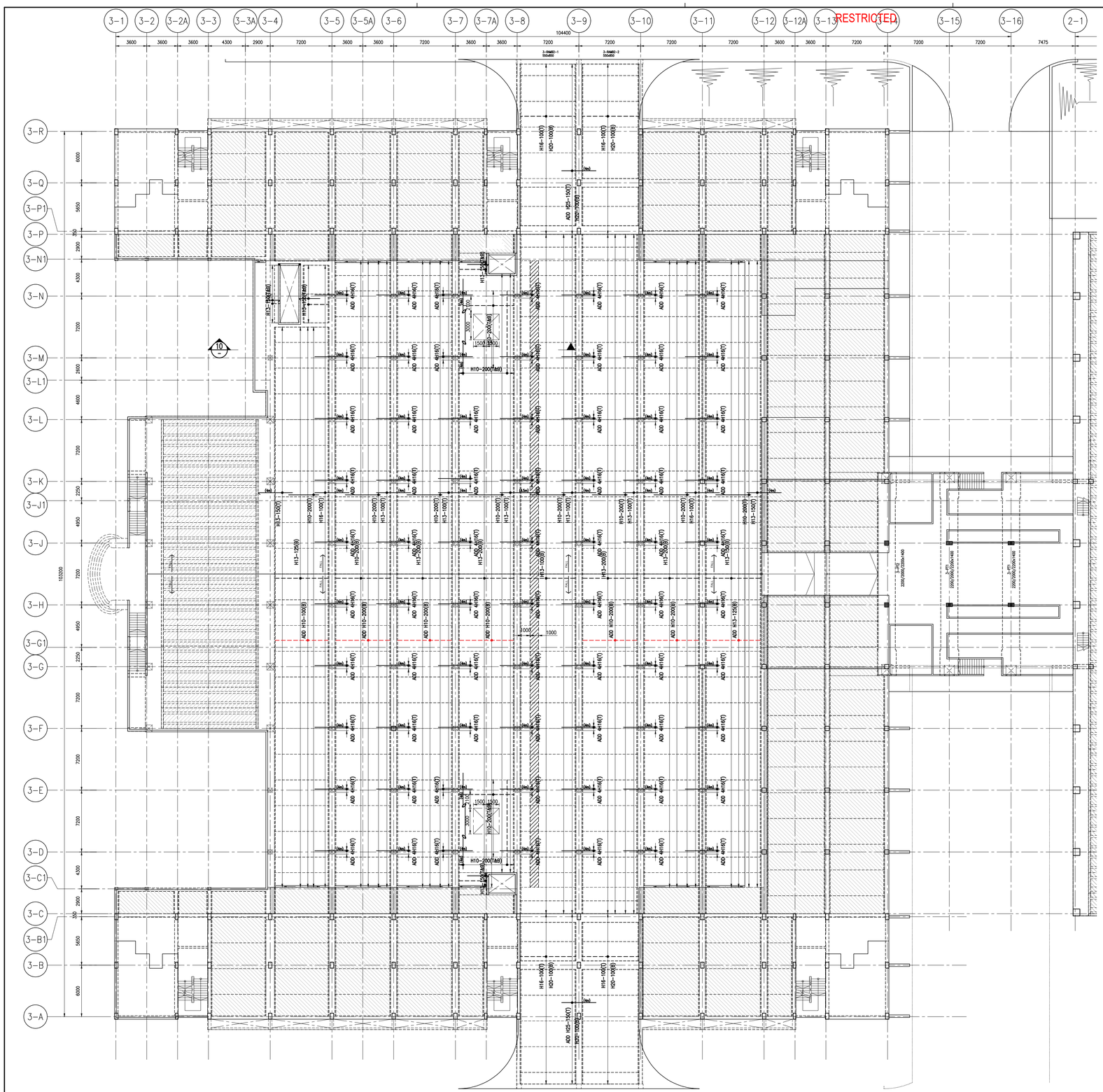


BLOCK 2 & BLOCK 3 – 2ND STOREY REINFORCEMENT PLAN

SCALE: 1:250

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. | | | | | | | | | | | | | | | | | | | | | | | | |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED | | | | | | | | | | | | | | | | | | | | | | | | |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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AC ENDORSEMENT

ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT

TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
TYPICAL SLAB DETAILS – 3

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3–6

Drawing no.
S_WS1416_BLK02_03_SLDT_3_ST09

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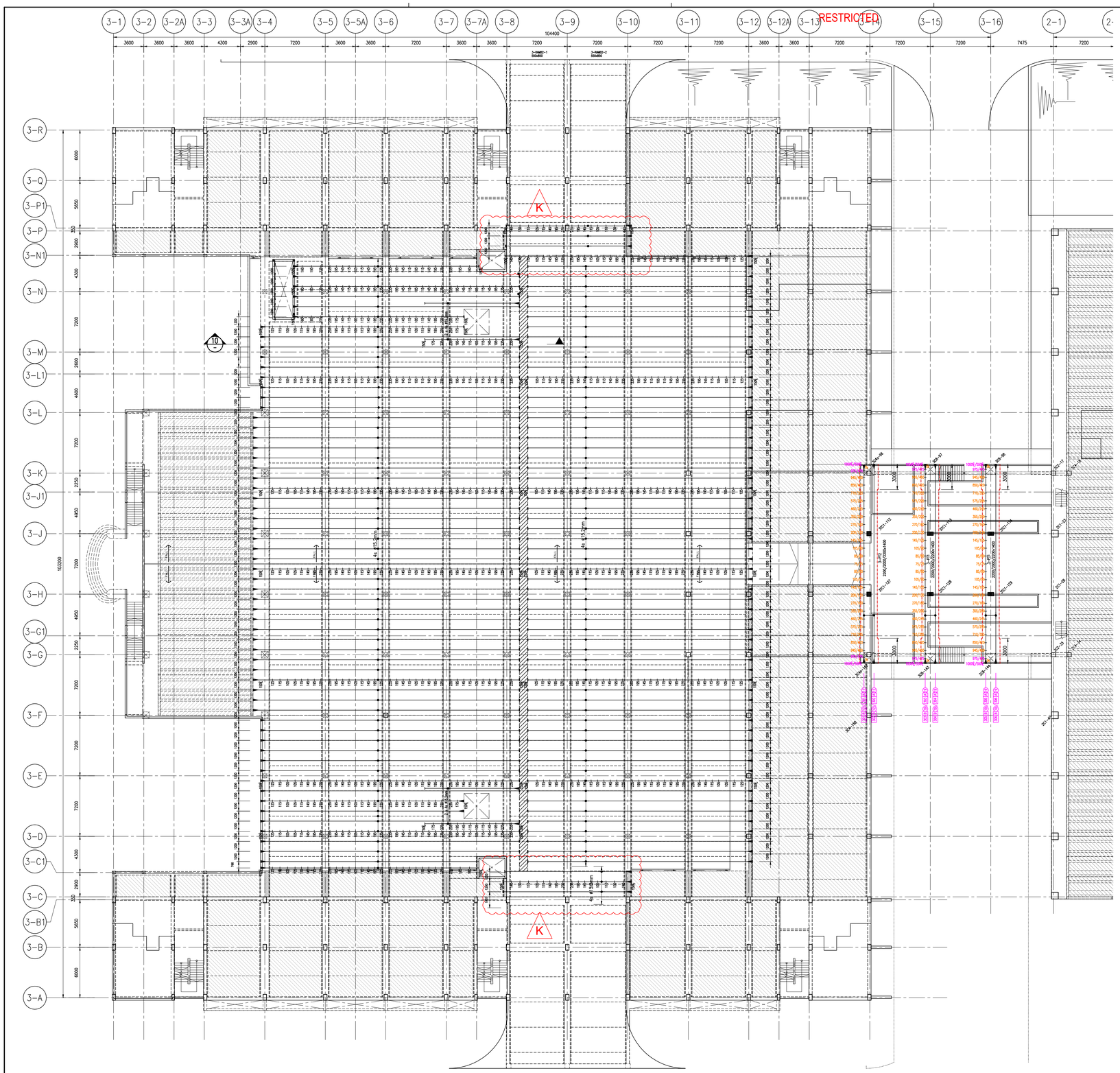
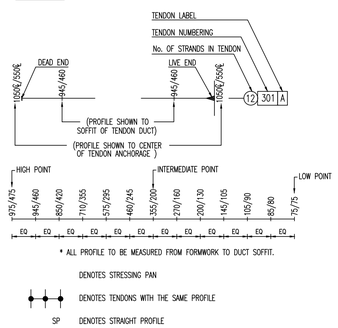



| Beam | Column | Output Case | P (kN) |
|---|---|---|---|
| 3-PT1 | 3TC1-113 | Total DL | 896 |
| | | Total Imposed Load | 160 |
| 3-PT1 | 3TC1-128 | Total DL | 895 |
| | | Total Imposed Load | 159 |
| 3-PT1 | 3TC1-114 | Total DL | 727 |
| | | Total Imposed Load | 127 |
| 3-PT1 | 3TC1-129 | Total DL | 727 |
| | | Total Imposed Load | 126 |
| 3-PT2 | 3TC1-112 | Total DL | 640 |
| | | Total Imposed Load | 176 |
| 3-PT2 | 3TC1-127 | Total DL | 640 |
| | | Total Imposed Load | 176 |

## NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH PRESTRESSED CONCRETE GENERAL NOTES.
2. ALL PRESTRESSING STRANDS TO BE 15.2mm DIAMETER LOW RELAXATION SUPA STRANDS COMPLYING TO ASTM A 416-85
   STRANDS PROPERTIES SHALL BE:
   NOMINAL DIAMETER 15.2mm
   NOMINAL STEEL AREA 140 $mm^2$
   NOMINAL MASS 1.10 kg/m
   NOMINAL ULT. TENSILE STRENGTH 1860 $N/mm^2$
   NOMINAL BREAKING LOAD 260.7 kN
   RELAXATION (1000 HRS/70% UTS) 2.5% MAX.

## LEGEND:




# BLOCK 2 & BLOCK 3 – 2ND STOREY TENDON ARRAGEMENT PLAN

SCALE: 1:250

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| K | 04/10/2023 | TWA | TENDON UPDATED. |

45 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

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(name & signature)

HCD ( Architecture )
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SENIOR PROGRAMME MANAGER
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C&S CONSULTANT
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DRAWING TITLE
BLOCK 2 & BLOCK 3
TYPICAL SLAB DETAILS – 4

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3-6

Drawing no.
S_WS1416_BLK02_03_SLDT_4_ST09

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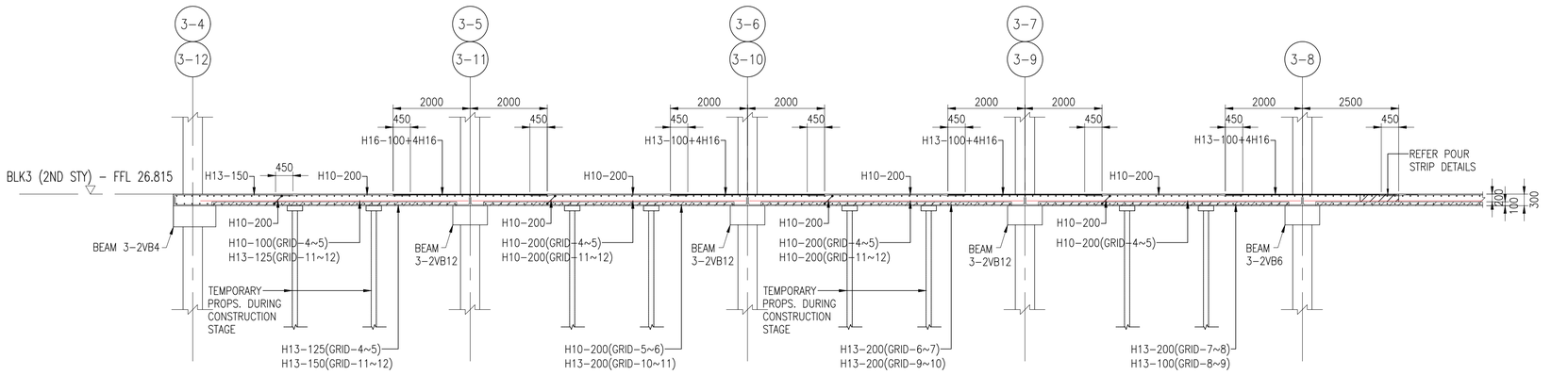
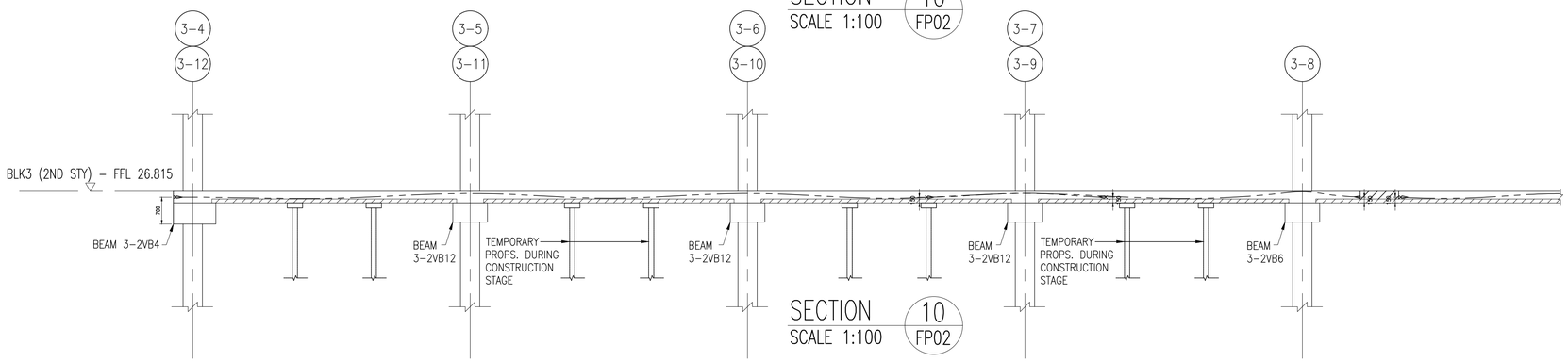
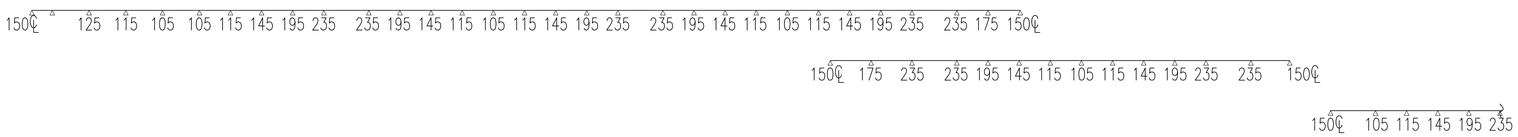
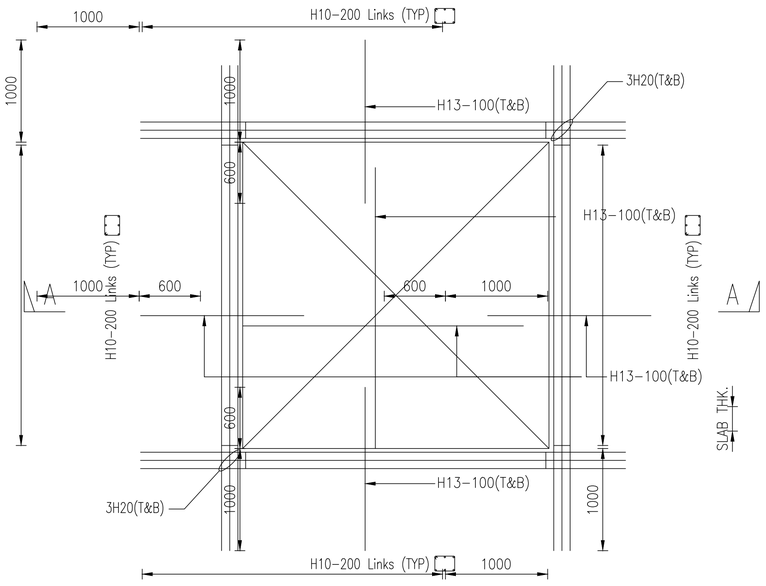



SECTION 10 FP02
SCALE 1:100

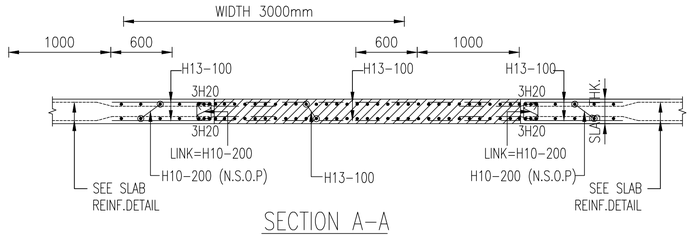



SECTION 10 FP02
SCALE 1:100

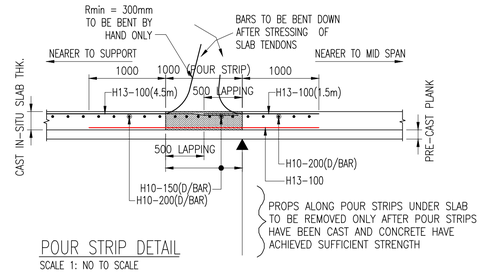


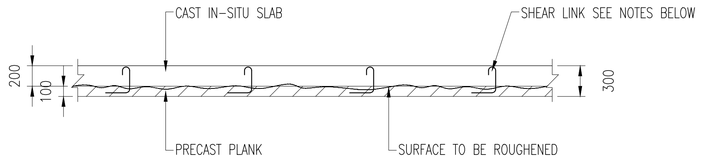

TYP. DETAIL FOR CRANE OPENINGS
SCALE 1: NO TO SCALE




SECTION A-A
SCALE 1: NO TO SCALE
NOTE: N.S.O.P DENOTES NOT SHOWN ON PLAN




POUR STRIP DETAIL
SCALE 1: NO TO SCALE




PRECAST PLANK SURFACE TREATMENT DETAIL
SCALE : NO TO SCALE
NOTES : PROVIDE VERTICAL REINFORCEMENT MIN AF = 314mm²/m² (I.E. 4 NOS H10 IN EVERY m² OR EQUIVALENT). CAN BE PROVIDED IN LATTICE GIRDER FORM (DETAILS BY OTHERS).

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

46 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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DRAWING TITLE
BLOCK 2 & BLOCK 3
TYPICAL SLAB DETAILS - 5

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3-6

Drawing no.
S_WS1416_BLK02_03_SLDT_5_ST09

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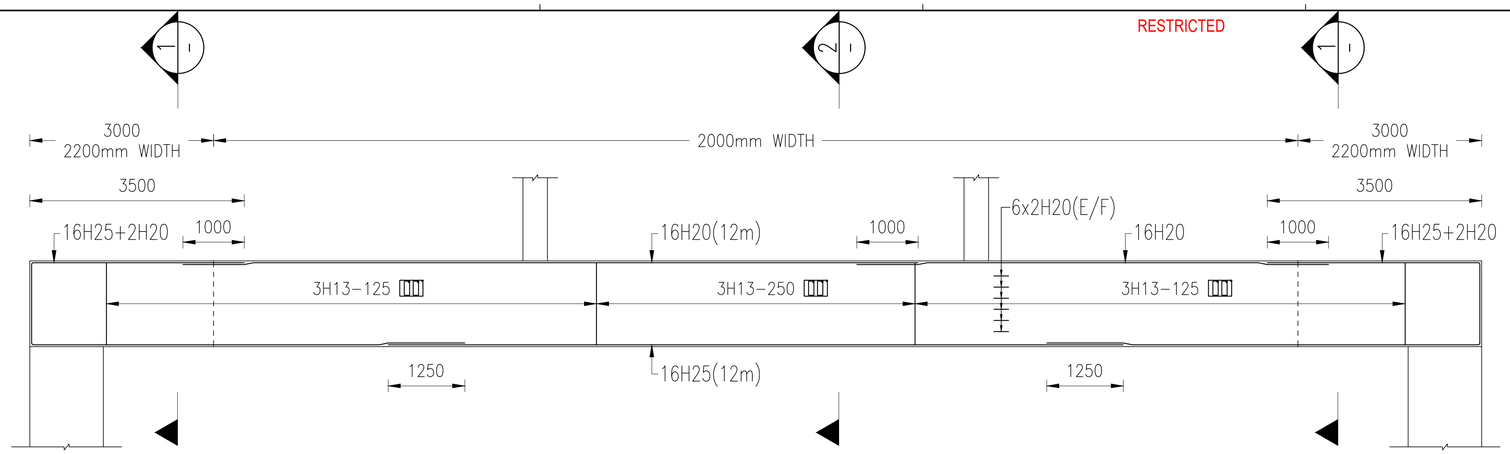
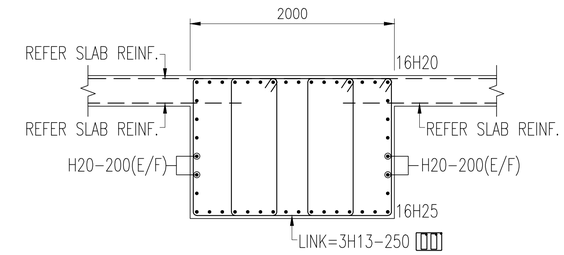
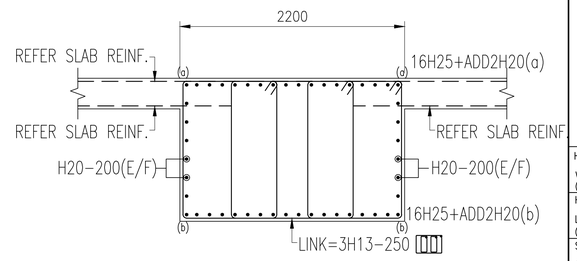


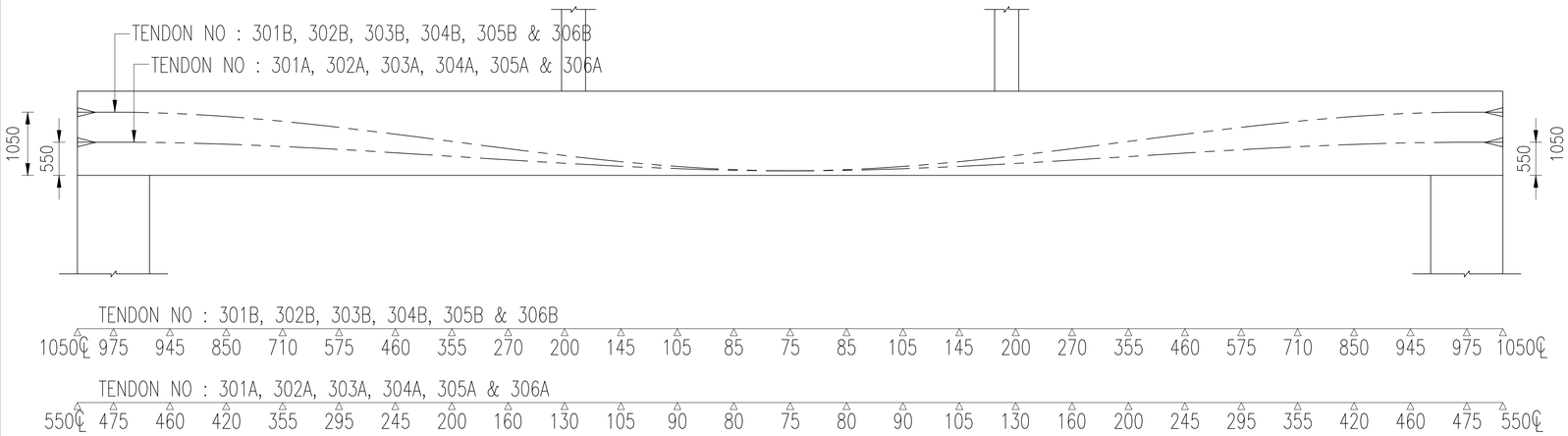

3-PT1 2200/2000/2200x1400
3-PT2 2200/2000/2200x1400 (SIMILAR REINF. DETAILS)
SCALE 1:100




SECTION 1-1
SCALE 1:50




SECTION 2-2
SCALE 1:50




3-PT1 2200/2000/2200x1400
3-PT2 2200/2000/2200x1400 (SIMILAR TENDON PROFILES)
SCALE 1:100

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION |
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| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. | | | | | | | | | | | | | | | | | | | | | | | | |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED | | | | | | | | | | | | | | | | | | | | | | | | |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
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SENIOR PROGRAMME MANAGER
EDMUND TEO
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ACCREDITED CHECKER
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Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT

TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
TYPICAL SLAB DETAILS – 6

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3-6

Drawing no.
S_WS1416_BLK02_03_SLDT_6_ST09

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# GENERAL NOTES FOR VSL POST-TENSIONED STRUCTURES

## 1.0 GENERAL

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2.1 SS EN 1992-1-1:2008
EUROCODE 2: DESIGN OF CONCRETE STRUCTURES

2.2 EN 10138 : PRESTRESSING STEELS

2.3 EN 10080 / SS560 : 2010
SPECIFICATION OF STEEL FOR THE REINFORCEMENT OF CONCRETE

2.4 EN 10080 / SS561 : 2010
SPECIFICATION OF STEEL FABRIC FOR THE REINFORCEMENT OF CONCRETE

2.5 EN 446/447 : GROUT FOR PRESTRESSING TENDONS

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3.1 CONCRETE STRENGTH OF :
PRESTRESSED SLAB & BEAM – C32/40 N/mm²
MINIMUM CUBE STRENGTH AT TRANSFER FOR SLAB – C20/25 N/mm²
MINIMUM CUBE STRENGTH AT TRANSFER FOR BEAM – C24/30 N/mm²

3.2 CONCRETE COVER TO ALL REINFORCEMENT INCLUDING LINKS:

PRESTRESSED SLABS : TOP = 30 mm
BOTTOM = 30 mm
PRESTRESSED BEAMS : TOP = 30 mm
BOTTOM = 30 mm

3.3 CONCRETE CURING : TO BE CARRIED OUT BY SPRAYING WITH WATER AND COVERING WITH PLASTIC SHEETS.

3.4 FIRE RATING : REI/R120.

3.5 EXPOSURE TYPE : XC3
(REFER TO SS EN 1992-1-1:2008, TABLE 4.1)

3.6 DESIGN WORKING LIFE = 50 YEARS

## 4.0 STEEL REINFORCEMENT

4.1 REINFORCEMENT BAR GRADE B500B (designated with the prefix 'H', e.g. H16)

4.2 WELDED FABRIC GRADE 485 CONFORMING TO EN 10080 / SS561 : 2010

## 5.0 PRESTRESSING TENDONS

5.1 STRAND CHARACTERISTICS :

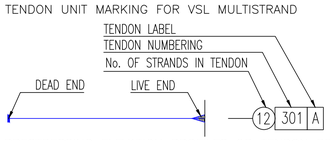
| | |
|---|---|
| STRAND TYPE | 15mm (0.6") |
| NOMINAL DIAMETER | 15.2 mm |
| NOMINAL STEEL AREA | 140 mm² |
| GUARANTEED ULTIMATE TENSILE STRENGTH | 260 kN |
| MODULUS OF ELASTICITY | 195 kN/mm² |
| STRESSING FORCE PER STRAND AFTER JACK & ANCHORAGE FRICTION LOSSES, Po=76% Pu | 198 kN |
| RELAXATION | MAX 2.5% |

5.2 FRICTION VALUES FOR STEEL DUCT:
COEEFICIENT OF FRICTION U = 0.18 / RAD
WOBBLE FACTOR k = 0.001 / m

5.3 VSL SLAB POST-TENSIONING SYSTEM
VSL BONDED SYSTEM WITH MAXIMUM FIVE STRANDS ENCASED IN FLAT STEEL DUCT WITH RIBS AT REGULAR INTERVAL WHICH IS GROUTED AFTER STRESSING.

5.4 VSL MULTISTRAND SYSTEM (FOR BEAMS)
TENDON CONSIST A VARIABLE NUMBER OF STRANDS ENCASED IN ROUND STEEL DUCT WITH RIBS AT REGULAR INTERVAL WHICH IS GROUTED AFTER STRESSING.

5.5 TENDON UNIT MARKING FOR VSL MULTISTRAND




5.6 PRESTRESSING ELEVATION PROFILES OR TENDON PROFILES :
ALL TENDON PROFILES ARE ELEVATION FROM THE SOFFIT OF SLAB / BEAM TO THE UNDERSIDE OF POST-TENSIONED (PT) DUCT, EXCEPT AT TENDON ENDS WHERE THEY ARE ELEVATION TO THE CENTRE OF GRAVITY (C.G.) OF ANCHORAGES; SLAB TENDON PROFILES IN PARENTHESES ( ) ARE ELEVATION FROM THE SOFFIT OF SLAB TO C.G. OF ANCHORAGES: WHENEVER THERE IS INTERFERENCE TO CLEARANCE BETWEEN TENDON & REINFORCEMENT, THE TENDON PROFILE GOVERNS.

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GROUTING IS TO BE IN LINE WITH EN 446/447.

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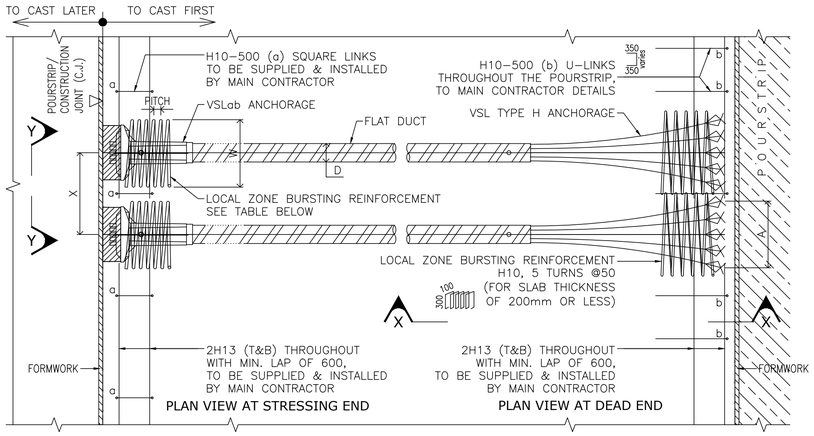
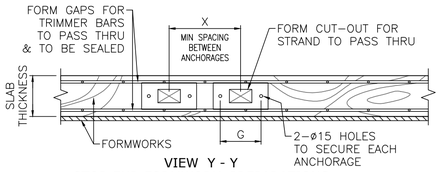
## 6.0 MOVEMENT CRACKS

6.1 CRACKS MAY OCCUR DUE TO DIFFERENTIAL MOVEMENT OF CONCRETE IN PRESTRESSED CONCRETE CONSTRUCTION. THESE HAVE GENERALLY NO EFFECT ON THE STRENGTH AND INTEGRITY OF THE STRUCTURE.

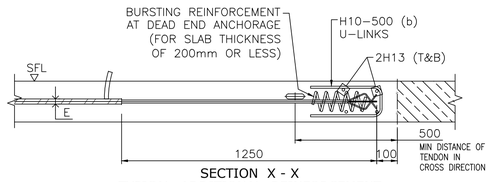
# STANDARD ANCHORAGE DETAILS FOR POST-TENSIONED SLAB



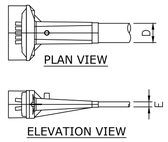

TYPICAL REINFORCEMENT DETAILS FOR ANCHORAGES AT POURSTRIP / CONSTRUCTION JOINT



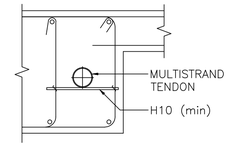

VIEW Y - Y
STOP-END FORMWORK PREPARATIONS



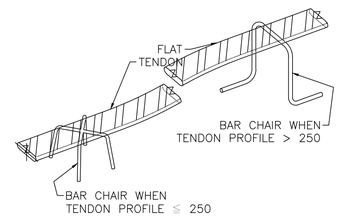

SECTION X - X
TYPICAL ADDITIONAL REINFORCEMENT



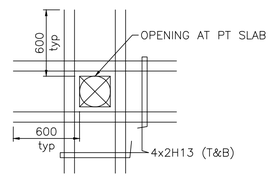

| TENDON UNIT | DUCT SIZE | | FORM CUT-OUT SIZE | FORM HOLES FOR ANCHOR BLOCK | LOCAL ZONE BURSTING REINFORCEMENT OF 'VSLab S' IN RECTANGULAR SPIRAL | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | D (width) | E (depth) | | G | REBAR SIZE | TURN | PITCH | WIDTH W | DEPTH | X (min.) | A |
| 6-4s | 80 | 20 | 60 x 90 | 180 | H13 | 6 | 50 | 390 | 160 | 430 | 390 |
| 6-5s | 90 | 25 | 65 x 110 | 200 | H13 | 7 | 45 | 440 | 180 | 480 | 490 |




MULTISTRAND TENDON SUPPORT
FOR BEAM




FLAT TENDON SUPPORT
FOR SLAB




TYPICAL TRIMMER BARS
FOR SLAB OPENING ≤ Ø150/150²



| REV. | DATE | APPR. | DESCRIPTION |
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| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |



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DRAWING TITLE
BLOCK 3
TYPICAL SLAB DETAILS – 7

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_7

Drawing no.
S_WS1416_BLK02_03_SLDT_7_ST09

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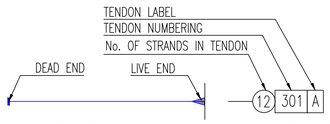


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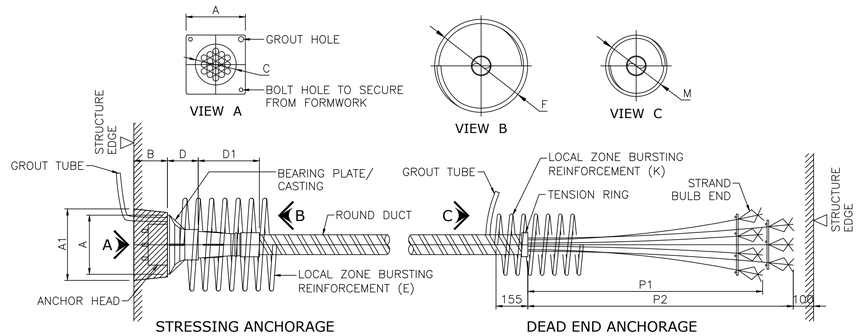
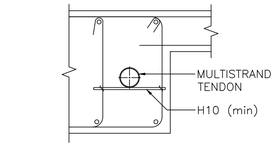



STRESSING ANCHORAGE
VSL TYPE GC

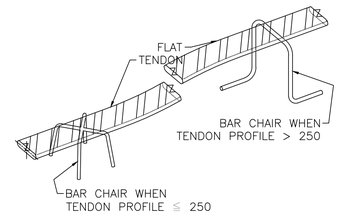
DEAD END ANCHORAGE
VSL TYPE H

VSL MULTISTRAND SYSTEM

| STRAND TYPE | TENDON UNIT | STEEL DUCT SIZE (ID/OD) | A | RECESS FORMER | | ANCHOR HEAD | D | D1 (TRUMPET) | LOCAL ZONE REINFORCEMENT AT STRESSING END | | BURSTING REINFORCEMENT AT DEAD END | | P1/P2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A1 | B | øC | | | E | øF | K | øM | |
| 15 mm (0.6") | 6-6 to 6-7 | 55/62 | 180 | 240 | 120 | 135 | 135 | NA | H13, 8 TURNS @40 | 290 | H16, 7 TURNS @60 | 200 | 1150/1300 |
| | 6-8 to 6-12 | 75/82 | 230 | 300 | 135 | 170 | 220 | NA | H16, 7 TURNS @55 | 385 | | 230 | |
| | 6-13 to 6-15 | 80/87 | 260 | 350 | 145 | 190 | 240 | NA | H16, 9 TURNS @45 | 395 | | 300 | |
| | 6-16 to 6-19 | 90/97 | 290 | 350 | 165 | 200 | 150 | 300 | H20, 8 TURNS @60 | 445 | | 300 | |




MULTISTRAND TENDON SUPPORT
FOR BEAM




FLAT TENDON SUPPORT
FOR SLAB



BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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EDMUND TEO
(name & signature)

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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3
TYPICAL SLAB DETAILS – 8

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_8

Drawing no.
S_WS1416_BLK02_03_BMDT_8_ST09

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

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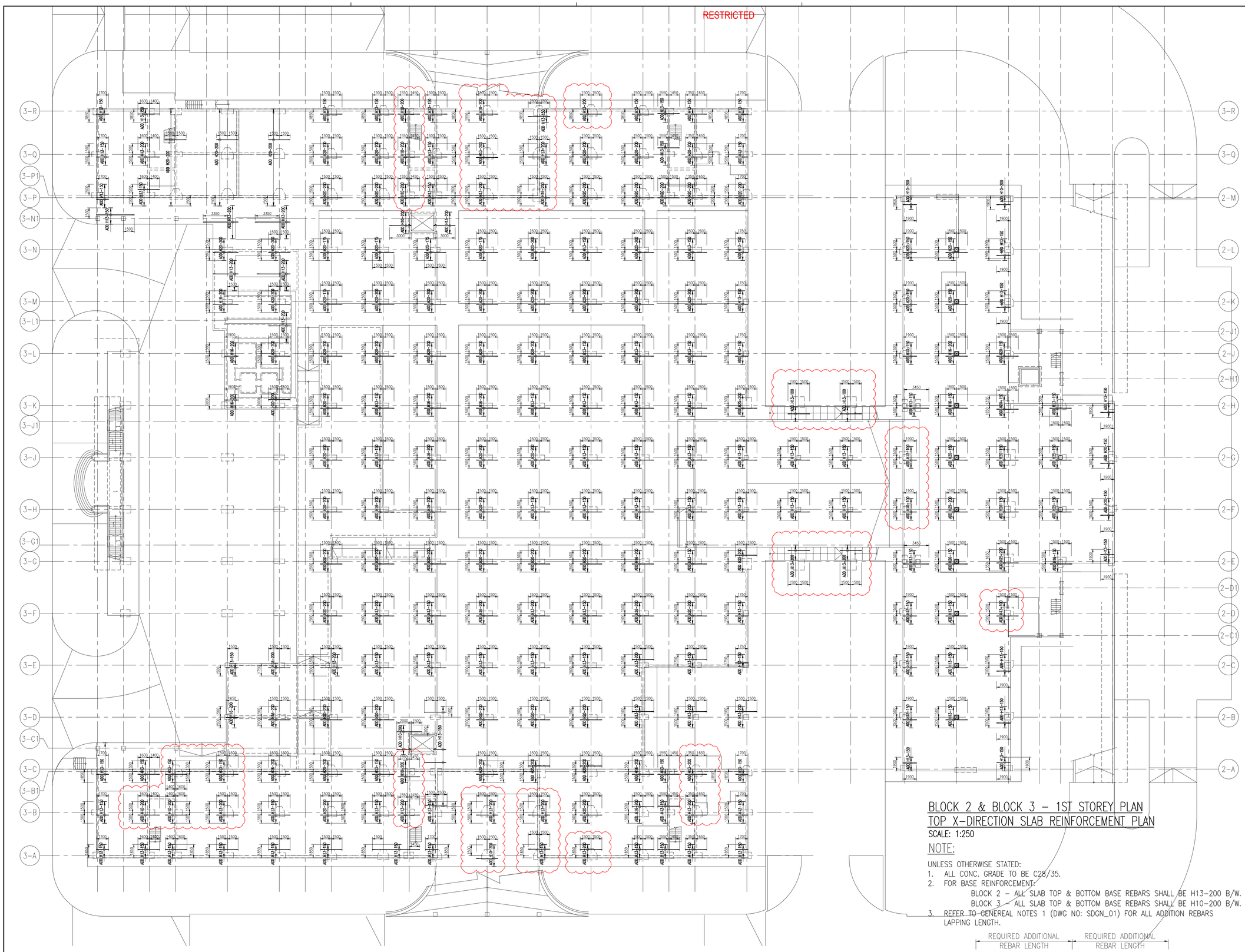

## BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
## TOP X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR BASE REINFORCEMENT:
   BLOCK 2 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H13–200 B/W.
   BLOCK 3 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H10–200 B/W.
3. REFER TO GENEREAL NOTES 1 (DWG NO: SDGN_01) FOR ALL ADDITION REBARS LAPPING LENGTH.

REQUIRED ADDITIONAL REBAR LENGTH | REQUIRED ADDITIONAL REBAR LENGTH

Lo

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C1 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 03/03/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |

28 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

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HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
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SENIOR PROGRAMME MANAGER
EDMUND TEO
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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
TOP X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3

Drawing no.
S_WS1416_BLK02_03_FP01_SLDT_TOPX_ST06

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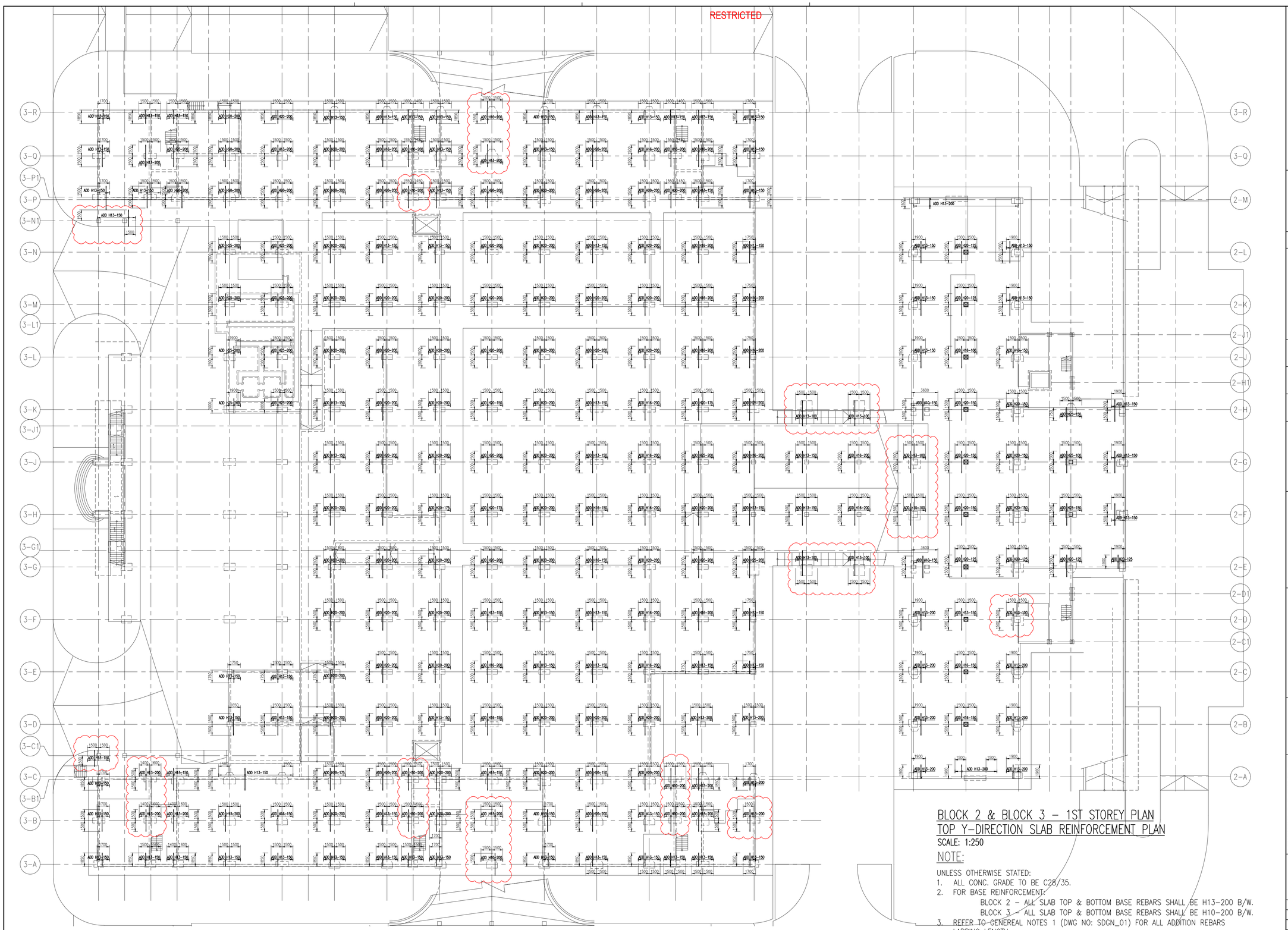

## BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
## TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR BASE REINFORCEMENT:
   BLOCK 2 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H13-200 B/W.
   BLOCK 3 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H10-200 B/W.
3. REFER TO GENEREAL NOTES 1 (DWG NO: SDGN_01) FOR ALL ADDITION REBARS LAPPING LENGTH.

REQUIRED ADDITIONAL REBAR LENGTH | REQUIRED ADDITIONAL REBAR LENGTH

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C1 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 03/03/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |

29 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT


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Registration No: A068
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SINGAPORE

C&S CONSULTANT

TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3

Drawing no.
S_WS1416_BLK02_03_FP01_SLDT_TOPY_ST06


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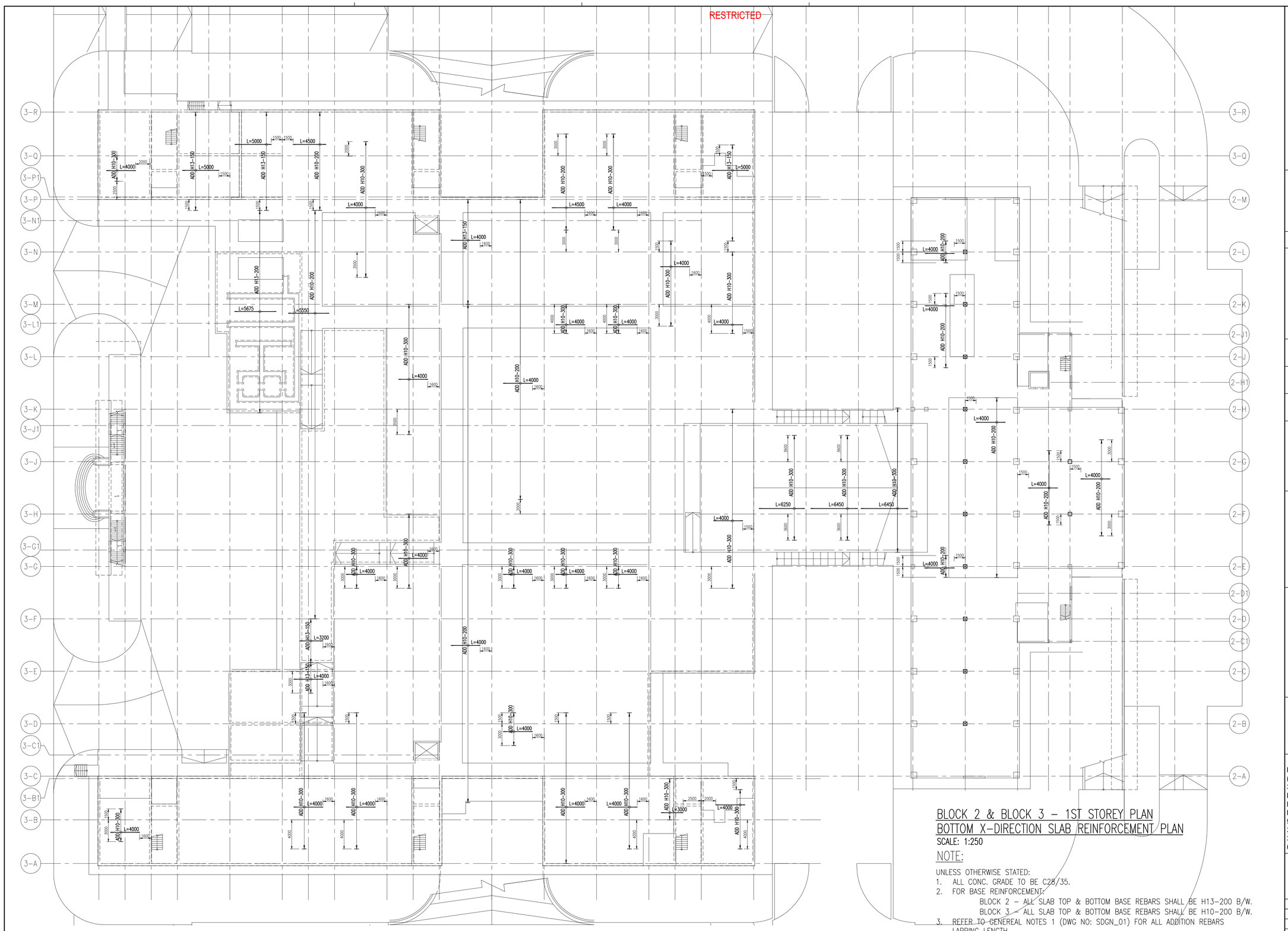

## BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
## BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR BASE REINFORCEMENT:
   BLOCK 2 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H13-200 B/W.
   BLOCK 3 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H10-200 B/W.
3. REFER TO GENEREAL NOTES 1 (DWG NO: SDGN_01) FOR ALL ADDITION REBARS LAPPING LENGTH.

REQUIRED ADDITIONAL REBAR LENGTH | REQUIRED ADDITIONAL REBAR LENGTH

Lo

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 03/03/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
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SENIOR PROGRAMME MANAGER
EDMUND TEO
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PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3

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S_WS1416_BLK02_03_FP01_SLDT_BTMX_ST06

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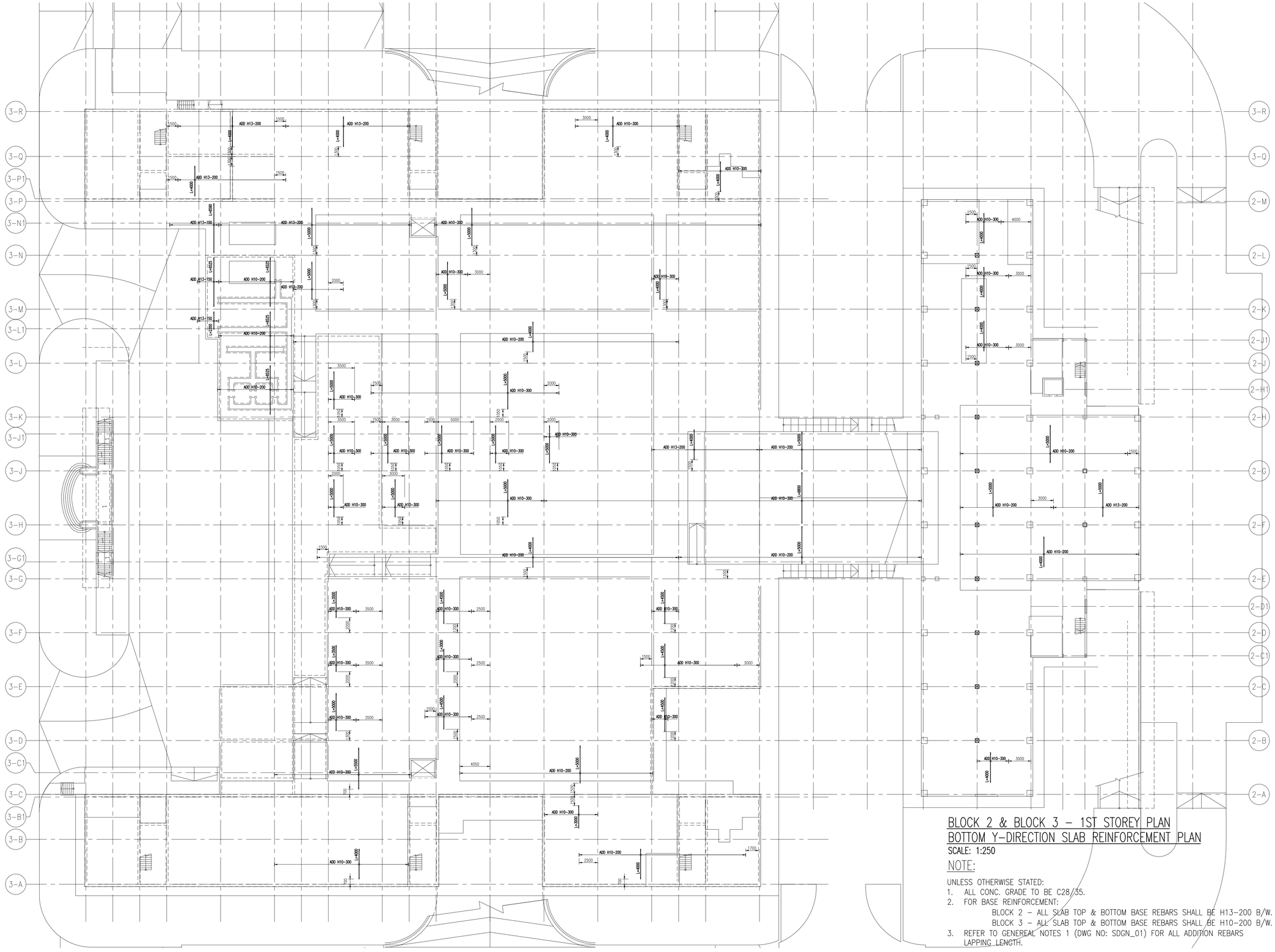

## BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
## BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR BASE REINFORCEMENT:
   BLOCK 2 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H13-200 B/W.
   BLOCK 3 – ALL SLAB TOP & BOTTOM BASE REBARS SHALL BE H10-200 B/W.
3. REFER TO GENEREAL NOTES 1 (DWG NO: SDGN_01) FOR ALL ADDITION REBARS LAPPING LENGTH.

REQUIRED ADDITIONAL REBAR LENGTH | REQUIRED ADDITIONAL REBAR LENGTH

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 26/04/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| C0 | 03/03/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 03/03/2023 | TWA | ST06 NOA RECEIVED |

31 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196


PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3 – 1ST STOREY PLAN
BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_3

Drawing no.
S_WS1416_BLK02_03_FP01_SLDT_BTMY_ST06


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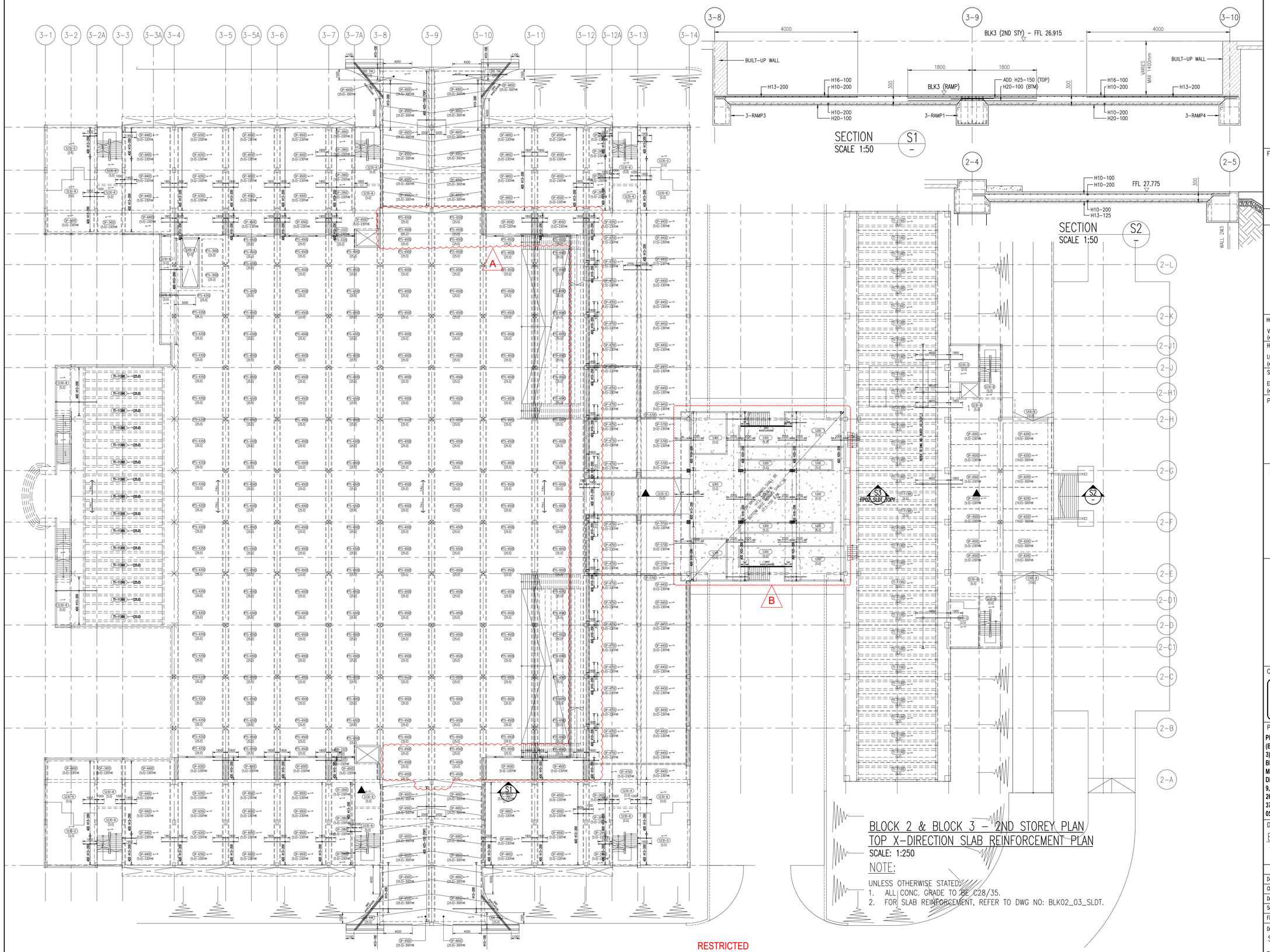


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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| B | 30/10/2023 | TWA | Blk 3–2nd Sty GL 13–16 slab rebar changes |
| A | 04/10/2023 | TWA | Blk 3–2nd Sty GL 3–12 added Built Up wall to support slab |

54 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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AS–BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN
TOP X–DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_9

Drawing no.
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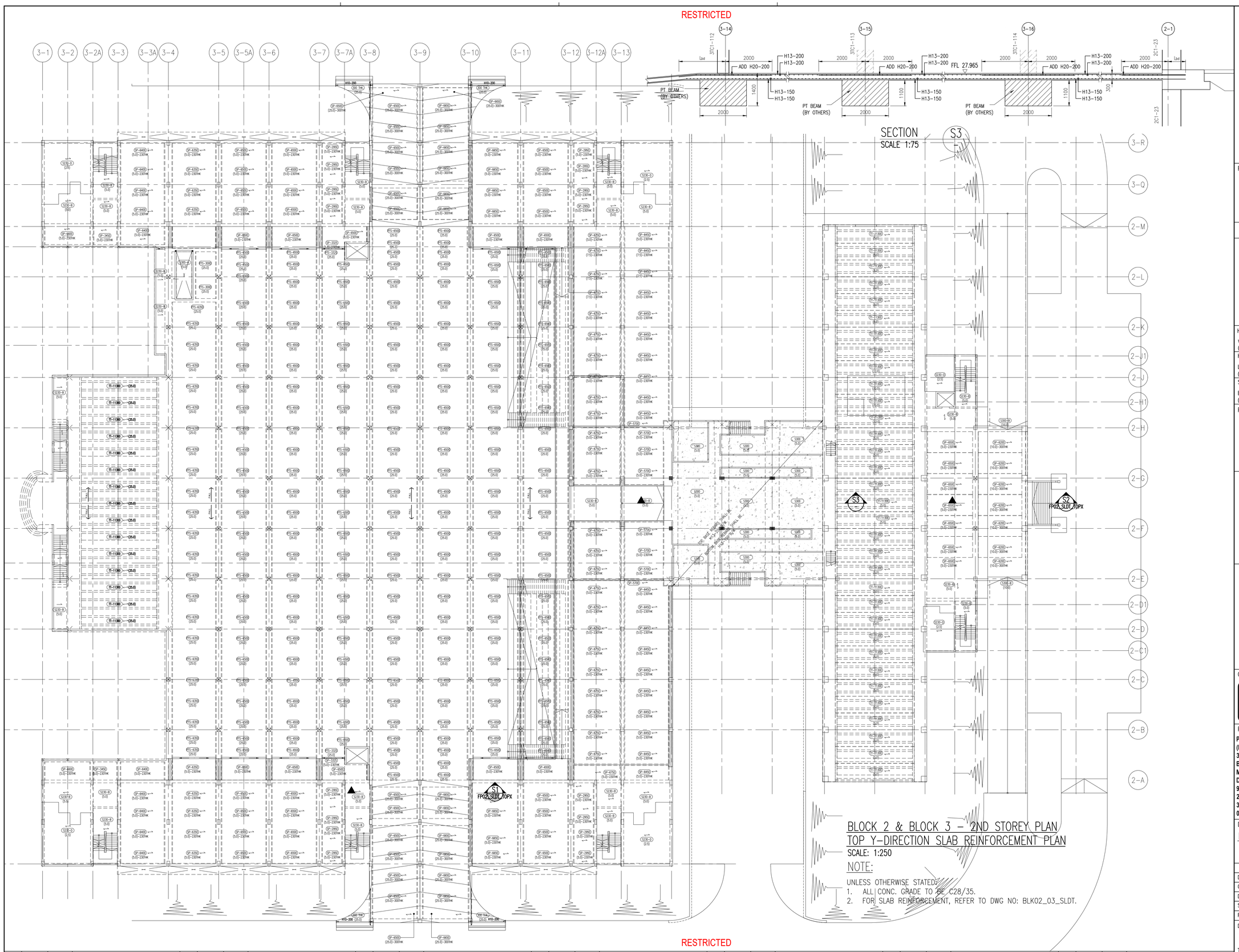


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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| CO | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN
TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_9

Drawing no.
S_WS1416_BLK02_03_FP02_SLDT_TOPY_ST09

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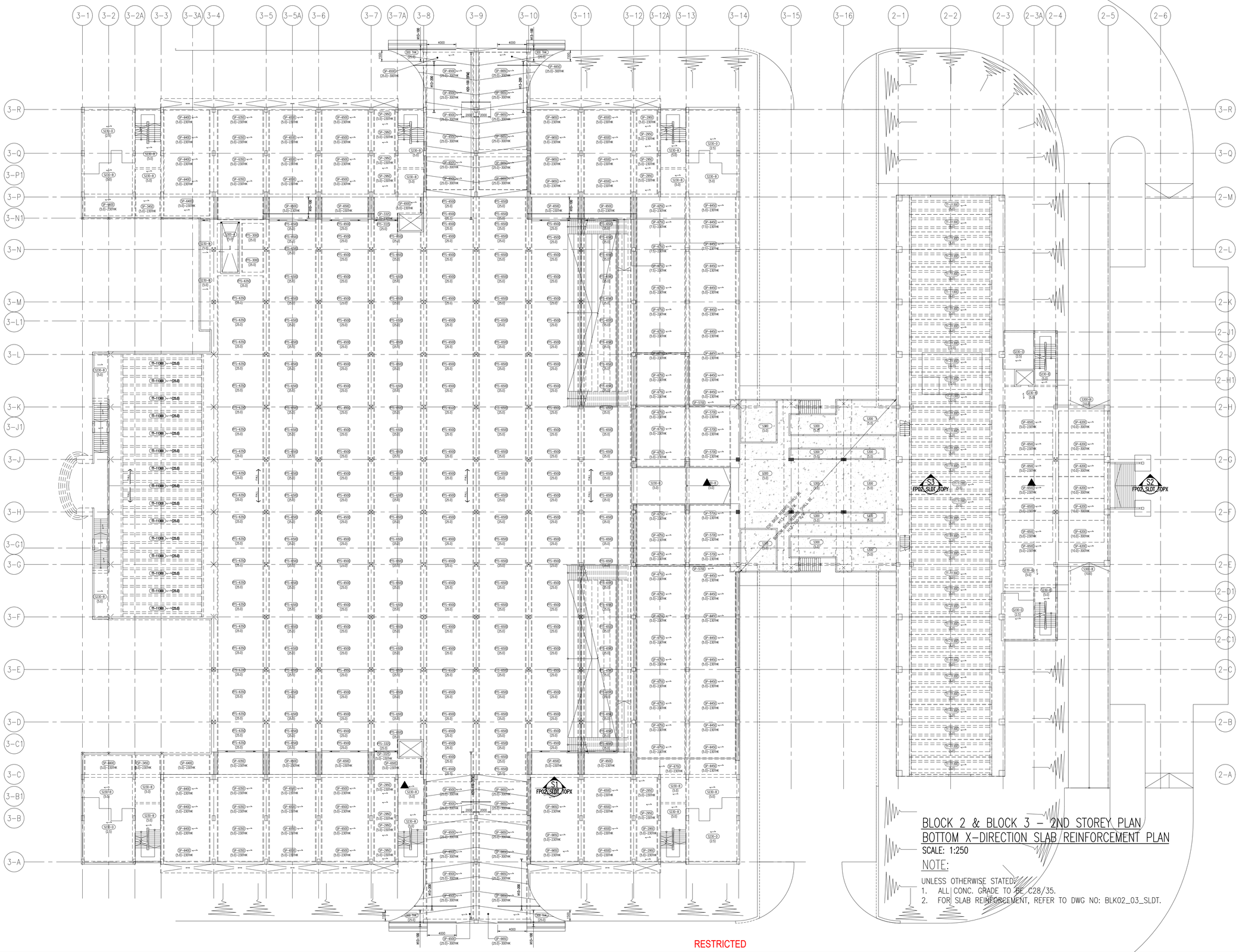


BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN
BOTTOM X-DIRECTION SLAB/REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C1 | 30/10/2023 | TWA | REVISED AS CLOUDED. |
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

56 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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AS-BUILT DRAWING
Date : APR 2024

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DRAWING TITLE
BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN
BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_9

Drawing no.
S_WS1416_BLK02_03_FP02_SLDT_BTMX_ST09

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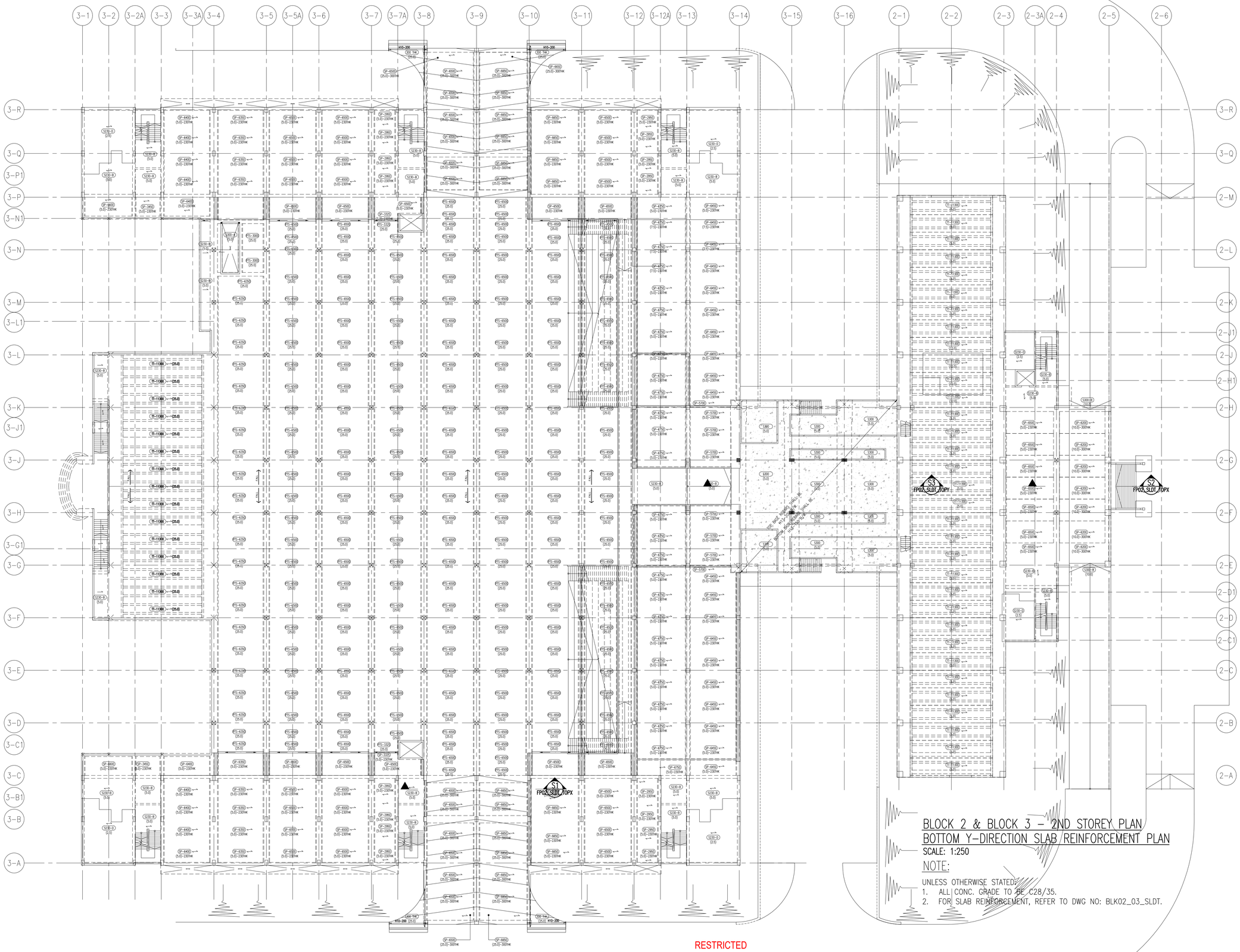


BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN
BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

39 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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DRAWING TITLE
BLOCK 2 & BLOCK 3 – 2ND STOREY PLAN
BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_9

Drawing no.
S_WS1416_BLK02_03_FP02_SLDT_BTMY_ST09

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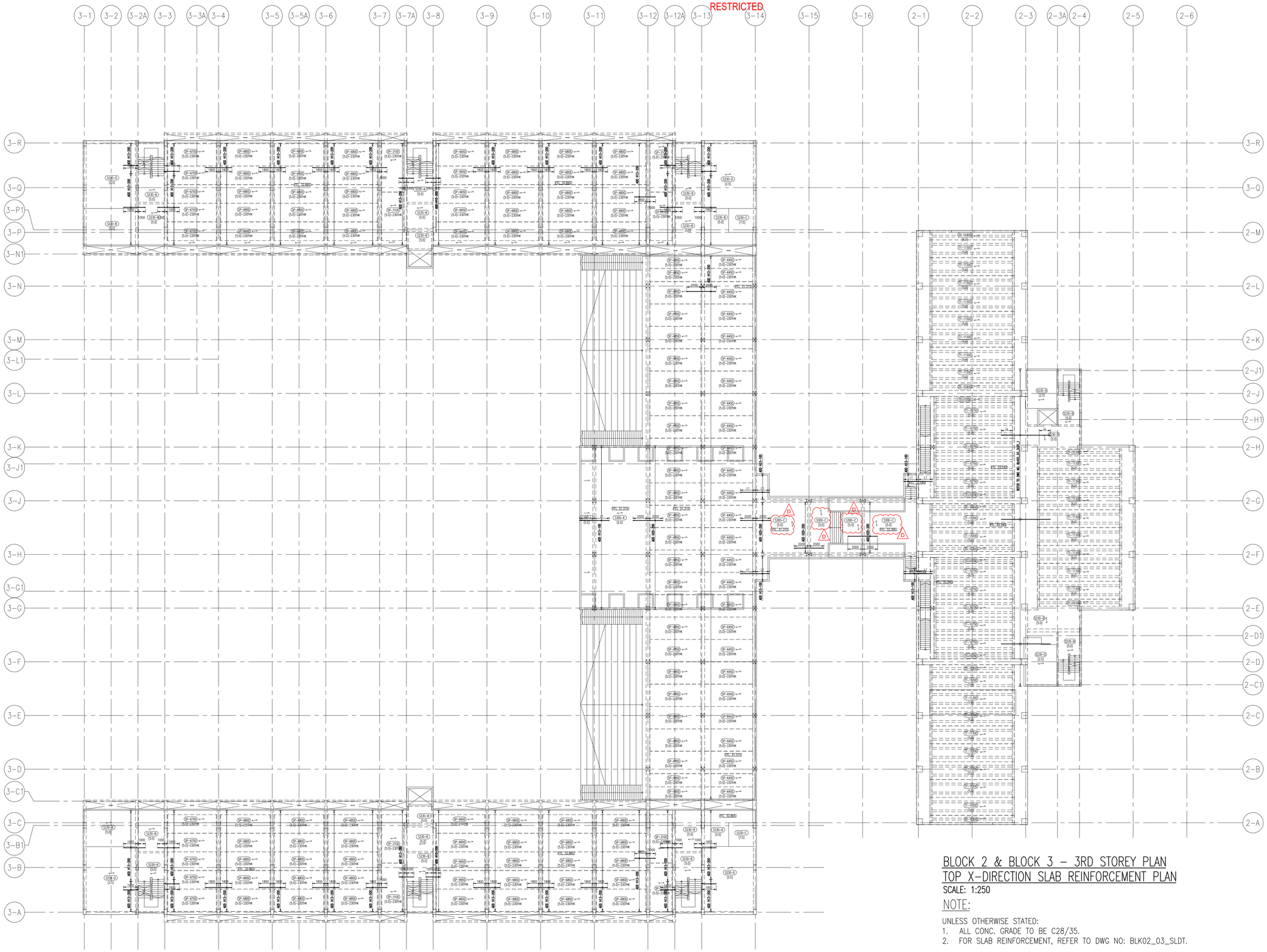


BLOCK 2 & BLOCK 3 – 3RD STOREY PLAN
TOP X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
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2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| D | 04/10/2023 | TWA | Blk 3-3rd Sty GL 13-16 slab rebar direction changes |

58 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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DRAWING TITLE

BLOCK 2 & BLOCK 3 – 3RD STOREY PLAN
TOP X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_SLDT_10

Drawing no.
S_WS1416_BLK02_03_FP03_SLDT_TOPX_ST09

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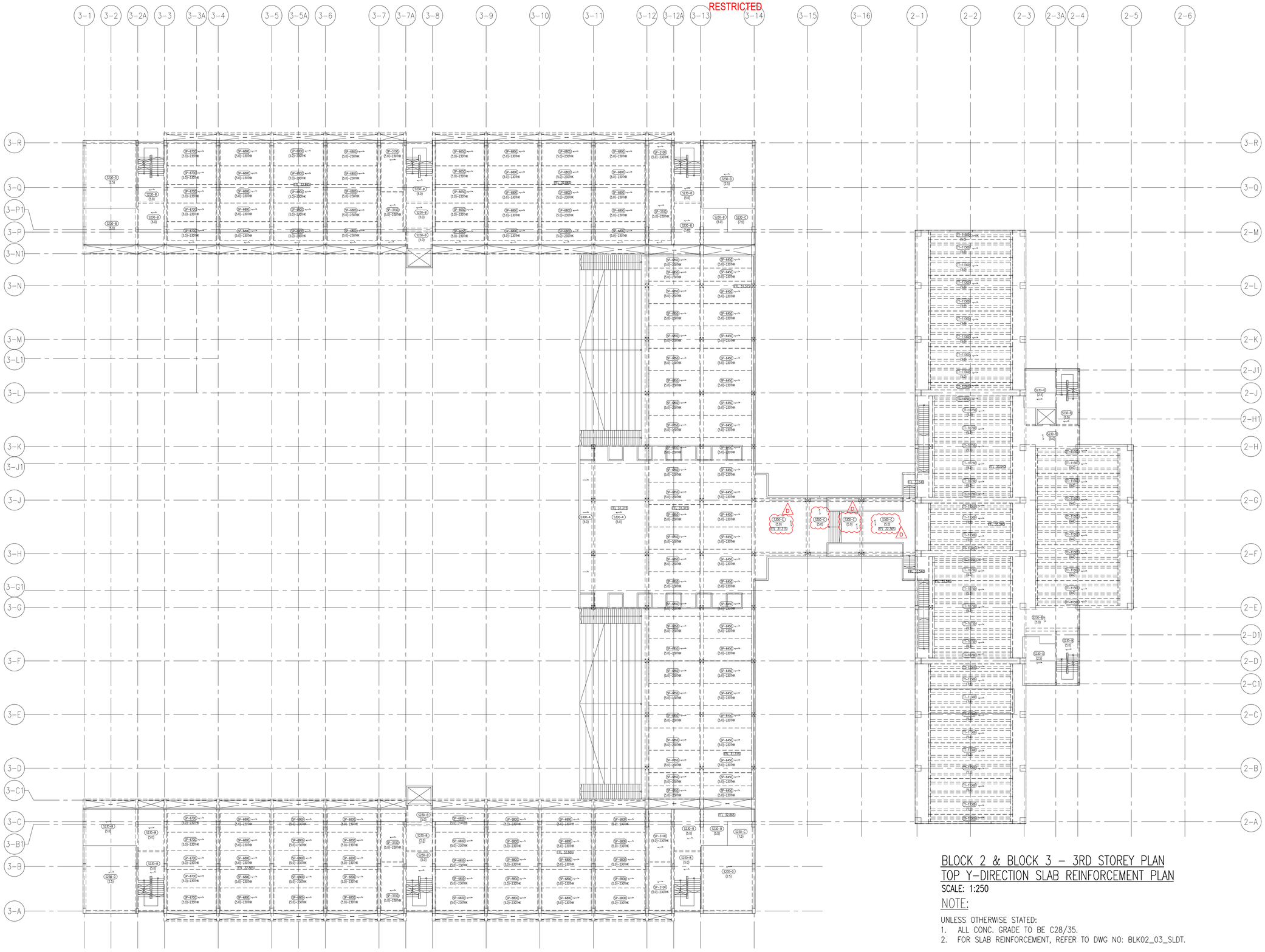


BLOCK 2 & BLOCK 3 – 3RD STOREY PLAN
TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| D | 04/10/2023 | TWA | Blk 3-3rd Sty GL 13-16 slab rebar direction changes |

59 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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DRAWING TITLE
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TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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Drawing no.
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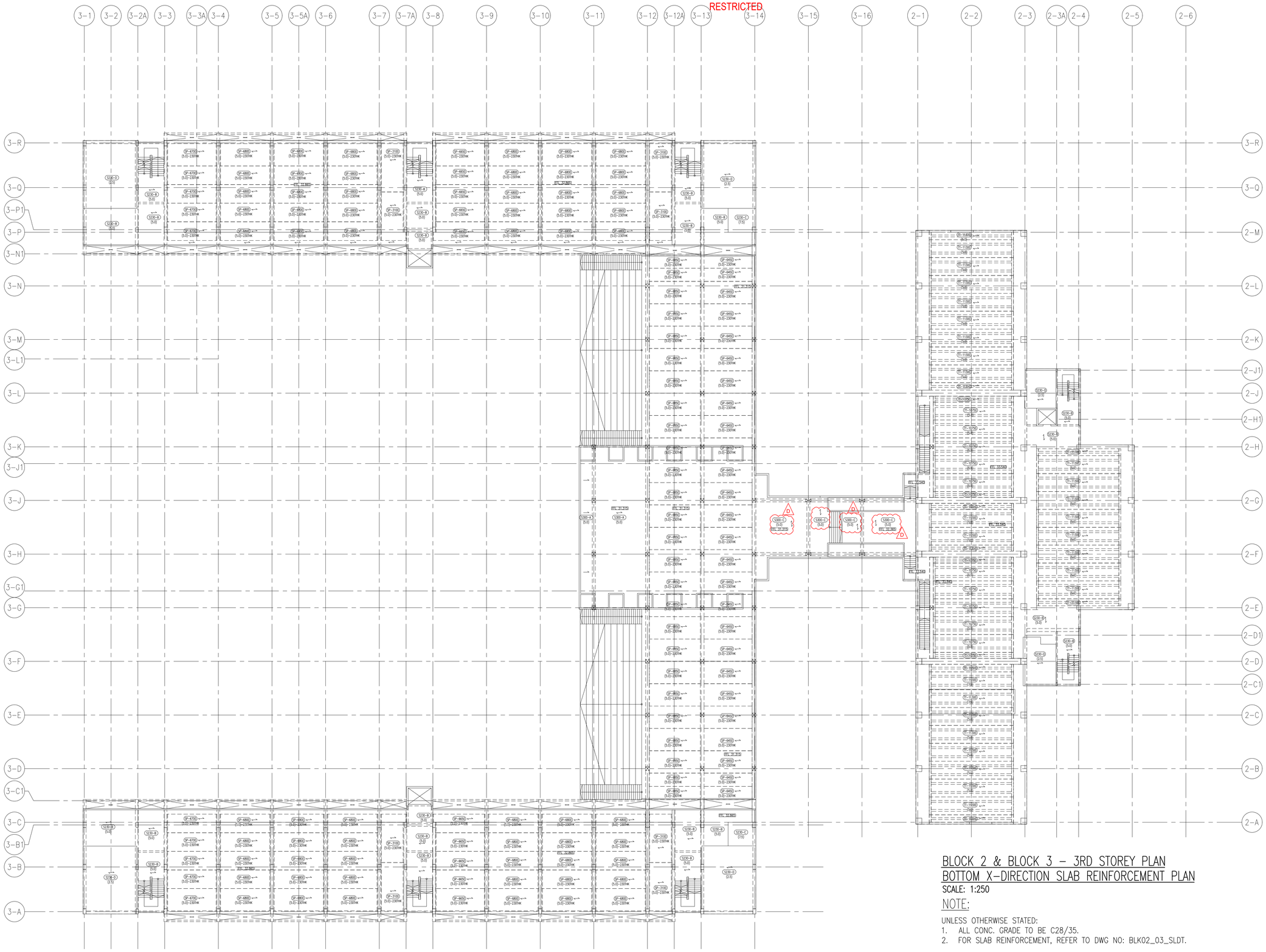


## BLOCK 2 & BLOCK 3 – 3RD STOREY PLAN
## BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

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RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| D | 04/10/2023 | TWA | Blk 3-3rd Sty GL 13-16 slab rebar direction changes |

60 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

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DRAWING TITLE

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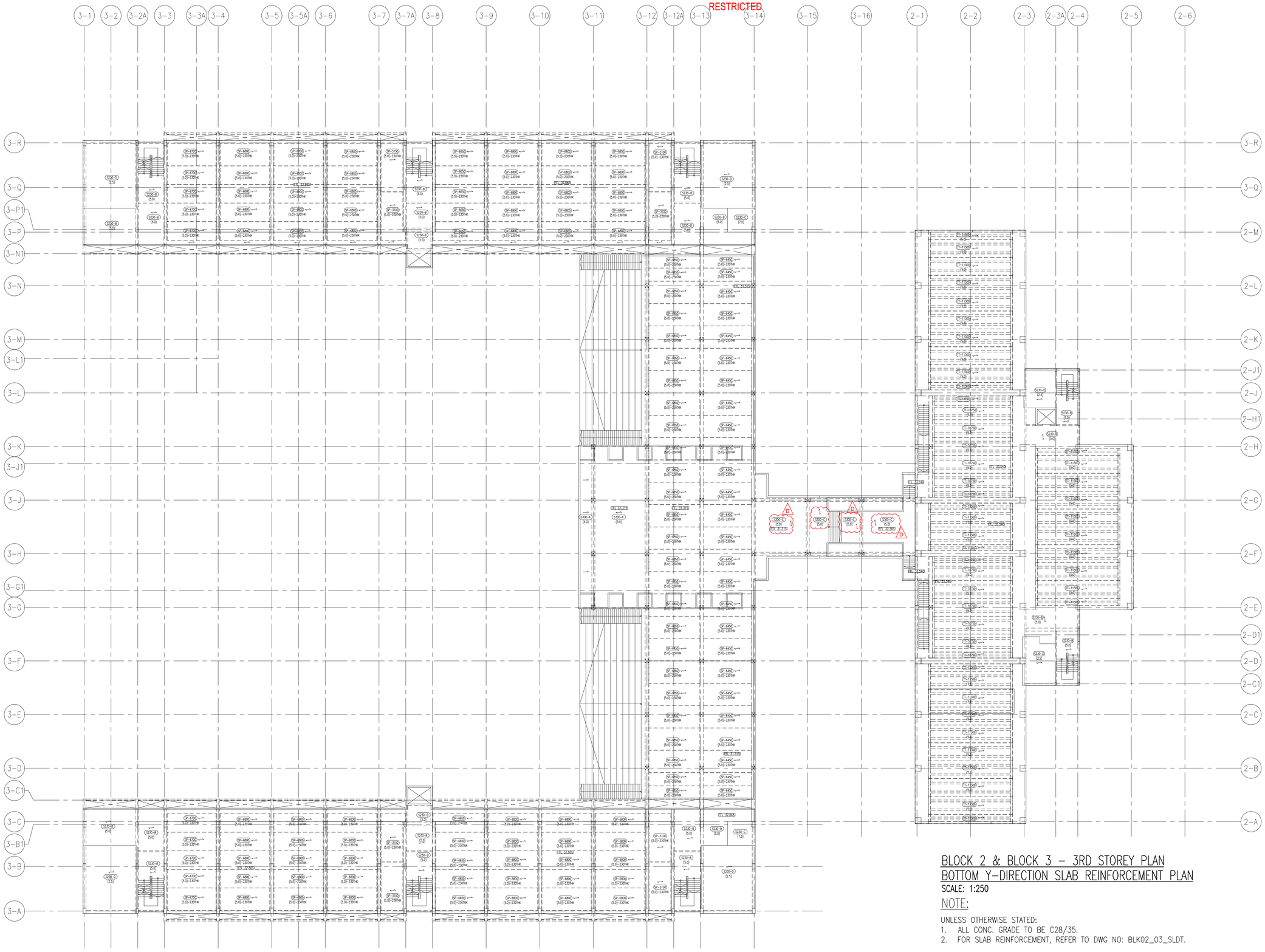


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| D | 04/10/2023 | TWA | Blk 3-3rd Sty GL 13-16 slab rebar direction changes |

43 sheet of 90

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VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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**ID ARCHITECTS PTE LTD**
3 HarbourFront Place, #03-01,
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ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT

TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3 – 3RD STOREY PLAN
BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
| Scale | AS SHOWN | | Sources | |

Filename S_WS1416_BLK02_03_SLDT_10

Drawing no.
S_WS1416_BLK02_03_FP03_SLDT_BTMY_ST09

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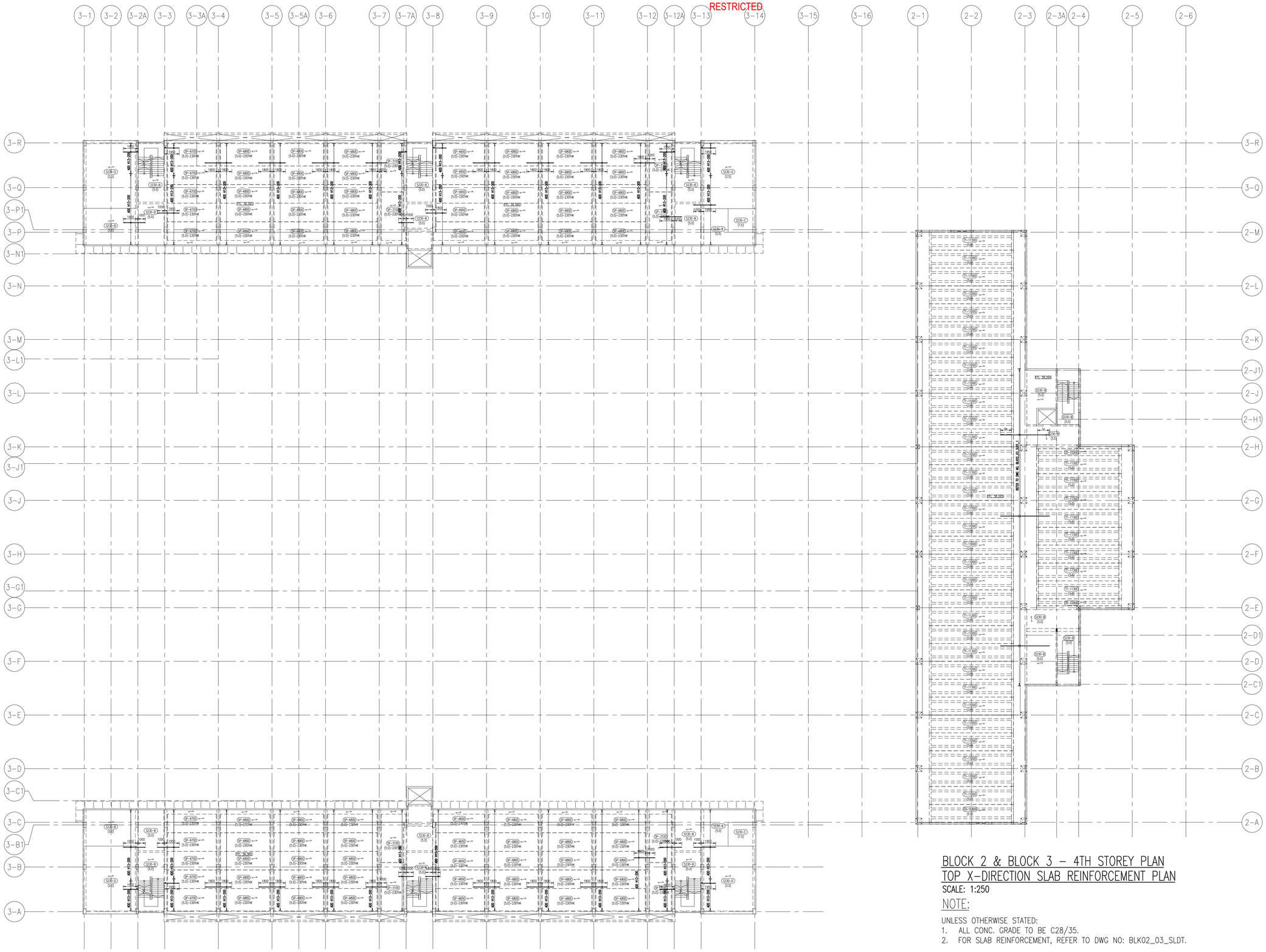


## BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
## TOP X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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| – | 04/10/2023 | TWA | ST09 NOA RECEIVED |

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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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PROJECT TITLE

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DRAWING TITLE

BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
TOP X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_11

Drawing no.
S_WS1416_BLK02_03_FP04_SLDT_TOPX_ST09

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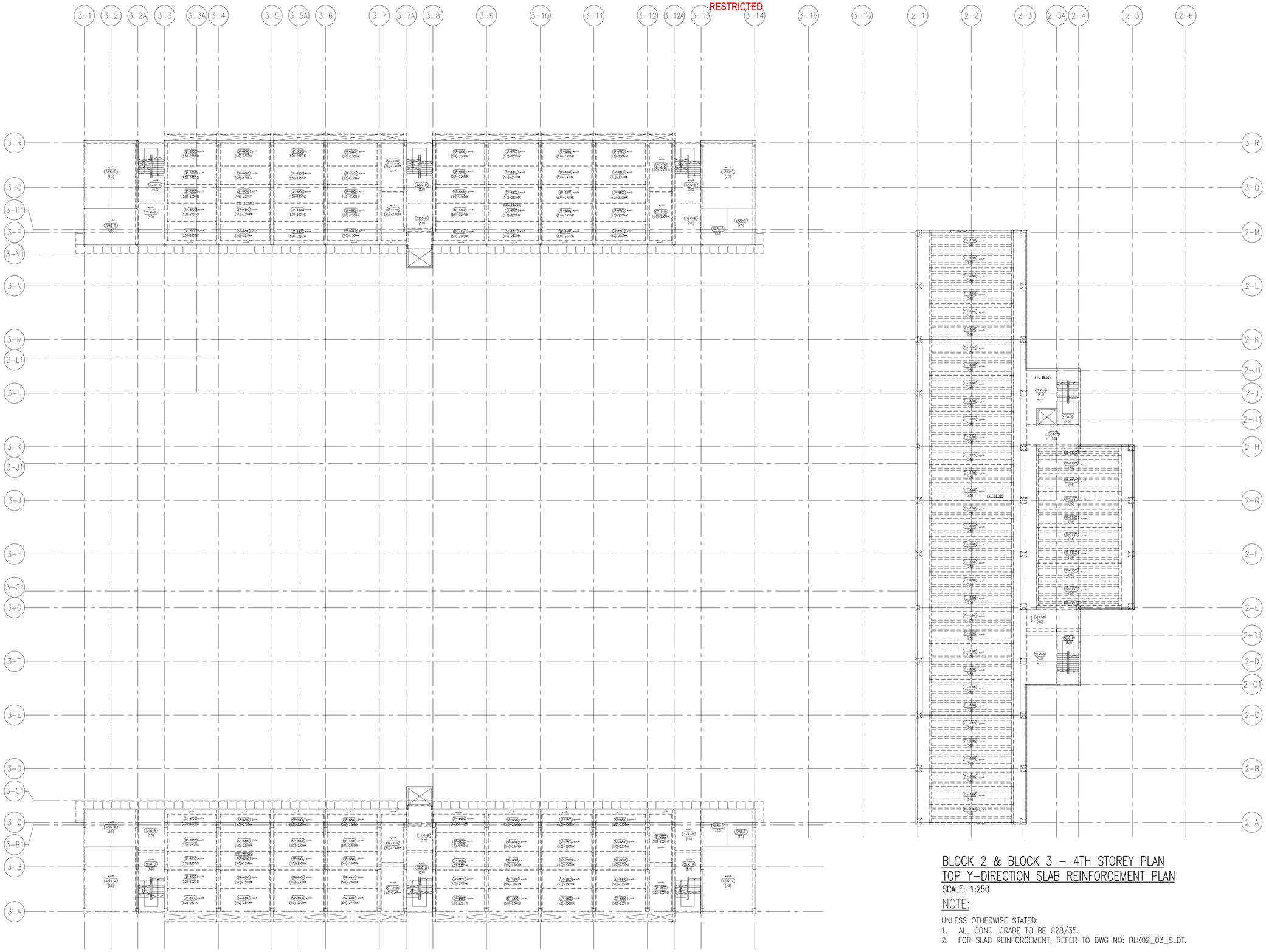


## BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
## TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE

BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

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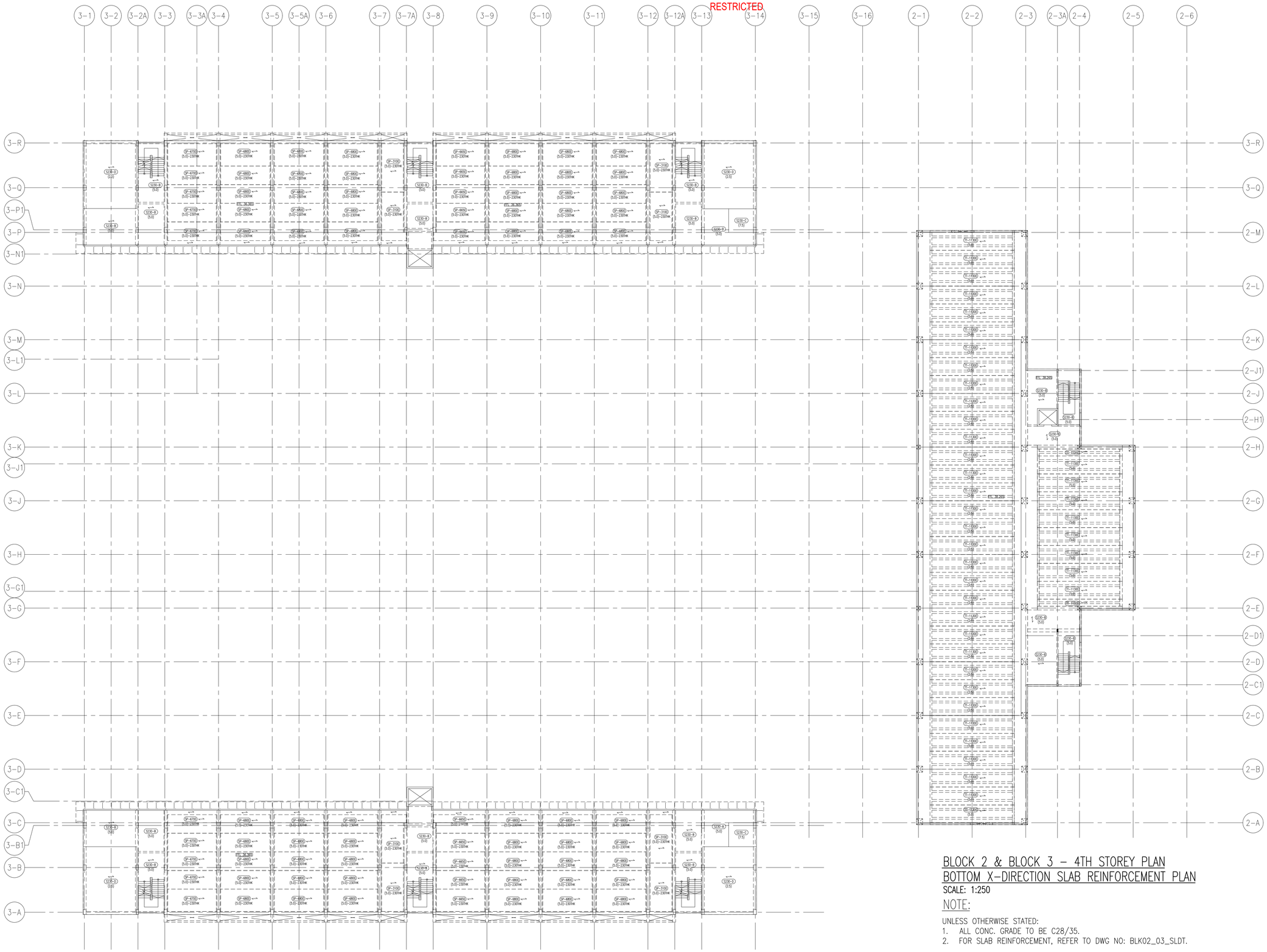


## BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
## BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
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2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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DRAWING TITLE

BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
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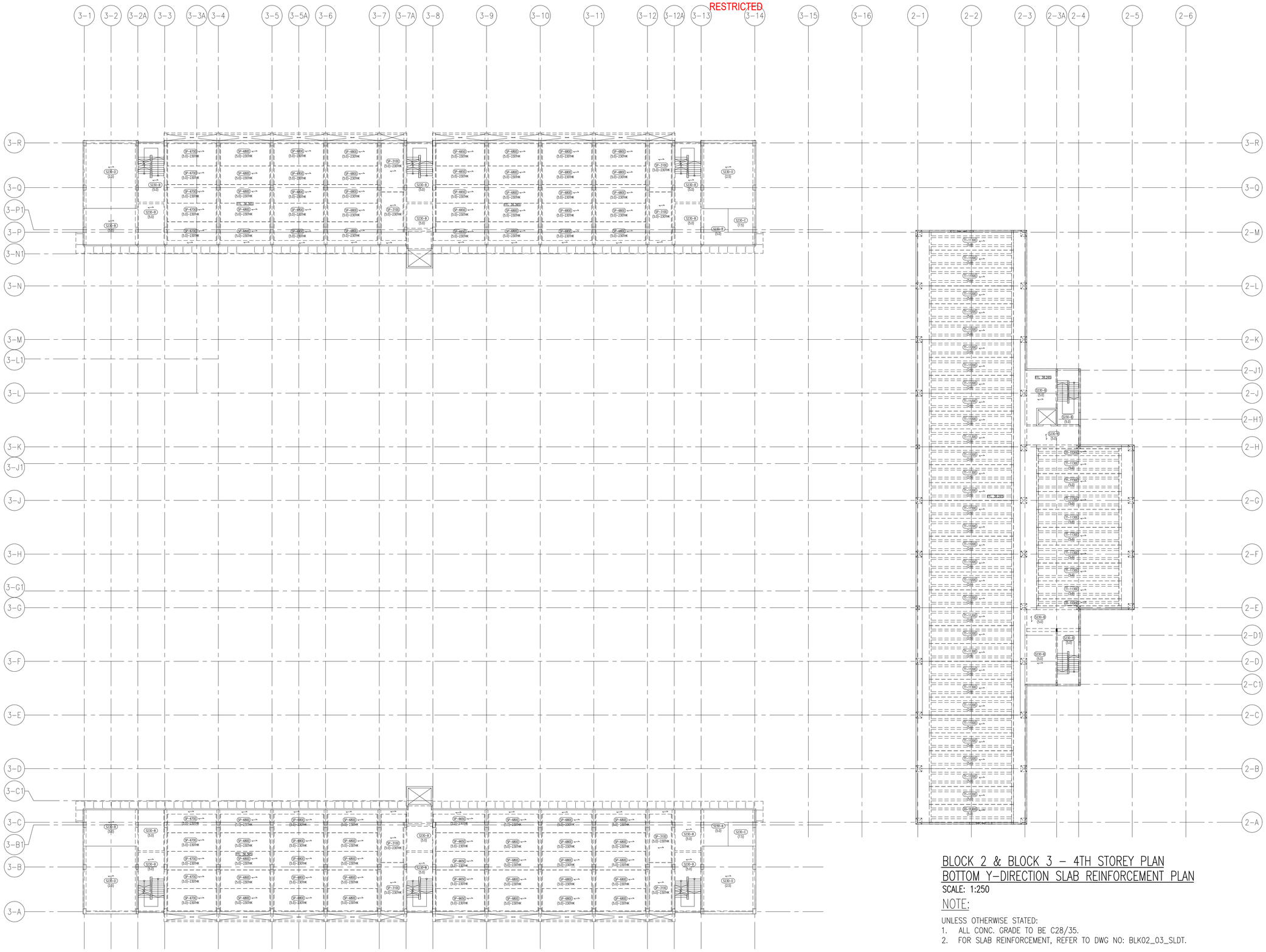


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## BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
## BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

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2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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PROJECT TITLE

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DRAWING TITLE

BLOCK 2 & BLOCK 3 – 4TH STOREY PLAN
BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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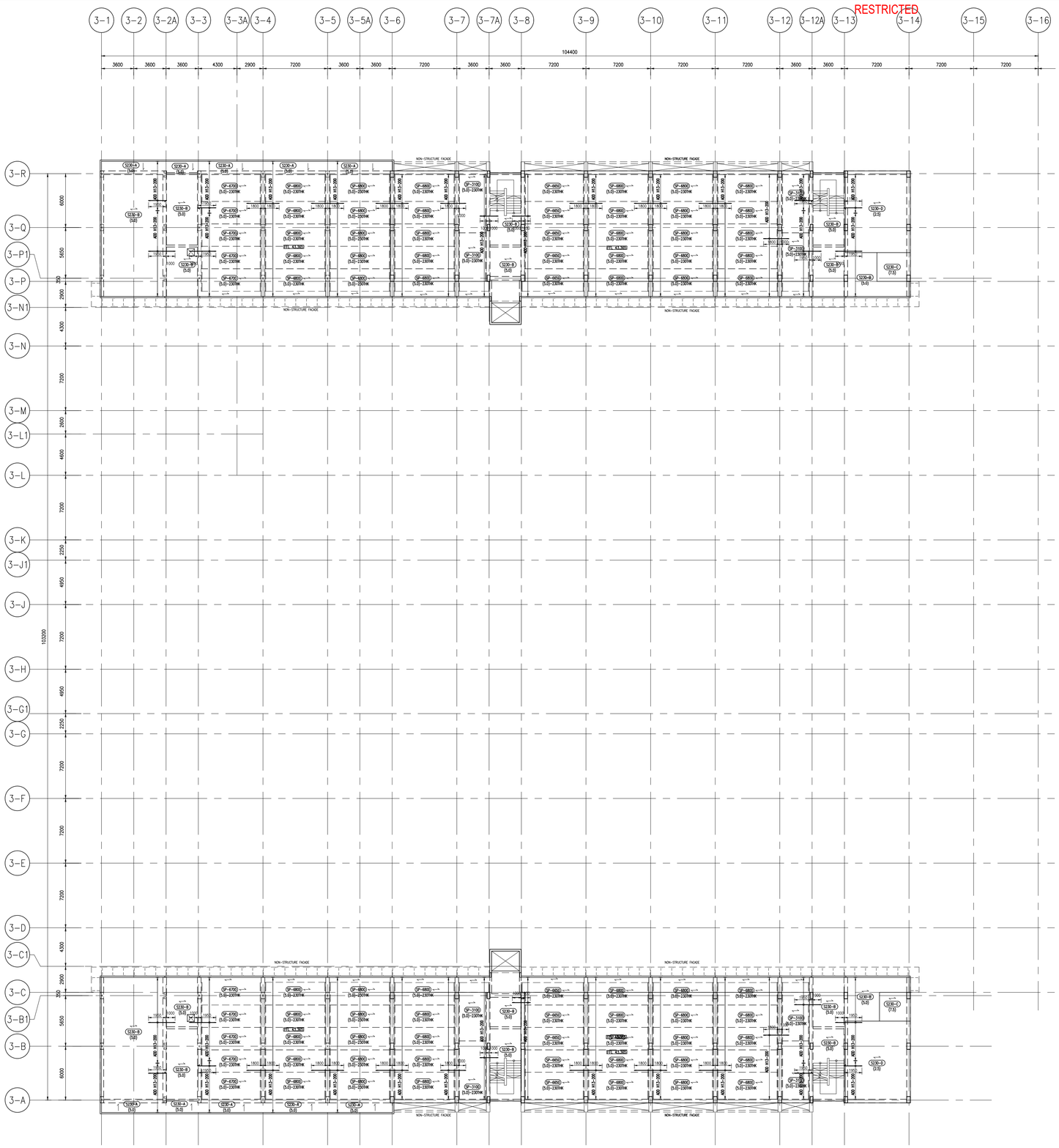


## BLOCK 3 – 6TH STOREY PLAN
## TOP X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

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2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.



| REV. | DATE | APPR. | DESCRIPTION |
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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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DRAWING TITLE

BLOCK 2 & BLOCK 3 – 6TH STOREY PLAN
TOP X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. | |
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| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
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Filename S_WS1416_BLK02_03_SLDT_12

Drawing no.
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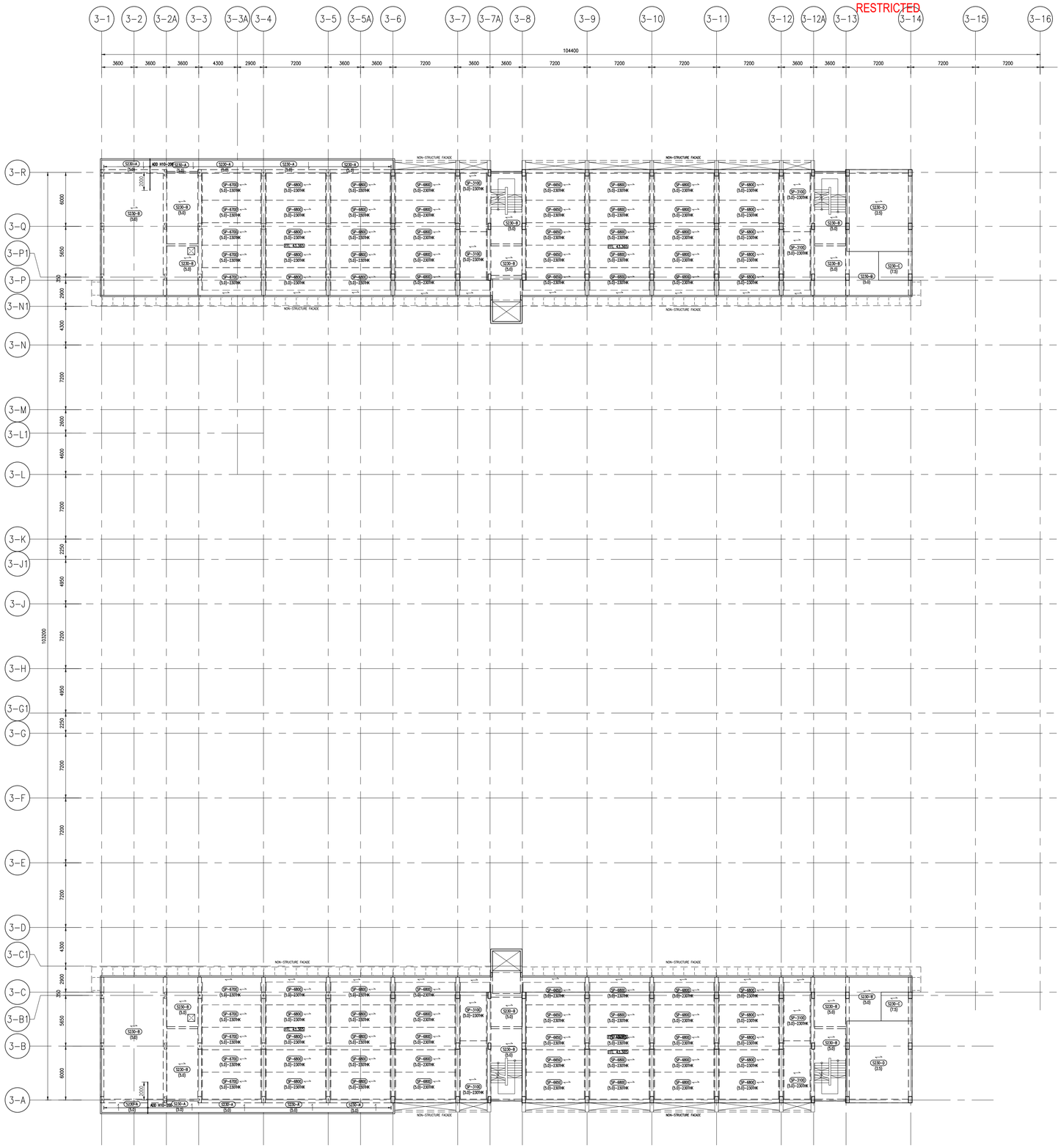


## BLOCK 3 – 6TH STOREY PLAN
## TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

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(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
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ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT

TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3 – 6TH STOREY PLAN
TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
| Scale | AS SHOWN | | Sources | |

Filename S_WS1416_BLK02_03_SLDT_12

Drawing no.
S_WS1416_BLK02_03_FP05_SLDT_TOPY_ST09

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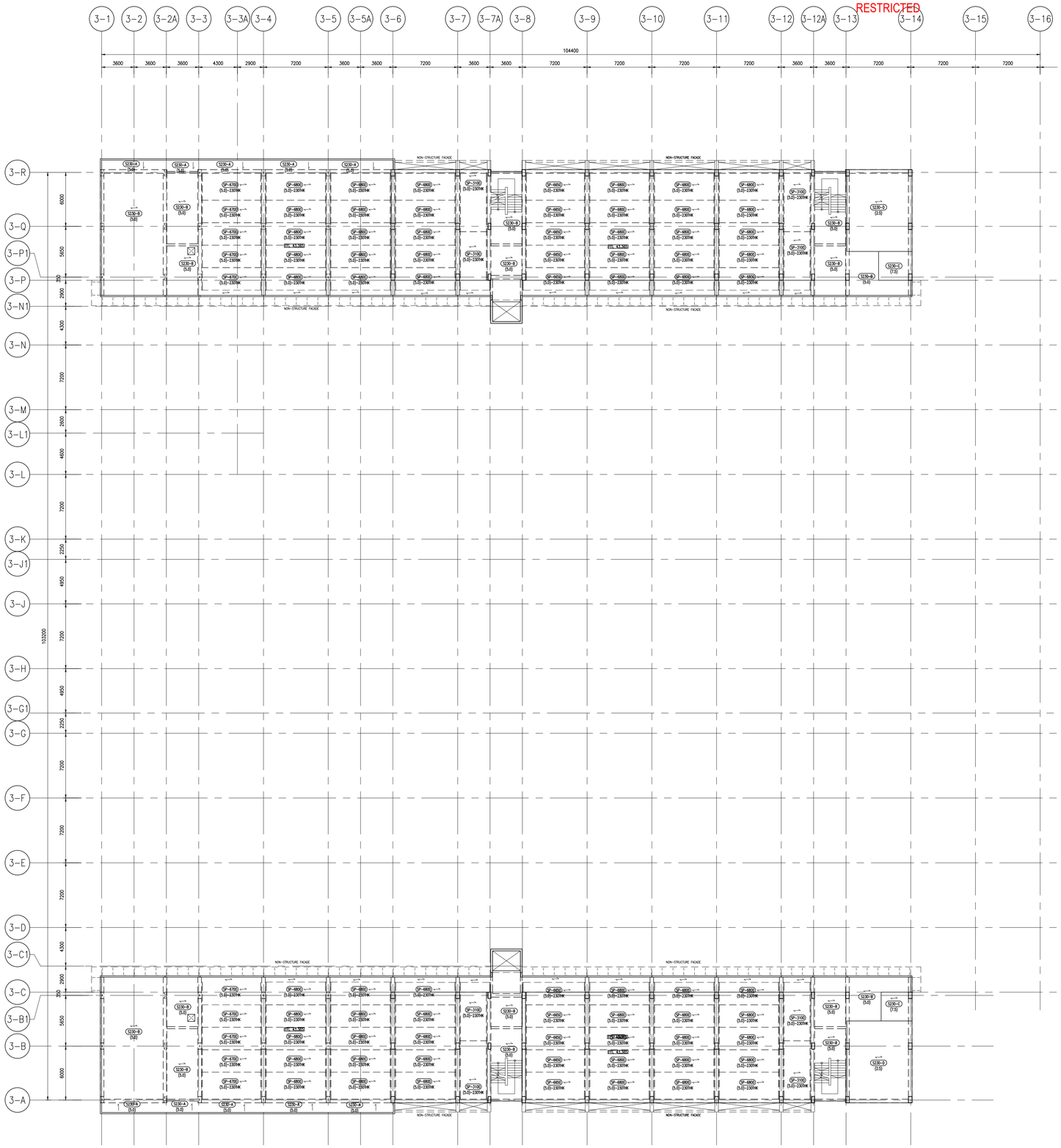


# BLOCK 3 – 6TH STOREY PLAN
# BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
2. FOR SLAB REINFORCEMENT, REFER TO DWG NO: BLK02_03_SLDT.

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| REV. | DATE | APPR. | DESCRIPTION |
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| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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HCD ( Army Camps )
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DRAWING TITLE

BLOCK 2 & BLOCK 3 – 6TH STOREY PLAN
BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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Drawing no.
S_WS1416_BLK02_03_FP05_SLDT_BTMX_ST09

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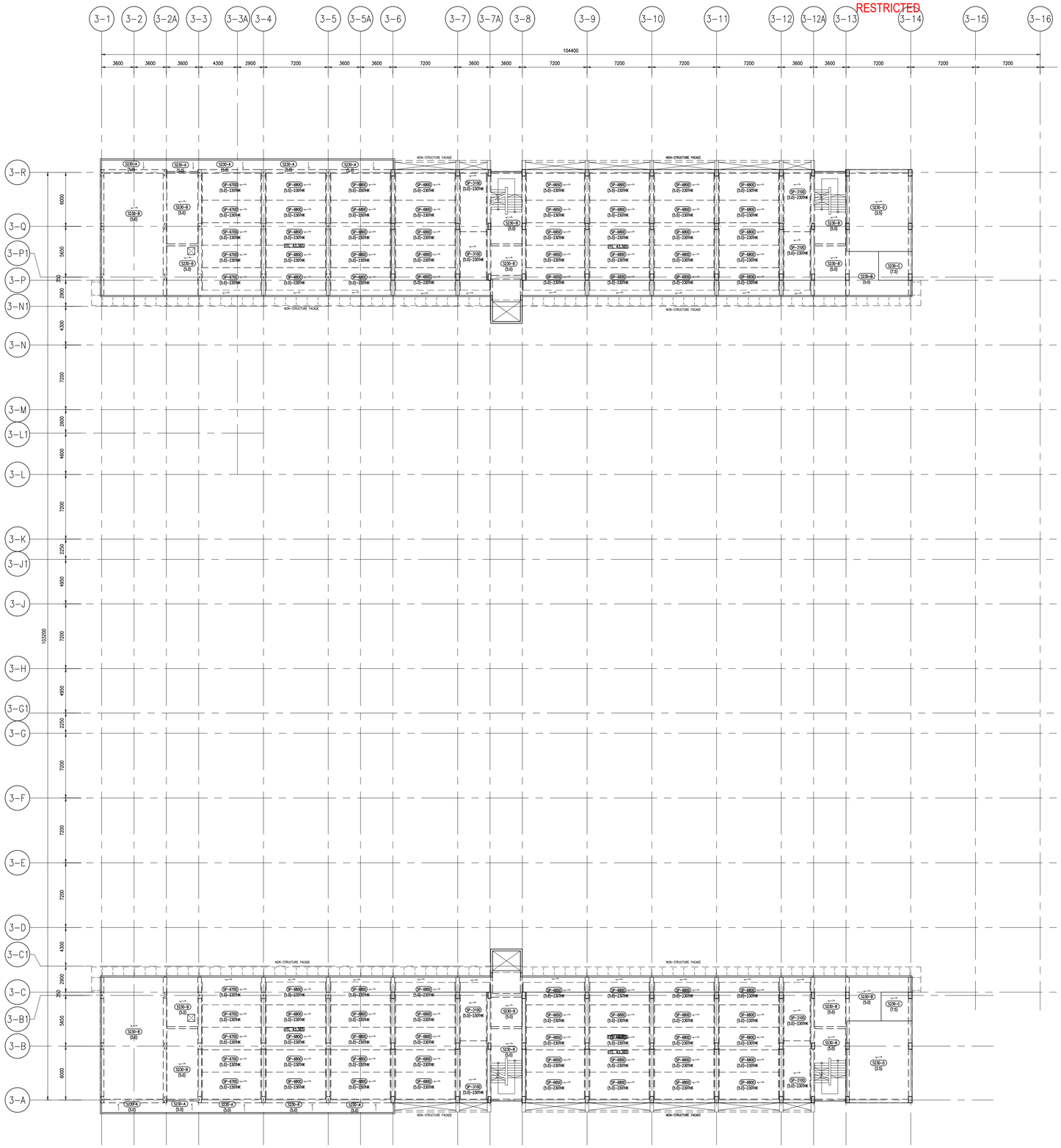


## BLOCK 3 – 6TH STOREY PLAN
## BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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DRAWING TITLE
BLOCK 2 & BLOCK 3 – 6TH STOREY PLAN
BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. | |
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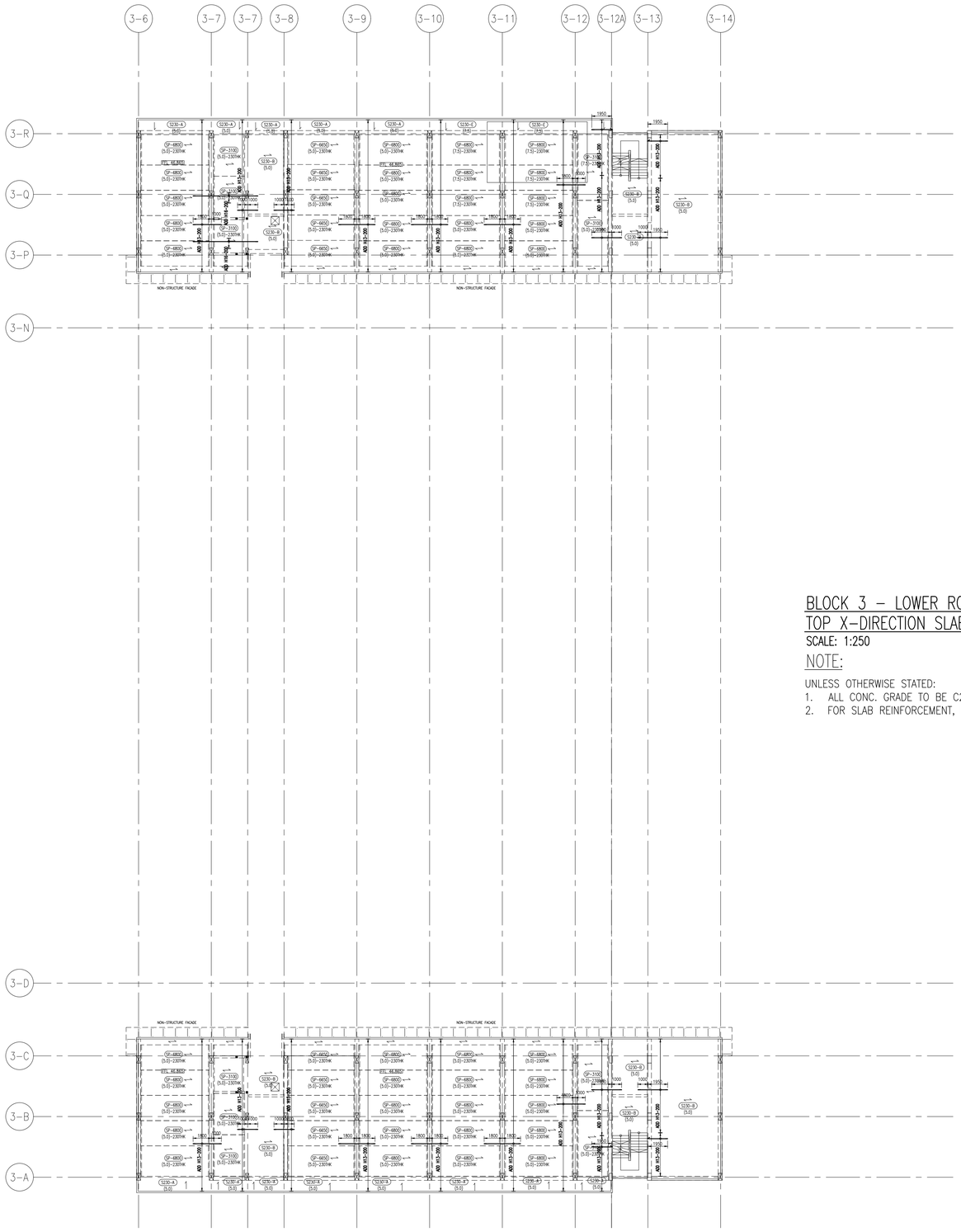


# BLOCK 3 – LOWER ROOF PLAN
# TOP X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

## NOTE:

UNLESS OTHERWISE STATED:
1. ALL CONC. GRADE TO BE C28/35.
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Date : APR 2024

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DRAWING TITLE

BLOCK 2 & BLOCK 3 – ROOF PLAN
TOP X-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
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| Drawn | TWA | 5/2022 | Revision – |
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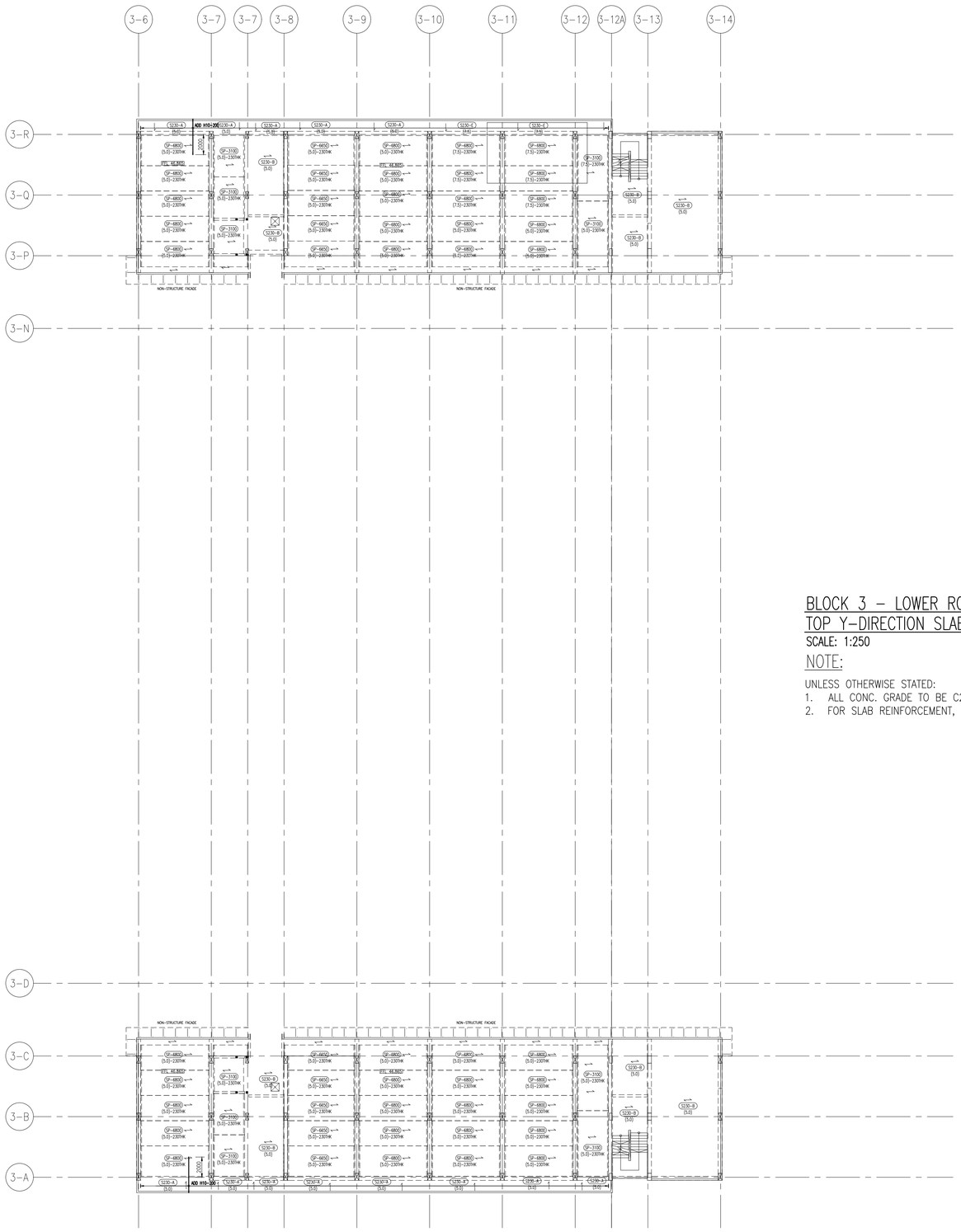


## BLOCK 3 – LOWER ROOF PLAN
## TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

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DRAWING TITLE

BLOCK 2 & BLOCK 3 – ROOF PLAN
TOP Y-DIRECTION SLAB REINFORCEMENT PLAN

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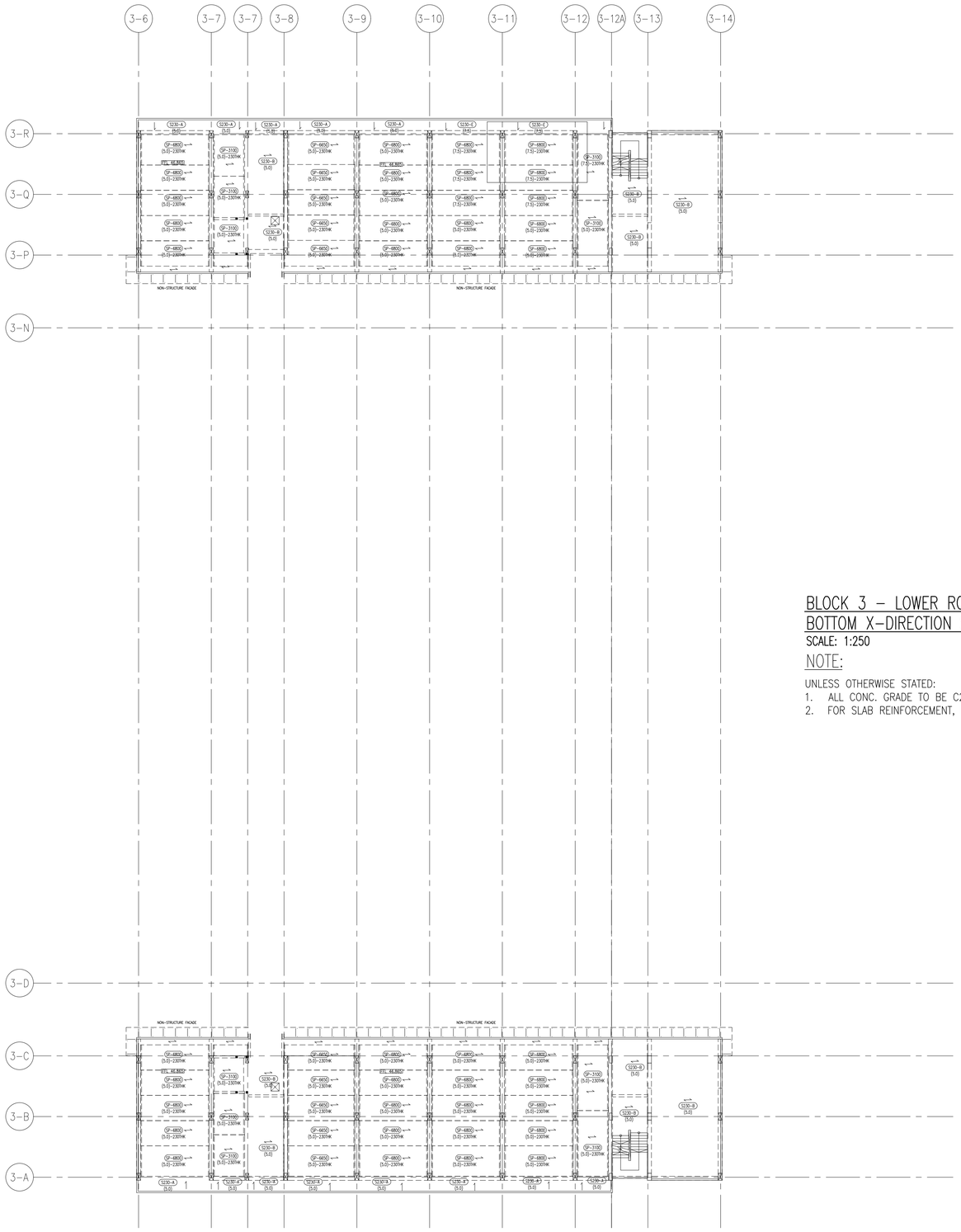


## BLOCK 3 – LOWER ROOF PLAN
## BOTTOM X-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

NOTE:

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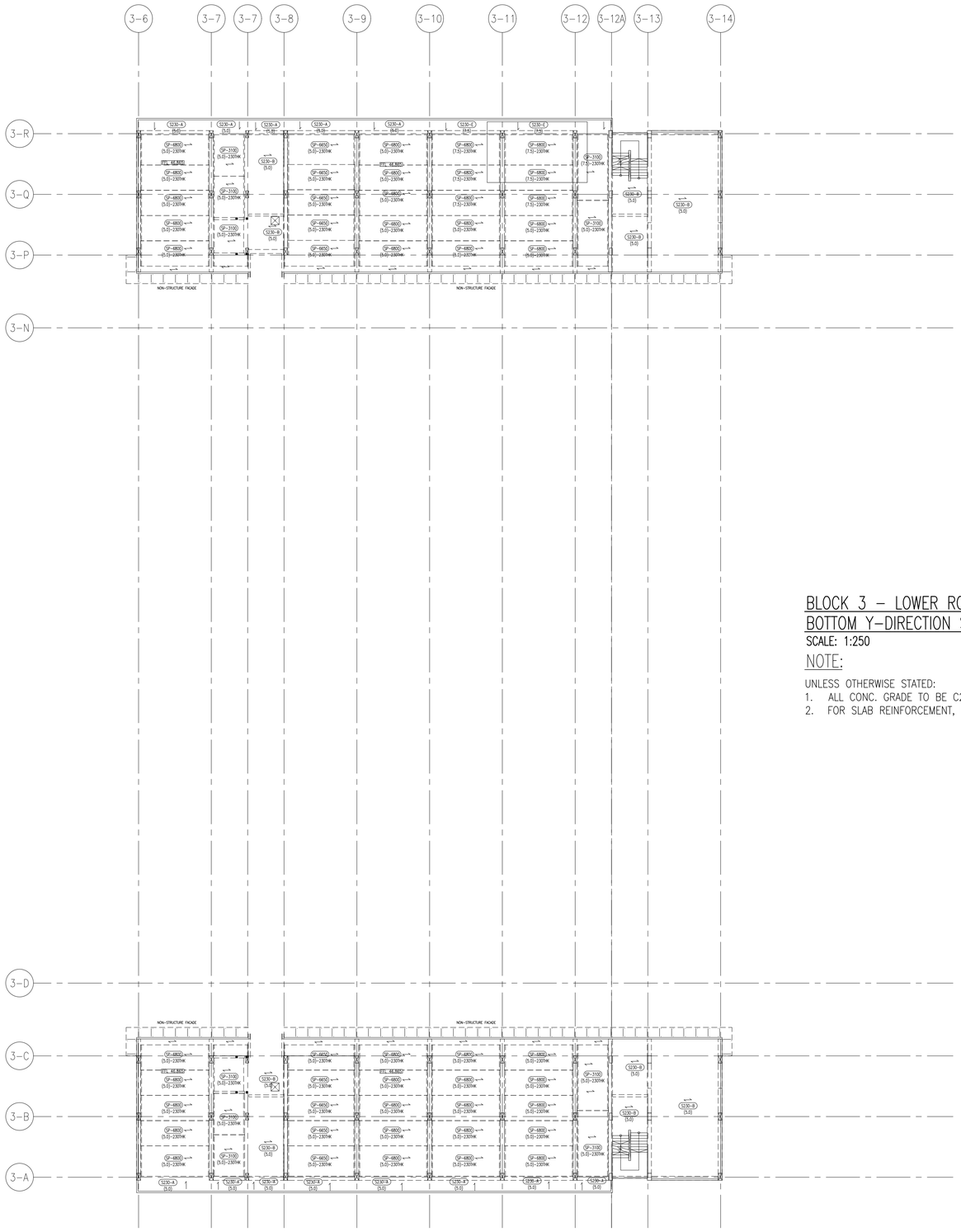


# BLOCK 3 – LOWER ROOF PLAN
# BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

SCALE: 1:250

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PROFESSIONAL ENGINEER
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4072
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AC ENDORSEMENT
ACCREDITED CHECKER
No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3 – ROOF PLAN
BOTTOM Y-DIRECTION SLAB REINFORCEMENT PLAN

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SLDT_13

Drawing no.
S_WS1416_BLK02_03_FP06_SLDT_BTMY_ST09

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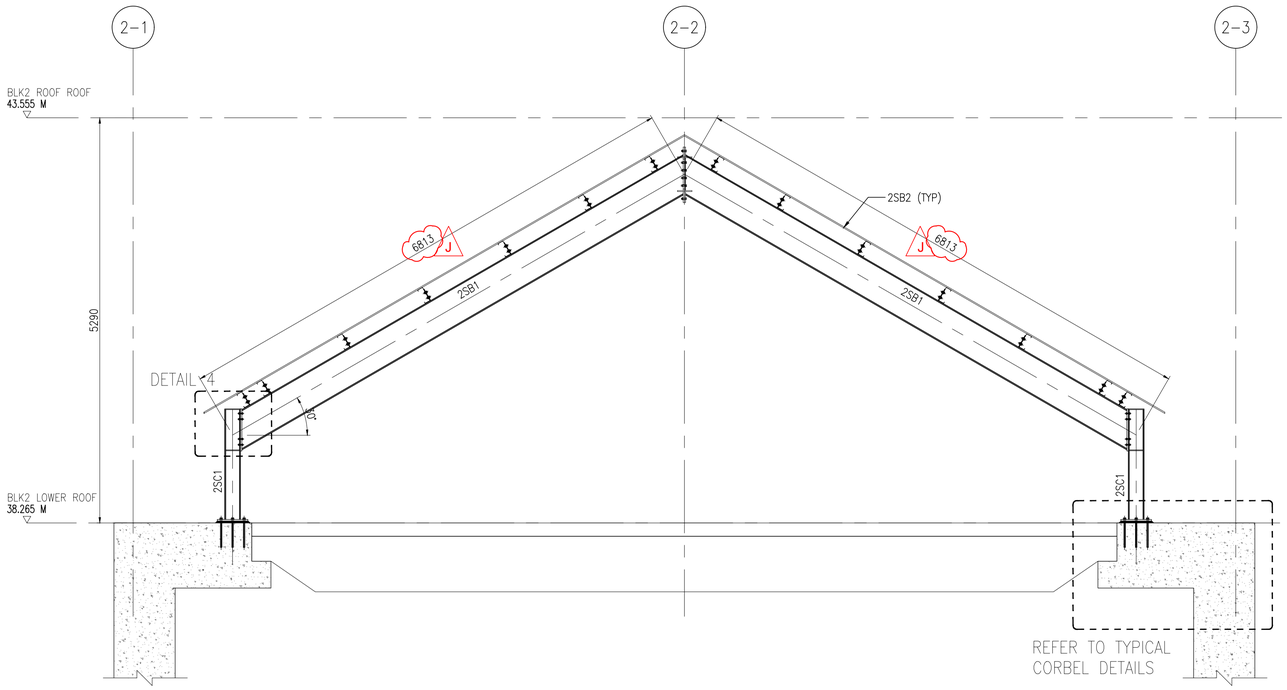
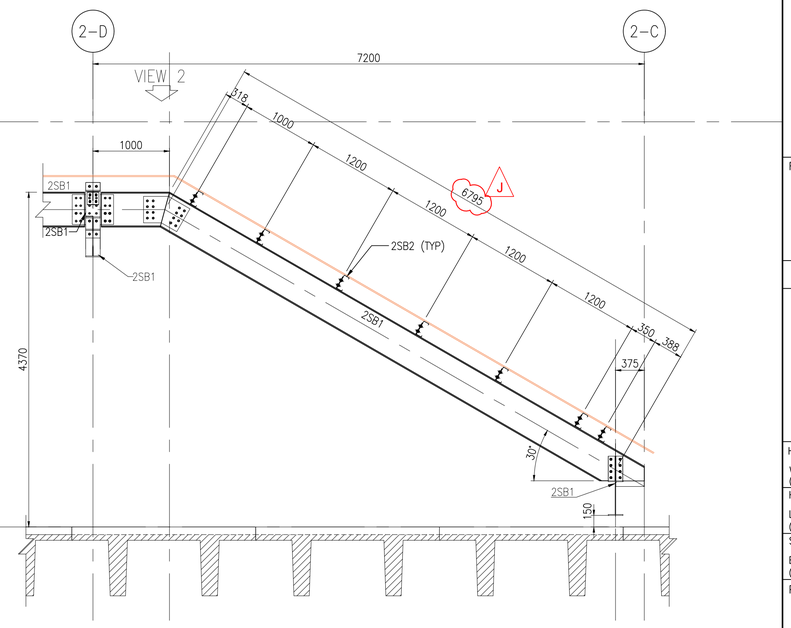



BLOCK 2 – SECTION 1
SCALE 1:40

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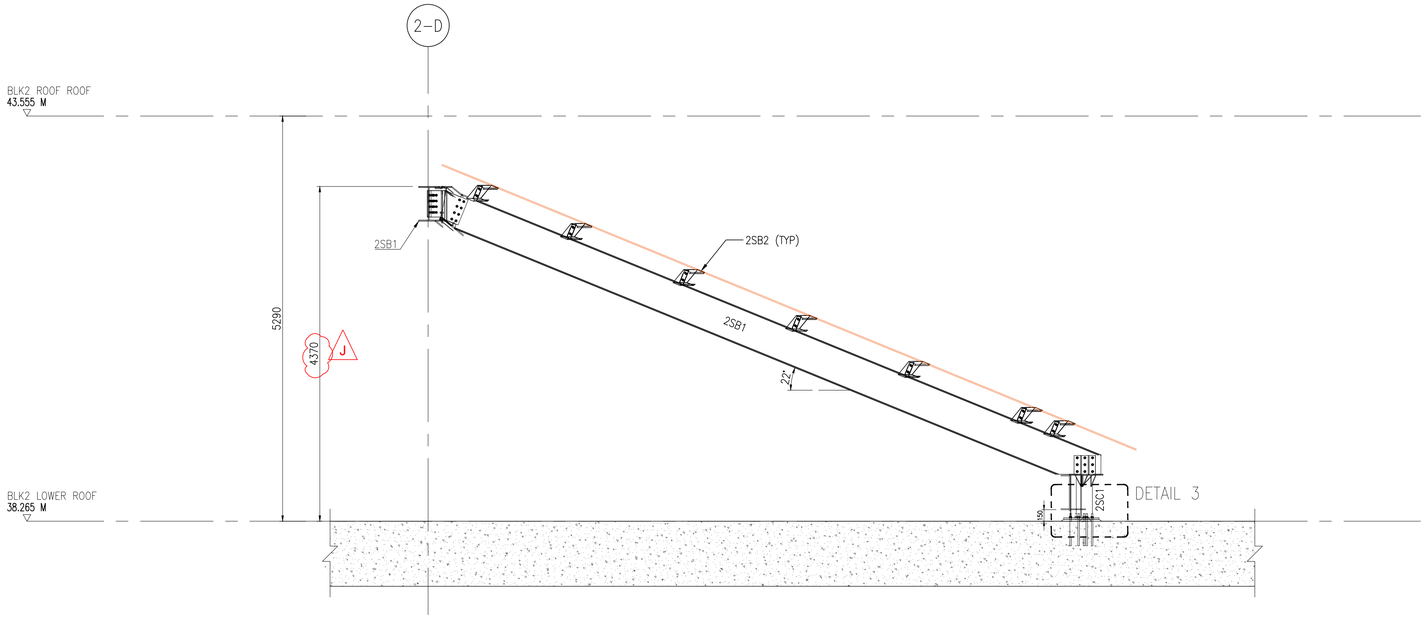
SCALE 1:40




BLOCK 2 – SECTION 3
SCALE 1:40

NOTES:

UNLESS OTHERWISE STATED:

1. ALL STRUCTURAL STEEL MEMBERS ARE TO BE CLASS 1 UNDER SINGAPORE BCI:2012 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/355.
2. ALL STEEL MEMBERS EXCEPT HOLLOW SECTIONS SHALL BE HOT-FORMED S355 AND HOT-DIP GALVANIZED.
3. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
4. STEEL MEMBER SIZE :
   - 2SB1 = UB 457x191x67.1 kg/m
   - 2SB2 = 200x2.4 LIPPED CHANNEL PURLIN @ 1200 C/C
   - 2SC1 = UC 203x203x46.1 kg/m
   - 2SB3 = SAG ROD 10mmø
   - 2SB4 = ANGLE 100x100x6 9.2 kg/m
5. ALL FILLET WELD SHALL BE 5mm THK. ALL ROUND.
6. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

DENOTES FIXED CONDITION

DENOTED PINNED CONDITION

7. NO SPLICE ARE ALLOWED AT MAIN MEMBERS. L

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| L | 30/10/2023 | TWA | note added. |
| J | 04/10/2023 | TWA | Blk 2 Steel roof span reduced. |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

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AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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PE ENDORSEMENT

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PROJECT TITLE

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DRAWING TITLE

BLOCK 2 & BLOCK 3

STEEL ROOF CONNECTION DETAILS – 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_SCDT_1_ST09

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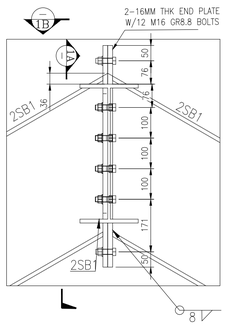
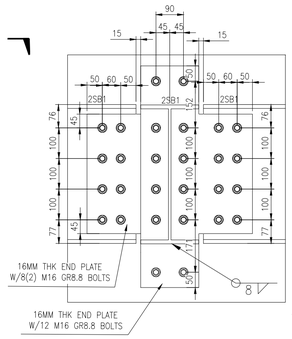
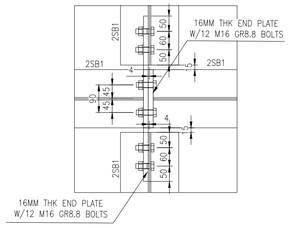



DETAIL 1
SCALE 1:10




SECTION 1A
SCALE 1:10




SECTION 1B
SCALE 1:10

TYPICAL CONNECTION 2SB1 TO 2SB1 (ROOF PITCH)
SCALE: 1:10

NOTES:

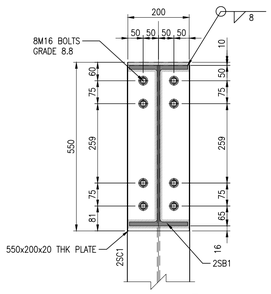
UNLESS OTHERWISE STATED:

1. ALL STRUCTURAL STEEL MEMBERS ARE TO BE CLASS 1 UNDER SINGAPORE BCI:2012 OR ITS LATEST VERSION & QUALITY OF STRUCTURAL STEEL SHALL CONFORM TO STANDARDS BS EN 10025/355.
2. ALL STEEL MEMBERS EXCEPT HOLLOW SECTIONS SHALL BE HOT-FORMED S355 AND HOT-DIP GALVANIZED.
3. ALL STEEL HOLLOW SECTIONS SHALL BE COLD-FORM S275 AND HOT-DIP GALVANIZED.
4. STEEL MEMBER SIZE :
   - 2SB1 = UB 457x191x67.1 kg/m
   - 2SB2 = 200x2.4 LIPPED CHANNEL PURLIN @ 1200 C/C
   - 2SC1 = UC 203x203x46.1 kg/m
   - 2SB3 = SAG ROD 10mmø
   - 2SB4 = ANGLE 100x100x6 9.2 kg/m
5. ALL FILLET WELD SHALL BE 5mm THK. ALL ROUND.
6. ALL STRUCTURAL STEEL MEMBERS SPLICED JOINT SHALL BE DESIGNED TO MEMBER SECTION CAPACITY.

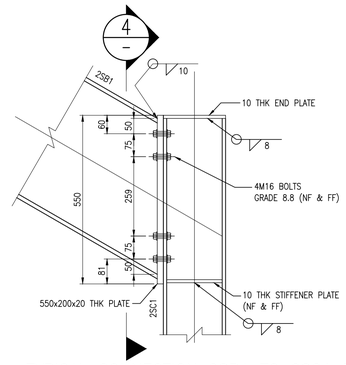
DENOTES FIXED CONDITION

DENOTED PINNED CONDITION

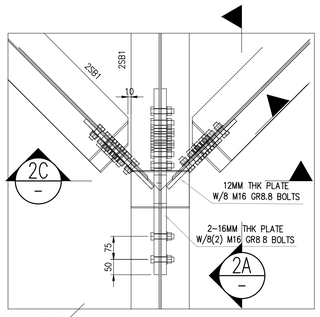
7. NO SPLICE ARE ALLOWED AT MAIN MEMBERS. L



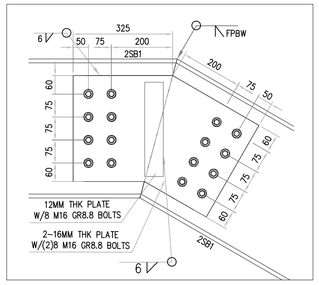

SECTION 4
SCALE 1:10



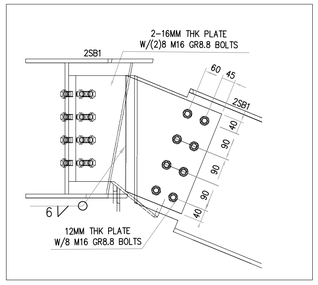

TYPICAL CONNECTION 2SB1 TO 2SC1 DETAIL
SCALE: 1:10



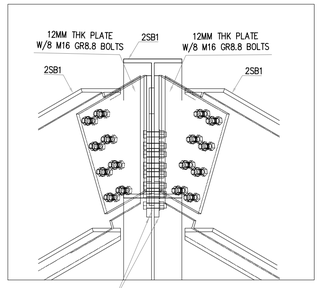

VIEW 2
SCALE 1:10



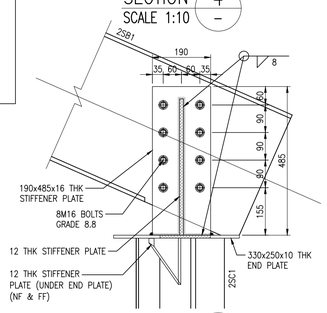

SECTION 2A
SCALE 1:10



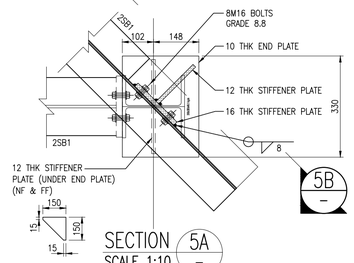

SECTION 2B
SCALE 1:10



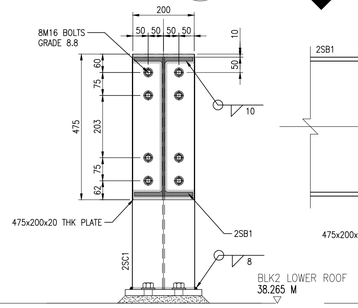

SECTION 2C
SCALE 1:10



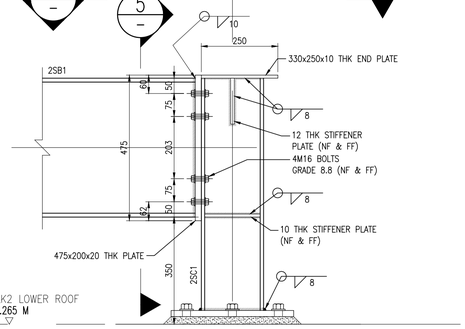

SECTION 5B
SCALE 1:10



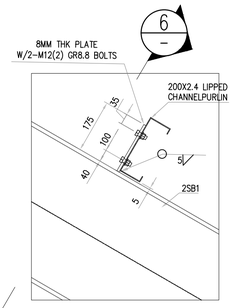

SECTION 5A
SCALE 1:10



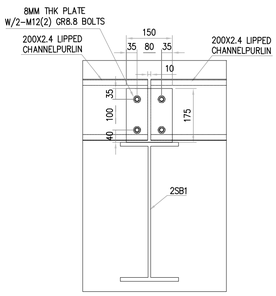

SECTION 5
SCALE 1:10



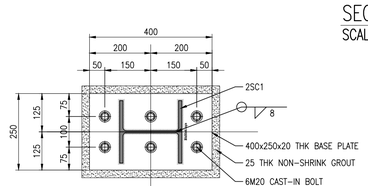

TYPICAL CONNECTION 2SB1 TO 2SC1 DETAIL
(ALONG GRIDLINE: 2-C & 2-K)
SCALE: 1:10



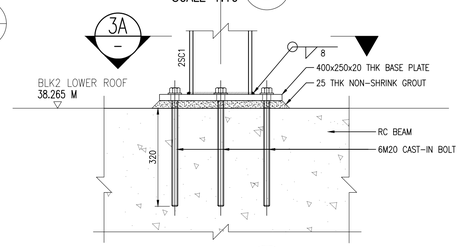

TYPICAL PURLIN CONNECTION DETAIL
SCALE: 1:10




SECTION 6
SCALE 1:10

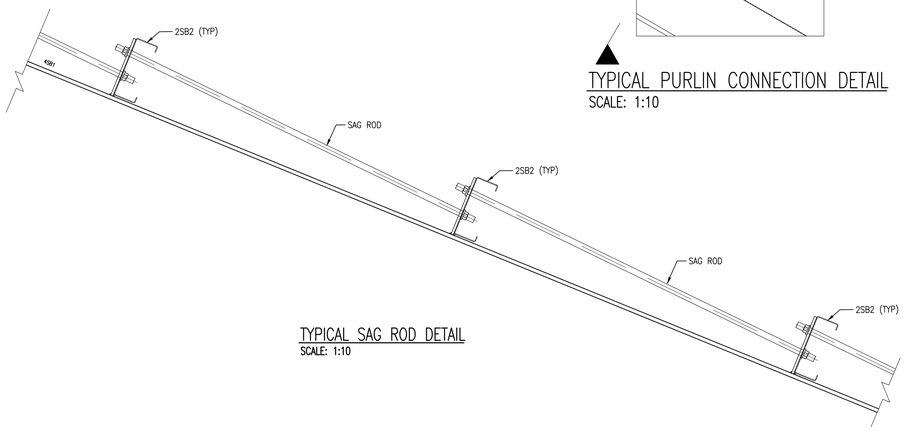



SECTION 3A
SCALE 1:10




DETAIL 3
SCALE 1:10

TYPICAL 2SC1 FOOTING DETAIL
SCALE: 1:10




TYPICAL SAG ROD DETAIL
SCALE: 1:10

RESTRICTED

| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| L | 04/10/2023 | TWA | Note added. |

75 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

.....

FOR OFFICIAL USE

AS-BUILT DRAWING
Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

PROJECT ARCHITECT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DRAWING TITLE

BLOCK 2 & BLOCK 3
STEEL ROOF CONNECTION DETAILS - 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision - |
| Scale AS SHOWN | | | Sources |

Filename S_WS1416_BLK02_03_FP

Drawing no.
S_WS1416_BLK02_03_SCDT_2_ST09


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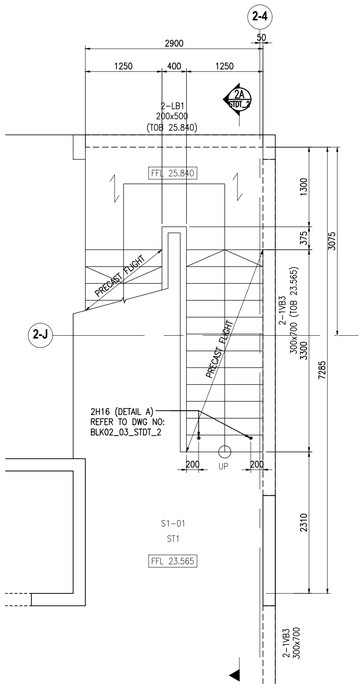
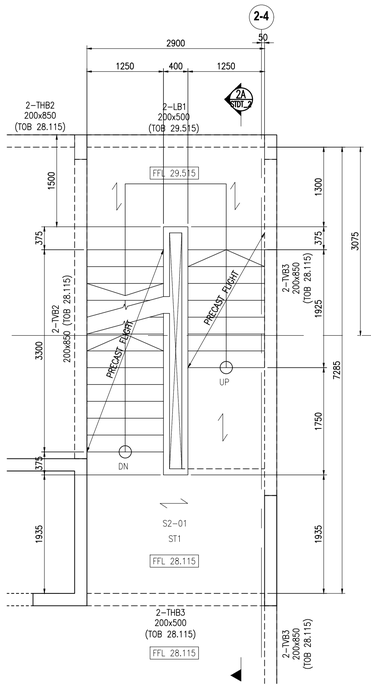
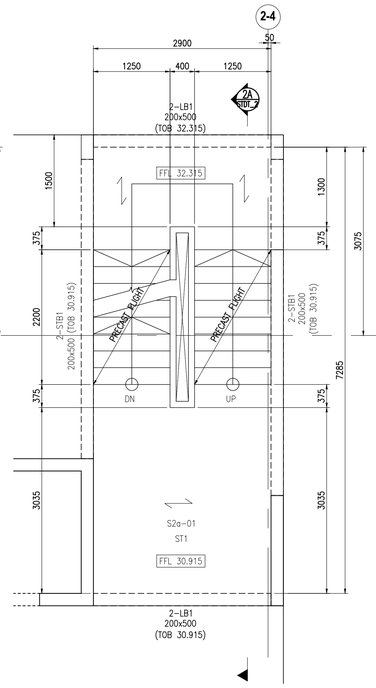
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.
2. ALL CONCRETE GRADE TO BE C28/35.



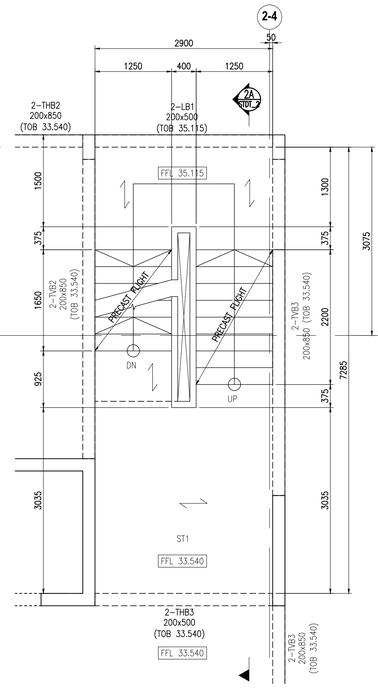

BLOCK 2 – 1ST STOREY PLAN
STAIRCASE S1-01
SCALE: 1:50



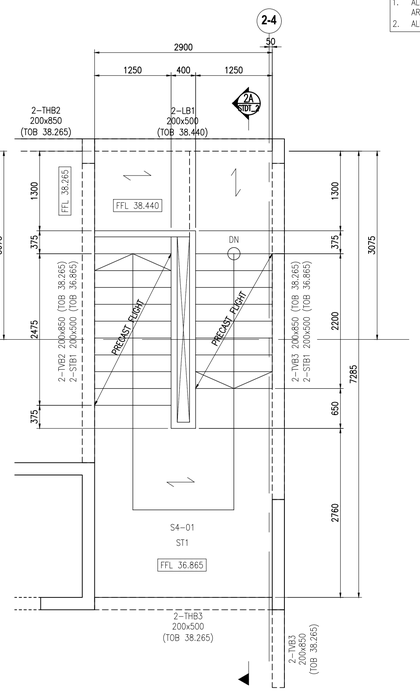

BLOCK 2 – 2ND STOREY PLAN
STAIRCASE S2-01
SCALE: 1:50



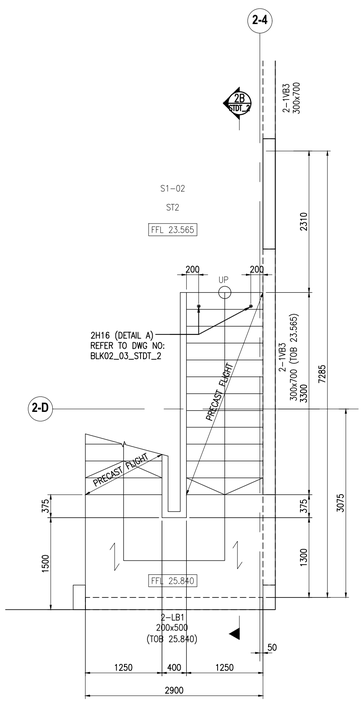

BLOCK 2 – INTERMEDIATE LANDING
STAIRCASE S2a-01
SCALE: 1:50



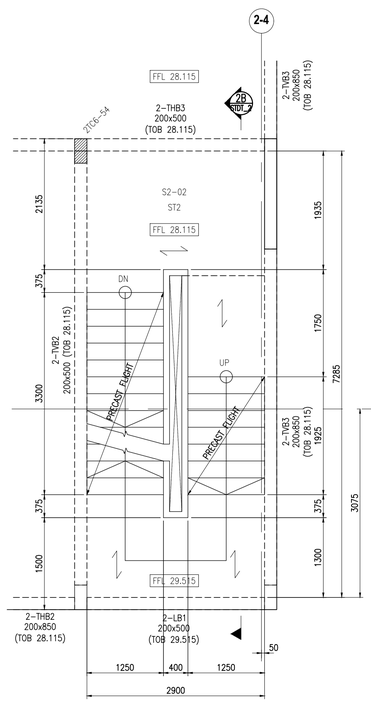

BLOCK 2 – 3RD STOREY PLAN
STAIRCASE S3-01
SCALE: 1:50



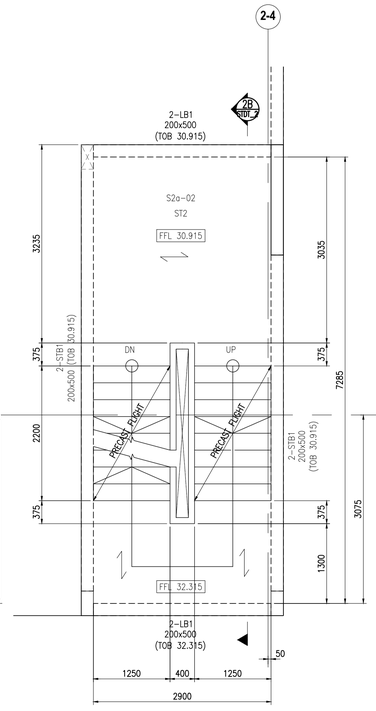

BLOCK 2 – LOWER ROOF PLAN
STAIRCASE S4-01
SCALE: 1:50



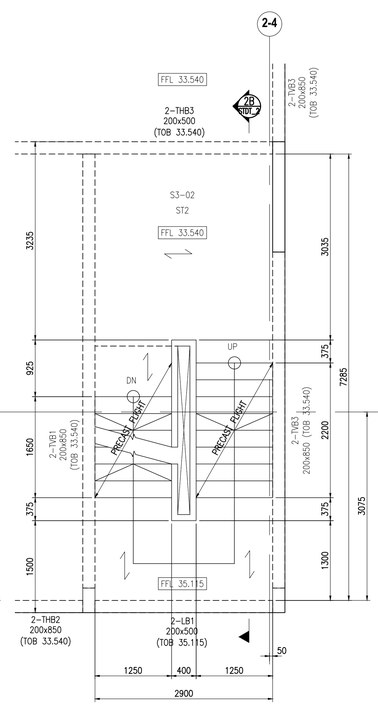

BLOCK 2 – 1ST STOREY PLAN
STAIRCASE S1-02
SCALE: 1:50



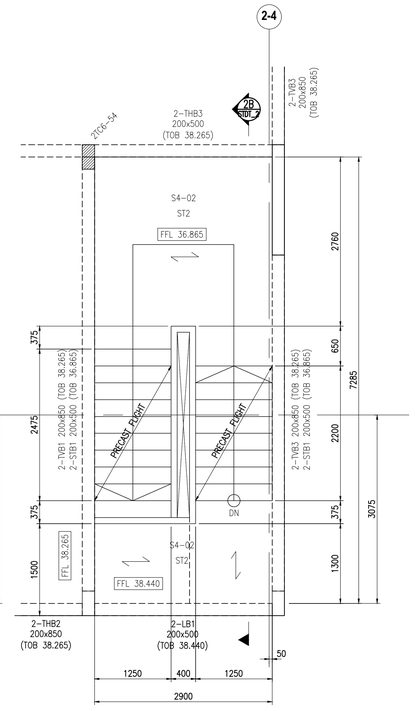

BLOCK 2 – 2ND STOREY PLAN
STAIRCASE S2-02
SCALE: 1:50




BLOCK 2 – INTERMEDIATE LANDING
STAIRCASE S2a-02
SCALE: 1:50




BLOCK 2 – 3RD STOREY PLAN
STAIRCASE S3-02
SCALE: 1:50




BLOCK 2 – LOWER ROOF PLAN
STAIRCASE S4-02
SCALE: 1:50

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|---|---|---|---|
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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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DSTA Defence Science & Technology Agency

HCD ( Army Camps )
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(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 1

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

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Drawing no.
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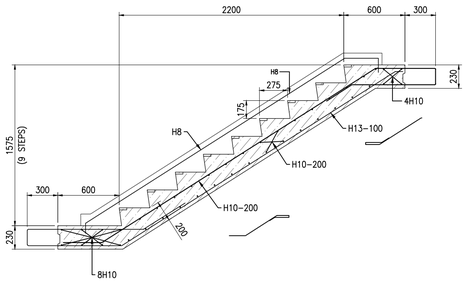
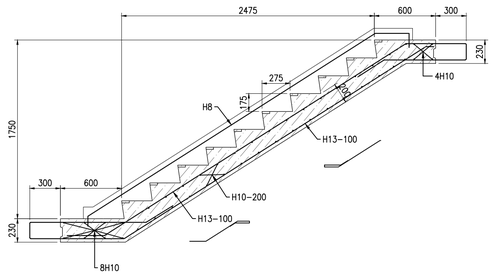



## PRECAST FLIGHT TYPE 1 DETAILS

SCALE: 1:30

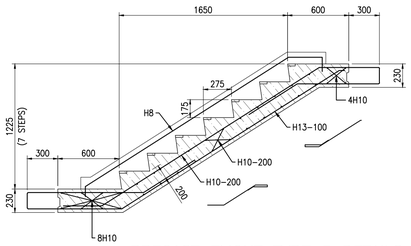
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 2 DETAILS

SCALE: 1:30

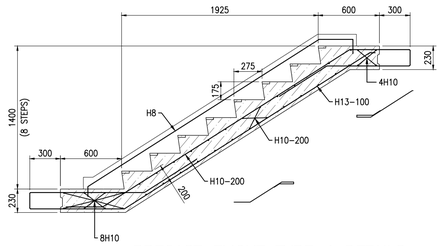
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 3 DETAILS

SCALE: 1:30

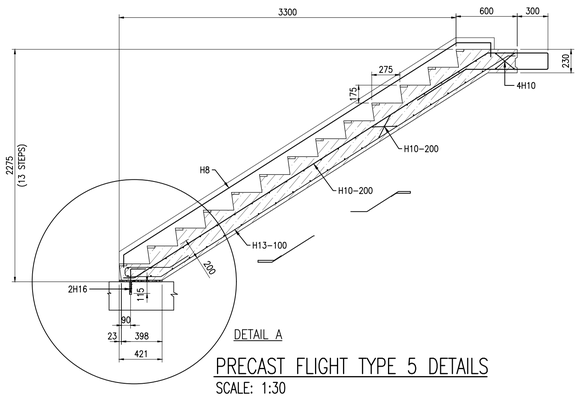
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 4 DETAILS

SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.



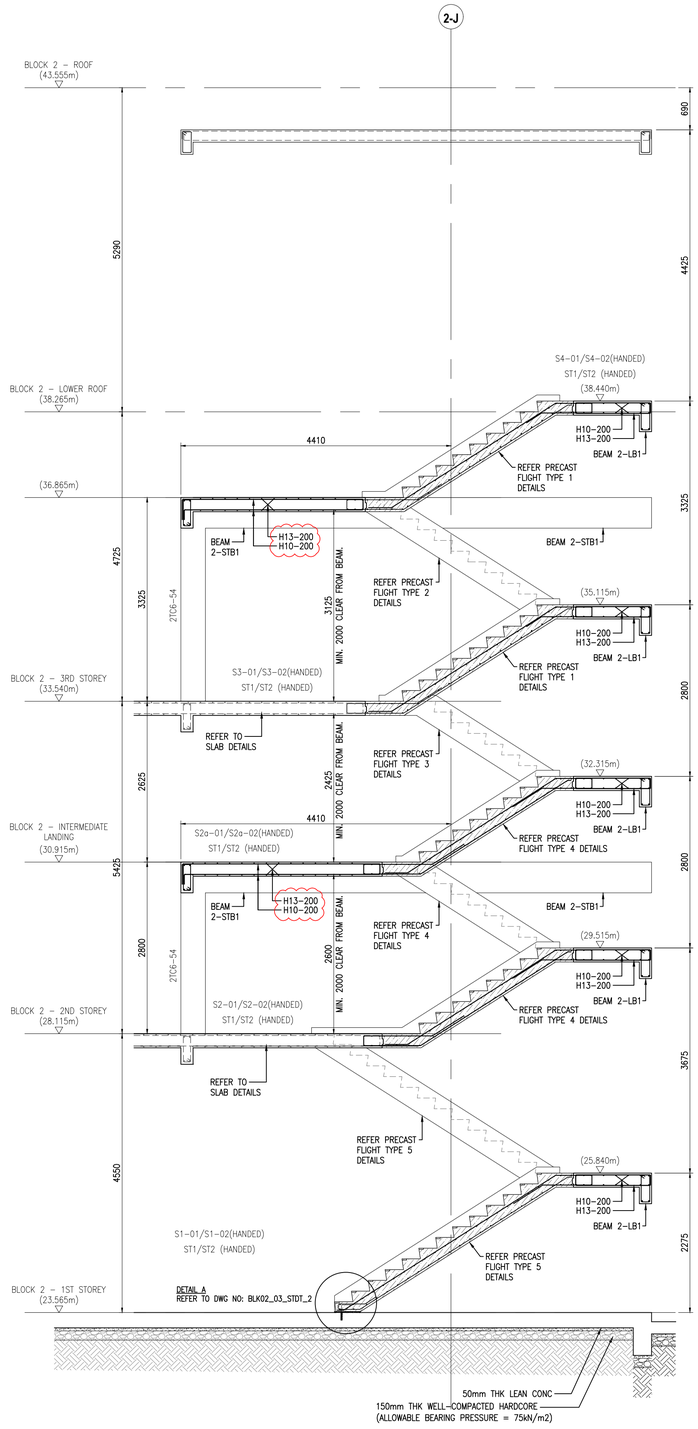

DETAIL A

## PRECAST FLIGHT TYPE 5 DETAILS

SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.
2. ALL CONCRETE GRADE TO BE C28/35.




SECTION 2A
SCALE 1:50 STDT_1

SECTION 2B (HANDED)
SCALE 1:50 STDT_1



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| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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SENIOR PROGRAMME MANAGER
EDMUND TEO
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in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
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C&S CONSULTANT

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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

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DRAWING TITLE

BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 2

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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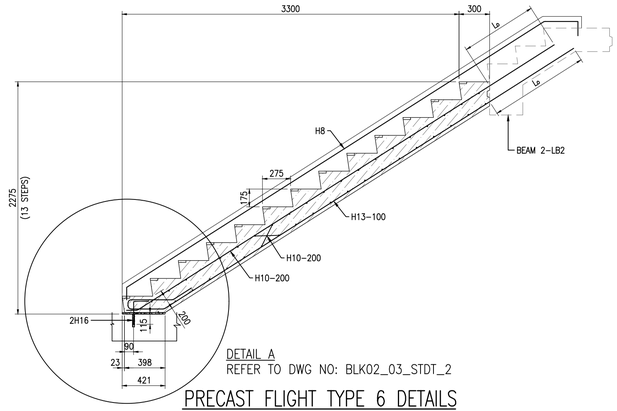
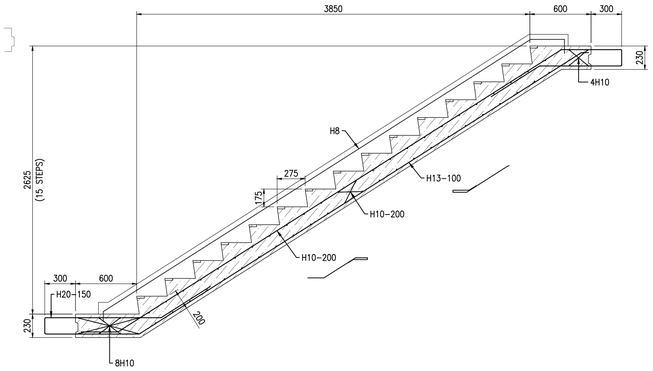



## PRECAST FLIGHT TYPE 6 DETAILS

SCALE: 1:30

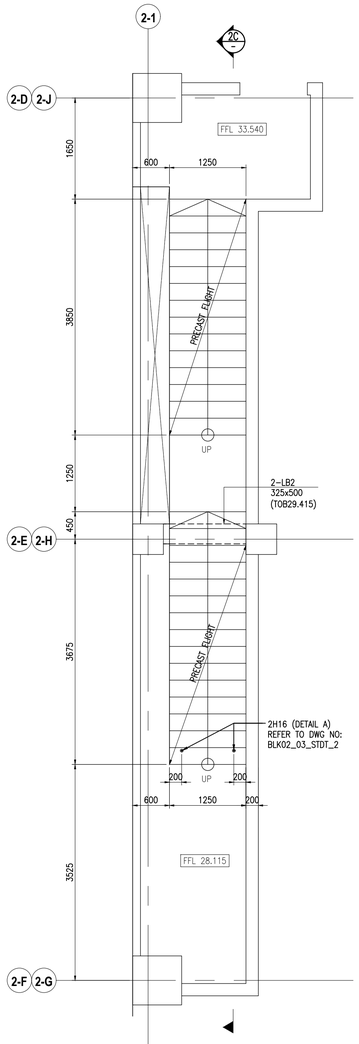
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 7 DETAILS

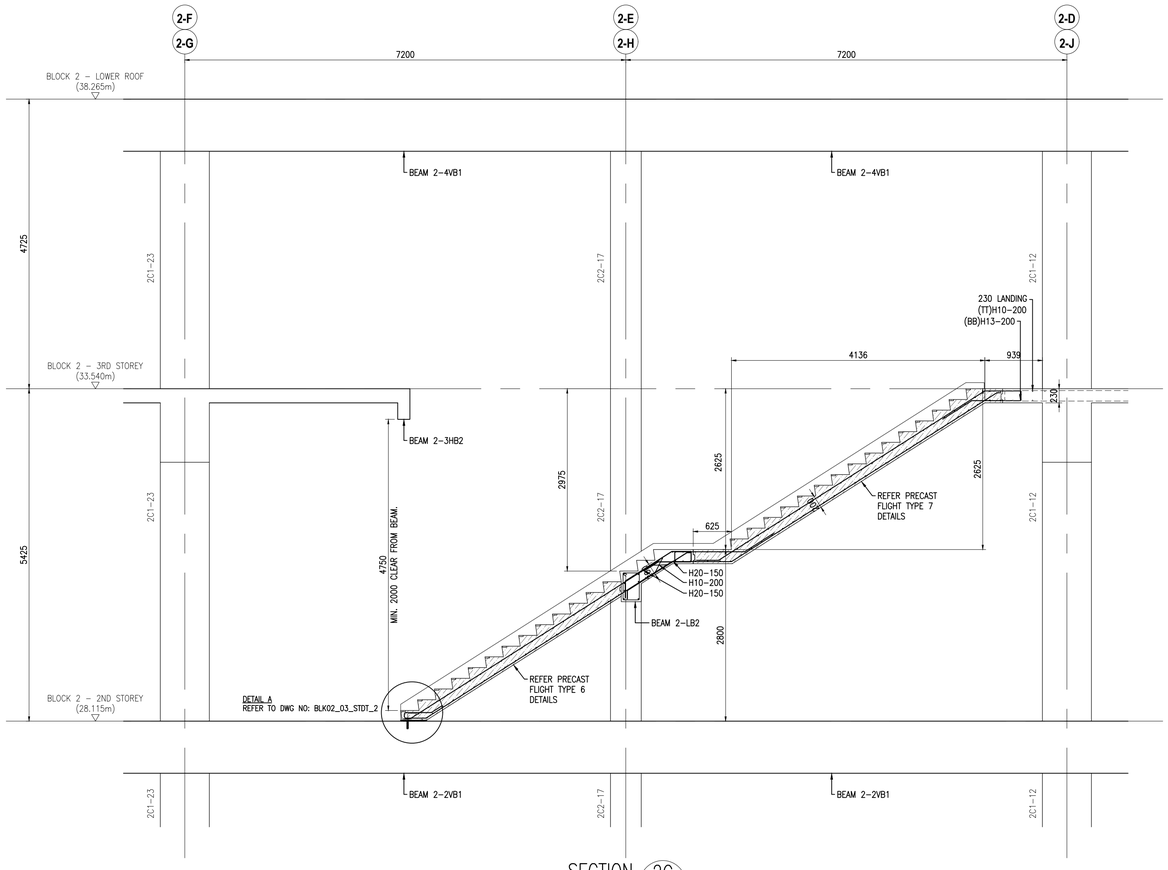
SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## BLOCK 2 – 3RD STOREY PLAN
## STAIRCASE S4-01/S4-02(HANDED)

SCALE: 1:50




SECTION 2C
SCALE 1:50

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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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LOH JU-HON
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SENIOR PROGRAMME MANAGER
EDMUND TEO
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DRAWING TITLE

BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 3

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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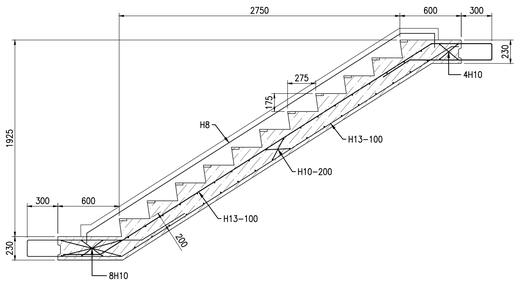


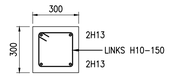

## PRECAST FLIGHT TYPE 8 DETAILS

SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.

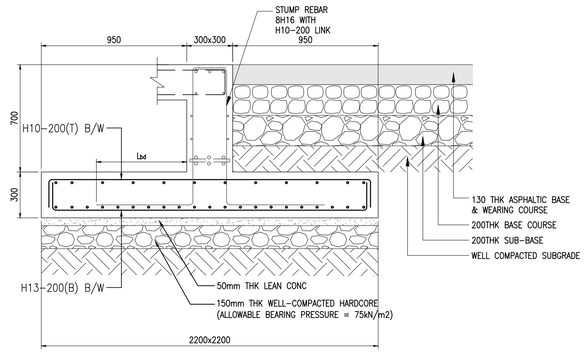
NOTES:
1) FOR BEAM STANDARD DETAILS REFER TO DRAWING NO. BMDT_1 & BMDT_2.
2) ALL BEAM CONCRETE GRADE TO BE C28/35.

| BEAM MARK | SIZE (W x D) | REINFORCEMENT | | | | | | LINK TYPE | LINK | | | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOP BAR | | | BOTTOM BAR | | | | | | | |
| | | T1 | T2 | T3 | B1 | B2 | B3 | | S1 | S2 | S3 | |
| ST1-BM1 | 300x700 | 3H16 | 3H16 | 3H16 | 3H20+3H20 | 3H20+3H20+3H16 | 3H20+3H20 | A1 | H10-250 | H10-250 | H10-250 | TOB 25.850 |




## TYPICAL STUMP DETAILS

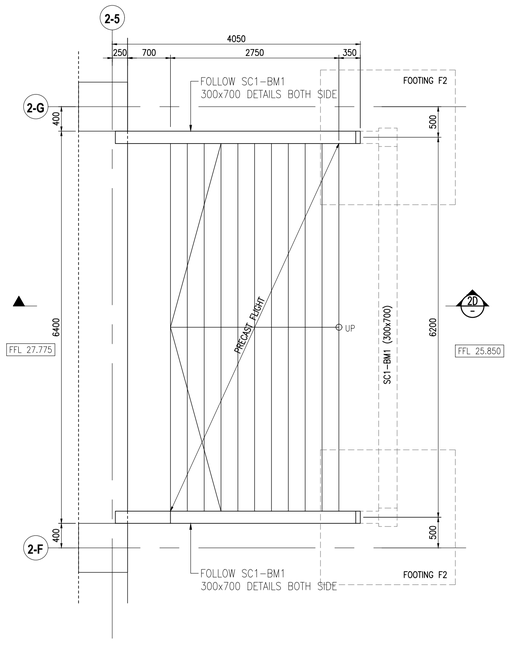
SCALE: 1:20




## TYPICAL FOOTING DETAILS (TYPE F2)

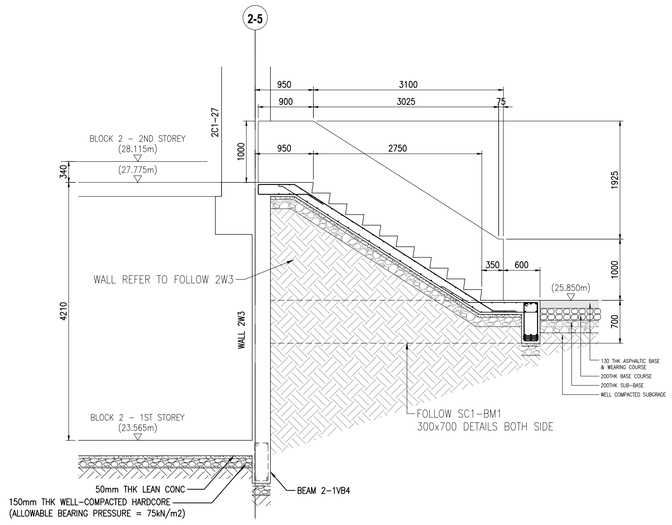
SCALE: 1:20

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.
2. ALL CONCRETE GRADE TO BE C28/35.




## BLOCK 2 – STAIRS 1

SCALE: 1:50




SECTION 2D / –
SCALE 1:50



| REV. | DATE | APPR. | DESCRIPTION |
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DRAWING TITLE

BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 4

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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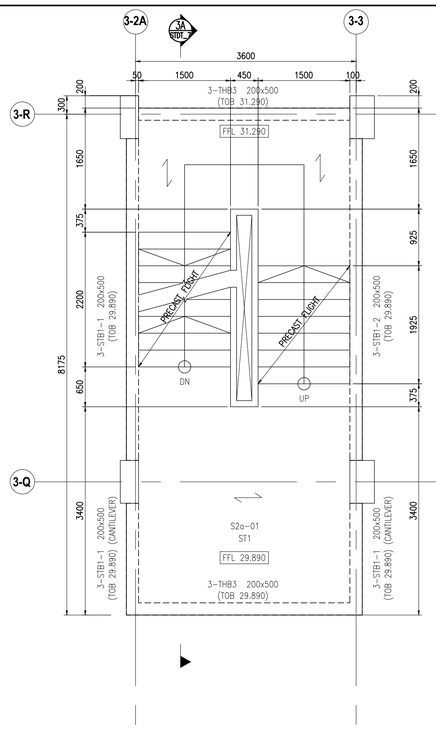
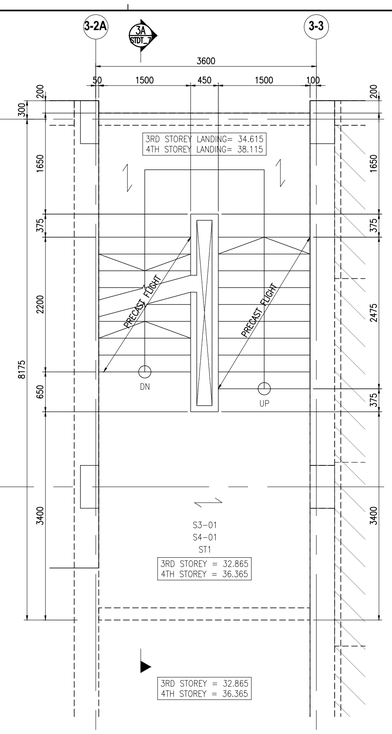
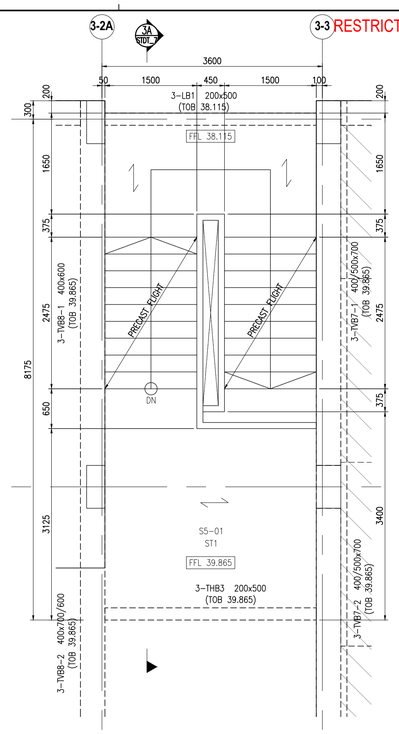


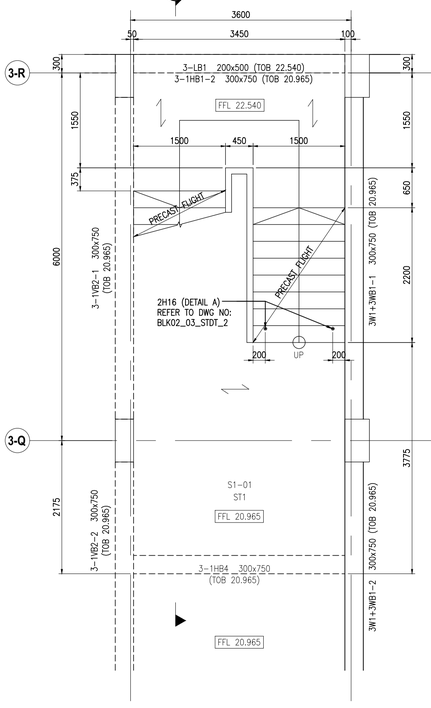

BLOCK 3 – INTERMEDIATE LANDING 2
STAIRCASE S2a-01
SCALE: 1:50



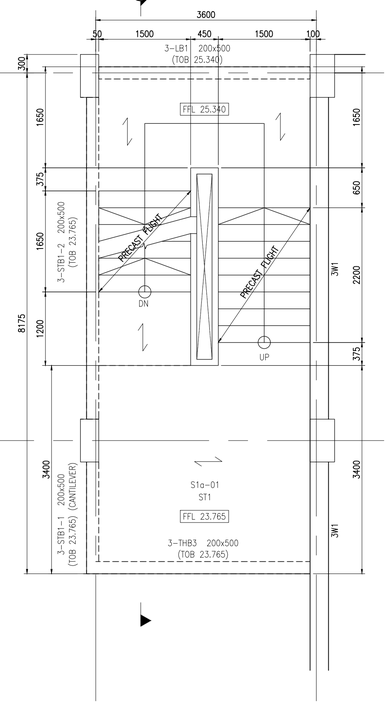

BLOCK 3 – 3RD & 4TH STOREY PLAN
STAIRCASE S3-01 & S4-01
SCALE: 1:50



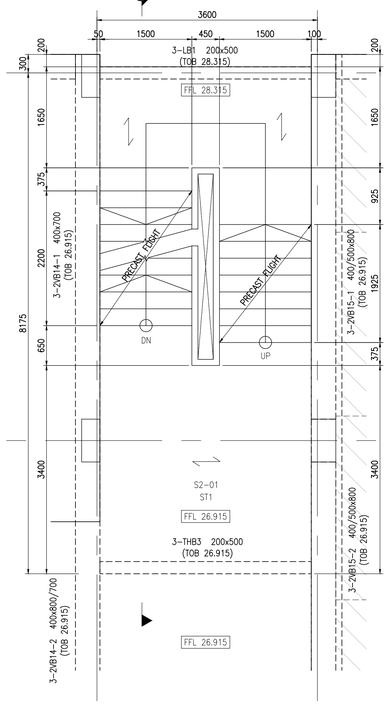

BLOCK 3 – 5TH STOREY PLAN
STAIRCASE S5-01
SCALE: 1:50




BLOCK 3 – 1ST STOREY PLAN
STAIRCASE S1-01
SCALE: 1:50



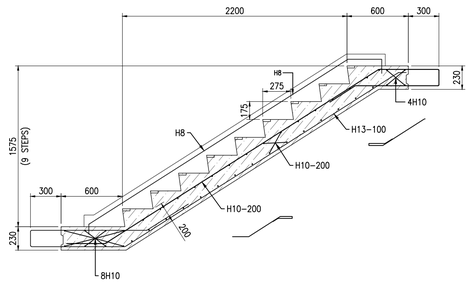

BLOCK 3 – INTERMEDIATE LANDING 1
STAIRCASE S1a-01
SCALE: 1:50



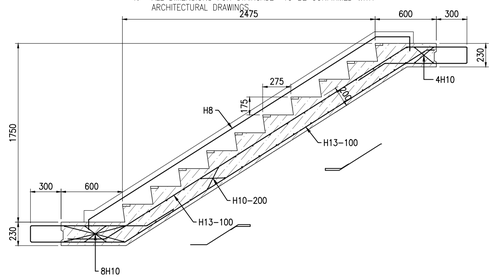

BLOCK 3 – 2ND STOREY PLAN
STAIRCASE S2-01
SCALE: 1:50

RESTRICTED

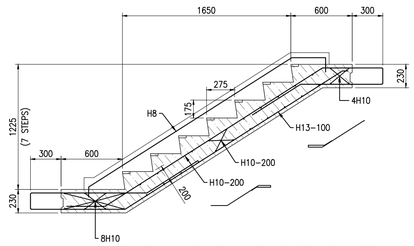
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.
2. ALL CONCRETE GRADE TO BE C28/35.



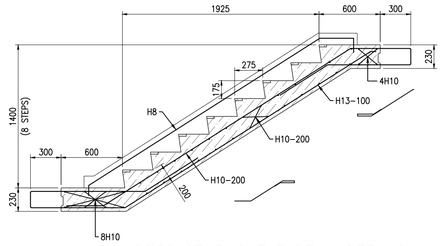

PRECAST FLIGHT TYPE 1 DETAILS
SCALE: 1:30
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




PRECAST FLIGHT TYPE 2 DETAILS
SCALE: 1:30
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




PRECAST FLIGHT TYPE 3 DETAILS
SCALE: 1:30
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




PRECAST FLIGHT TYPE 4 DETAILS
SCALE: 1:30
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.

| REV. | DATE | APPR. | DESCRIPTION |
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| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
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DSTA Defence Science & Technology Agency

HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
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SENIOR PROGRAMME MANAGER
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BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 5

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SCDT

Drawing no.
S_WS1416_BLK02_03_STDT_5

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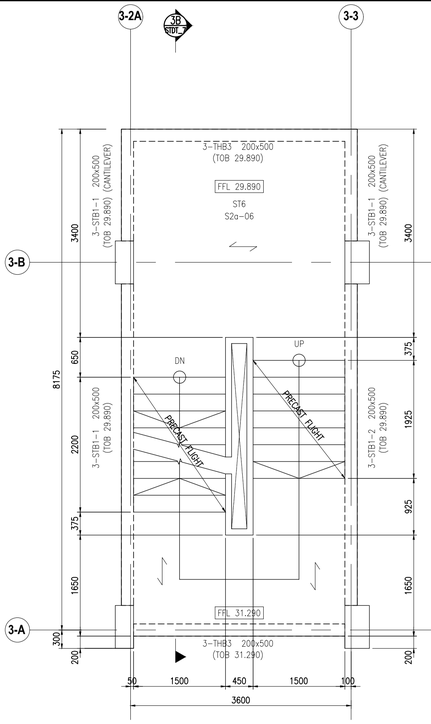
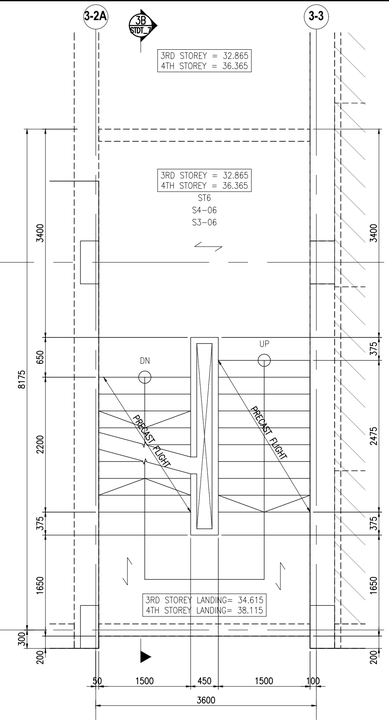


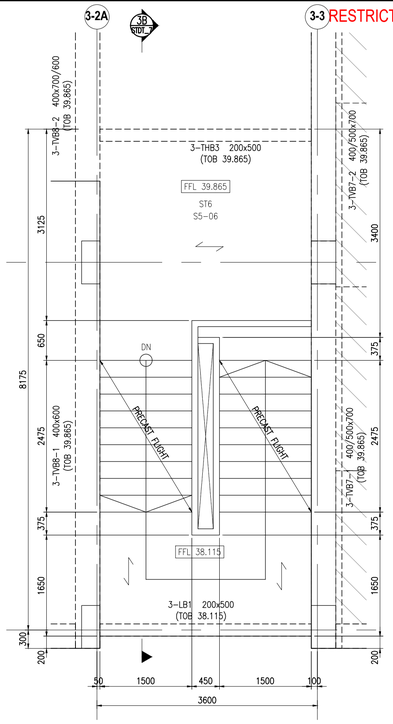

## BLOCK 3 – INTERMEDIATE LANDING 2 STAIRCASE S2a–06

SCALE: 1:50



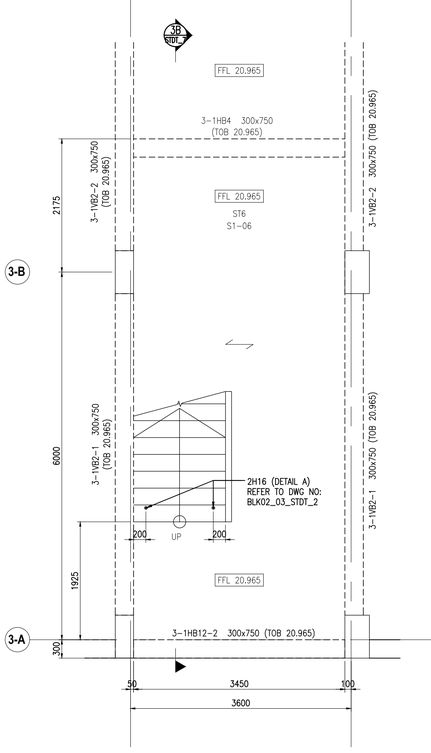

## BLOCK 3 – 3RD & 4TH STOREY PLAN STAIRCASE S3–06 & S4–06

SCALE: 1:50



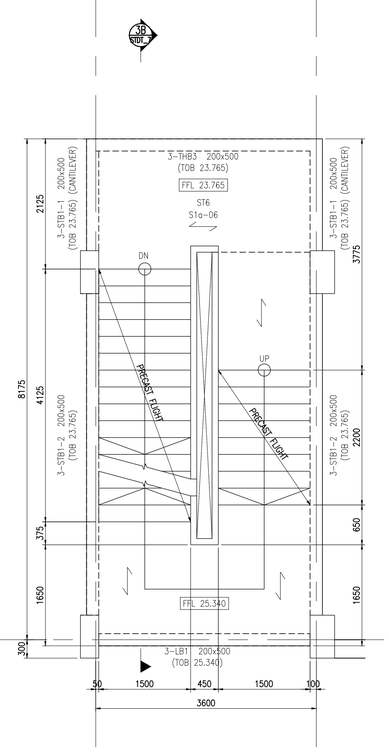

## BLOCK 3 – 5TH STOREY PLAN STAIRCASE S5–06

SCALE: 1:50



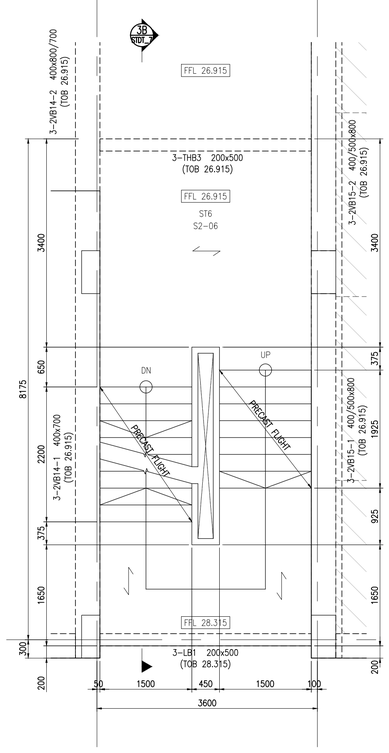

## BLOCK 3 – 1ST STOREY PLAN STAIRCASE S1–06

SCALE: 1:50




## BLOCK 3 – INTERMEDIATE LANDING 1 STAIRCASE S1a–06

SCALE: 1:50




## BLOCK 3 – 2ND STOREY PLAN STAIRCASE S2–06

SCALE: 1:50

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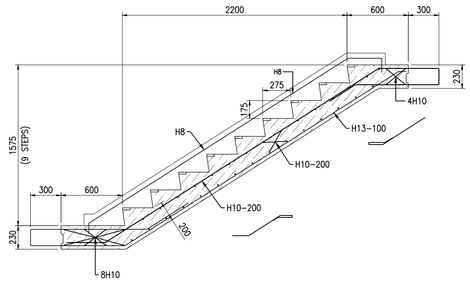
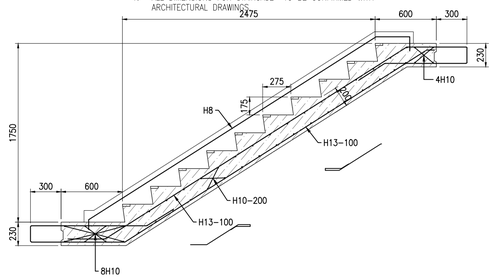
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.
2. ALL CONCRETE GRADE TO BE C28/35.




## PRECAST FLIGHT TYPE 1 DETAILS

SCALE: 1:30

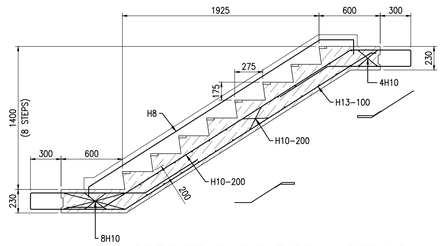
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 2 DETAILS

SCALE: 1:30

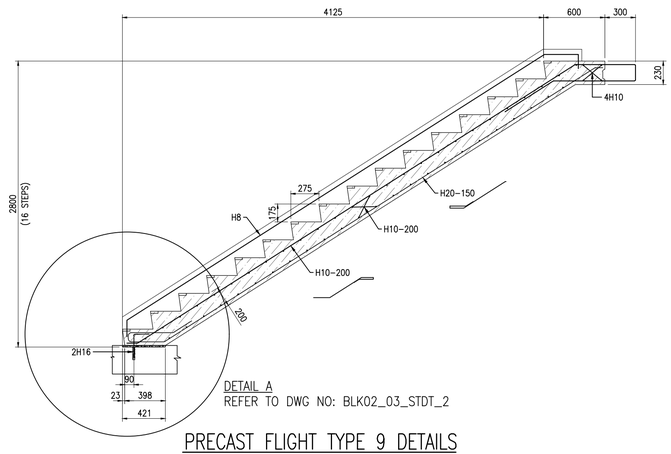
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 4 DETAILS

SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 9 DETAILS

SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.

| REV. | DATE | APPR. | DESCRIPTION |
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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

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HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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BUILDING CONTROL ACT
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C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
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DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 6

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |

Filename S_WS1416_BLK02_03_SCDT

Drawing no.
S_WS1416_BLK02_03_STDT_6

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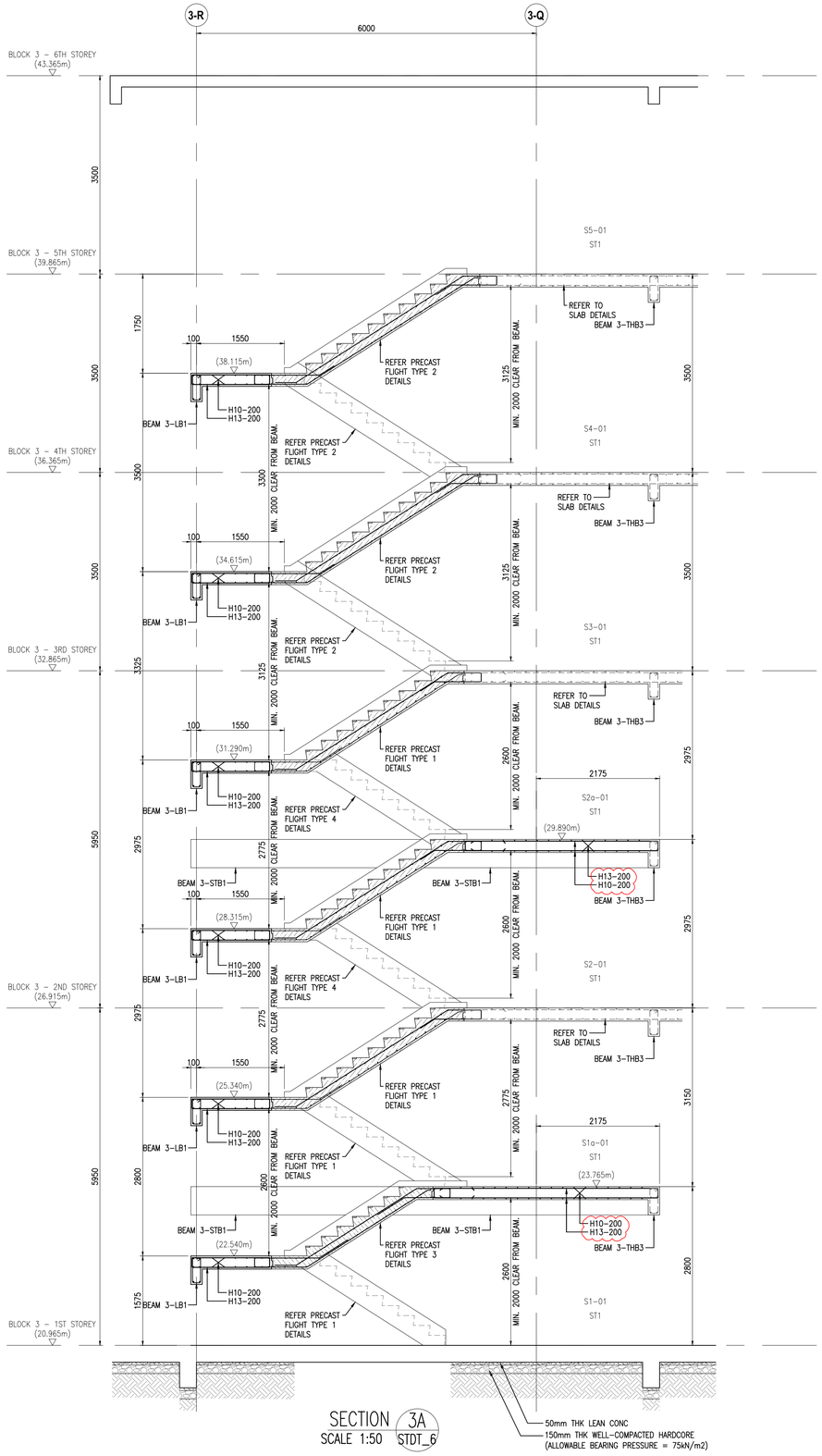
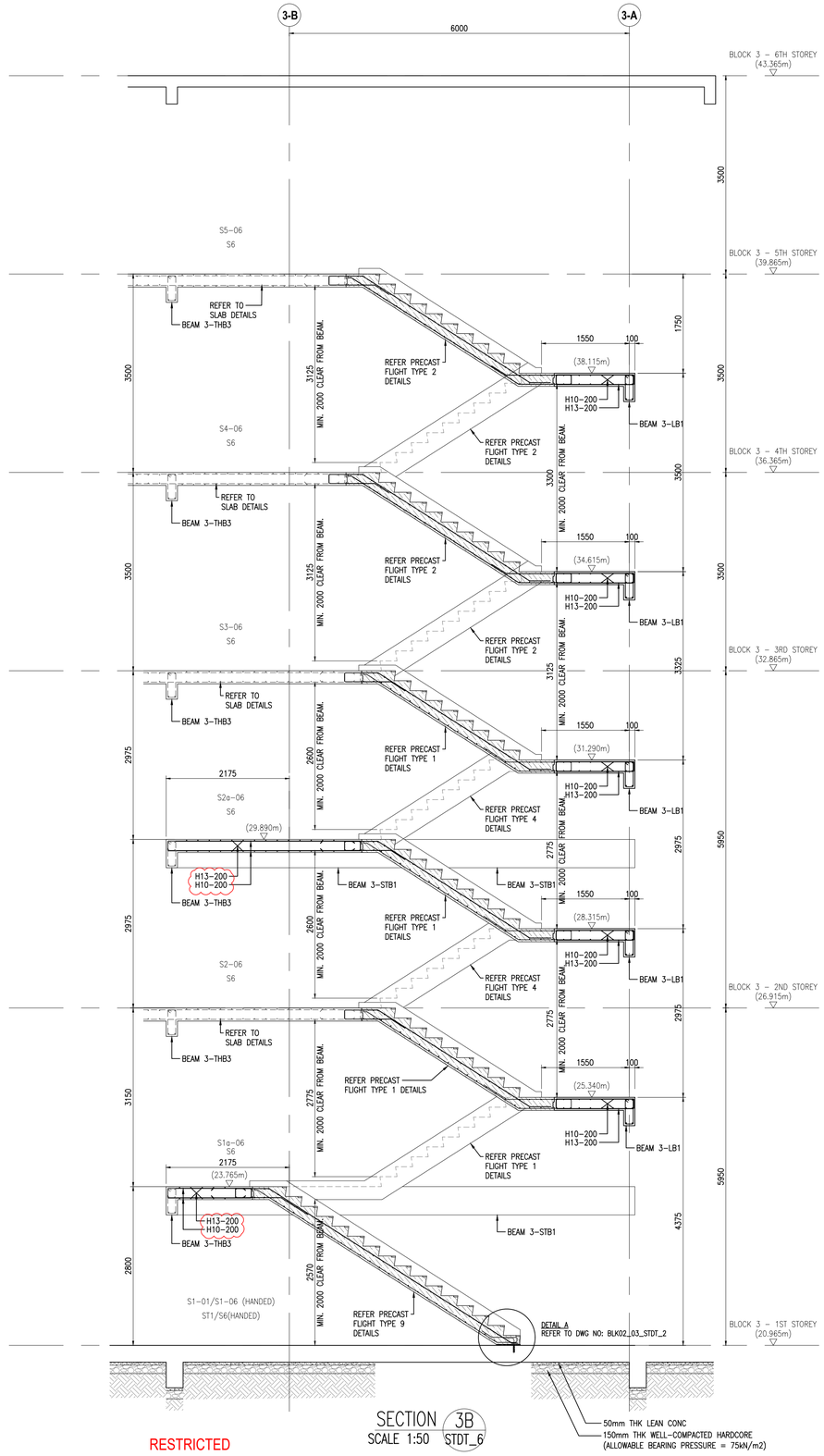



SECTION 3A
SCALE 1:50 STDT_6




SECTION 3B
SCALE 1:50 STDT_6

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| REV. | DATE | APPR. | DESCRIPTION |
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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 7

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale | AS SHOWN | | Sources |
| Filename | S_WS1416_BLK02_03_SCDT | | |

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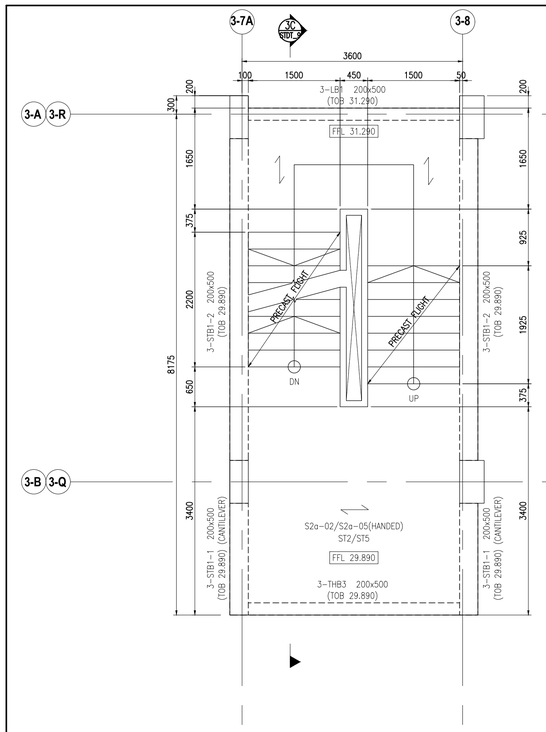
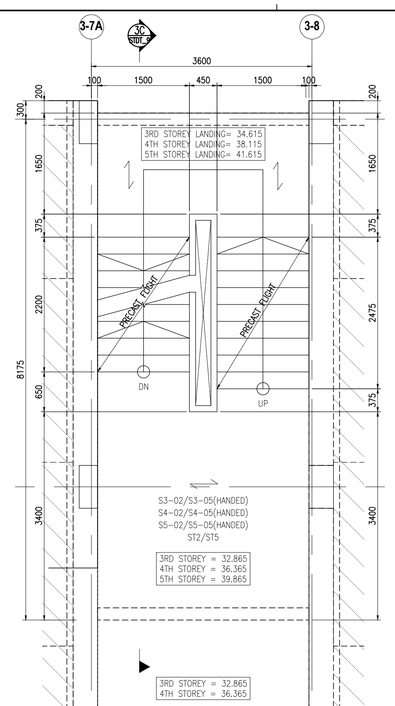
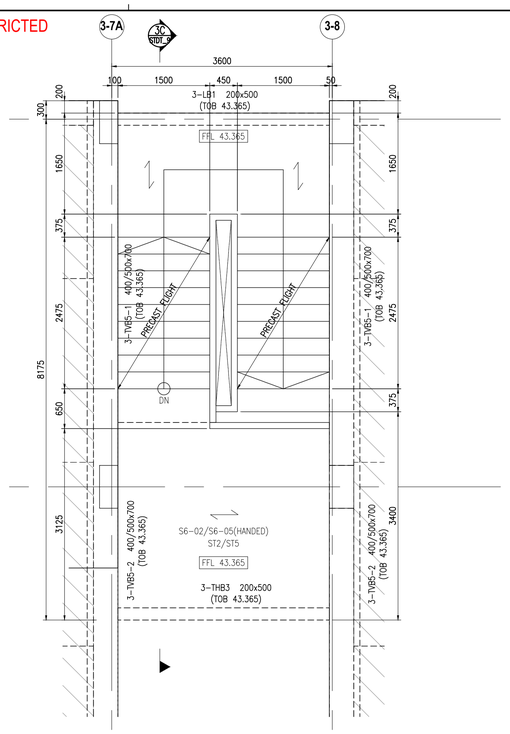


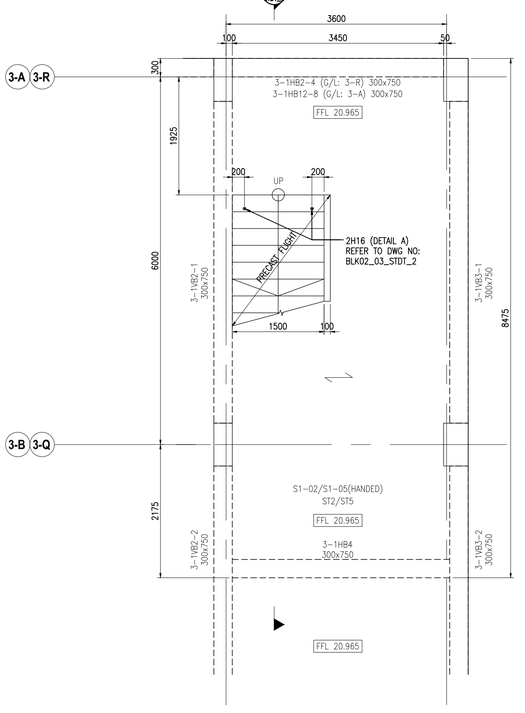

BLOCK 3 – INTERMEDIATE LANDING 2
STAIRCASE S2a-02/S2a-05 (HANDED)
SCALE: 1:50



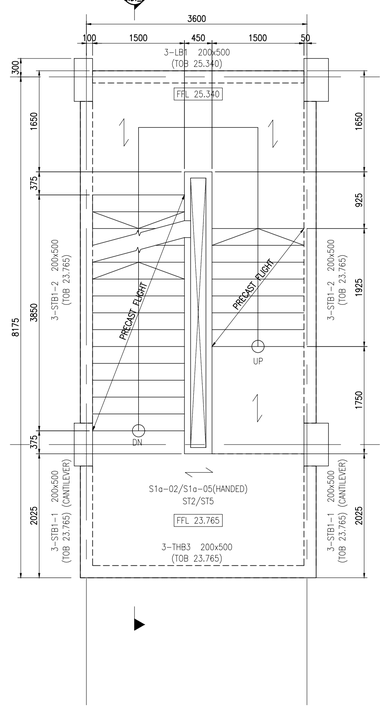

BLOCK 3 – 3RD, 4TH & 5TH STOREY PLAN
STAIRCASE S3-02/S3-05 (HANDED)
STAIRCASE S4-02/S4-05 (HANDED)
STAIRCASE S5-02/S5-05 (HANDED)
SCALE: 1:50



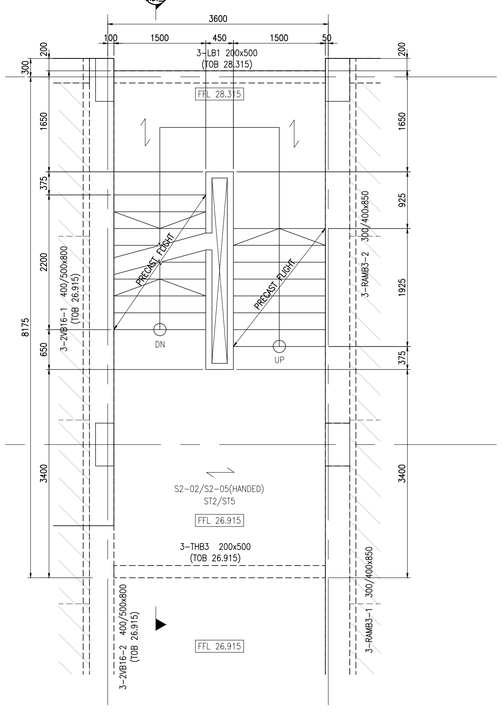

BLOCK 3 – 6TH STOREY PLAN
STAIRCASE S6-02/S6-05 (HANDED)
SCALE: 1:50




BLOCK 3 – 1ST STOREY PLAN
STAIRCASE S1-02/S1-05 (HANDED)
SCALE: 1:50




BLOCK 3 – INTERMEDIATE LANDING 1
STAIRCASE S1a-02/S1a-05 (HANDED)
SCALE: 1:50




BLOCK 3 – 2ND STOREY PLAN
STAIRCASE S2-02/S2-05 (HANDED)
SCALE: 1:50

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
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83 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

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HCD ( Army Camps )
VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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No: 1078
CHEN HAO
in AC Organisation
Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW–ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04–137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 8

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
| Scale AS SHOWN | | | Sources |

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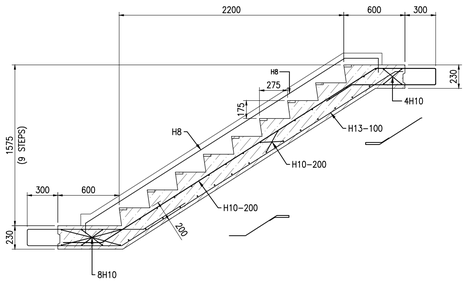
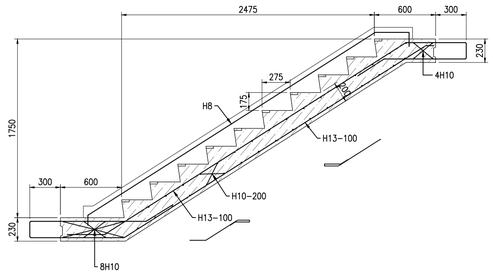



## PRECAST FLIGHT TYPE 1 DETAILS

SCALE: 1:30

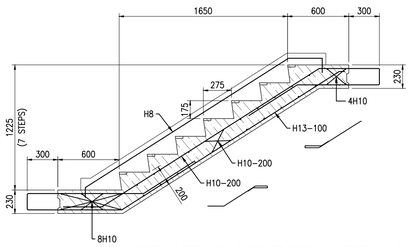
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 2 DETAILS

SCALE: 1:30

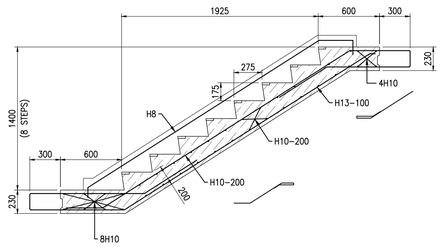
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 3 DETAILS

SCALE: 1:30

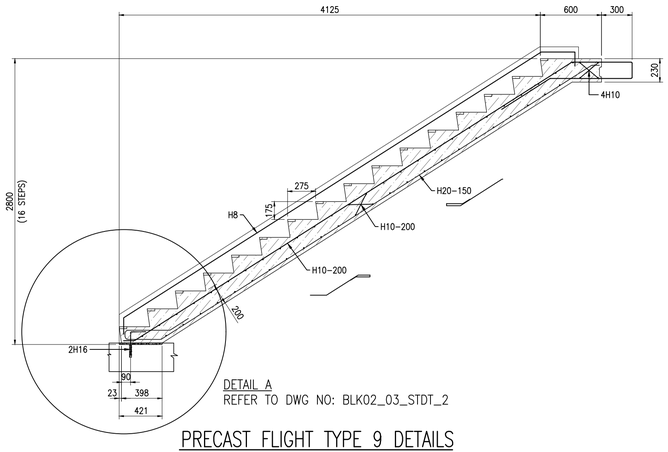
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 4 DETAILS

SCALE: 1:30

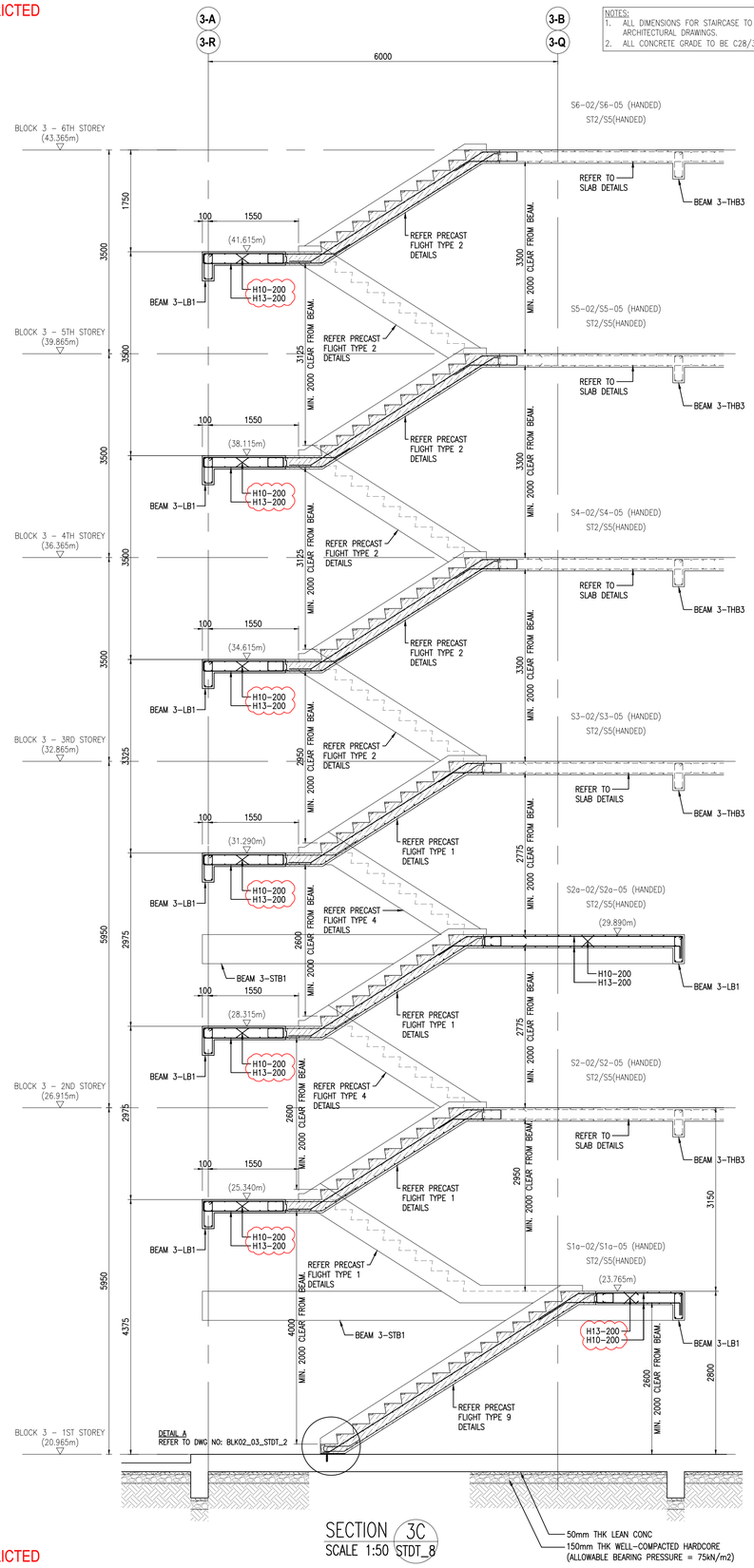
NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 9 DETAILS

SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




SECTION 3C STDT_8
SCALE 1:50

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.
2. ALL CONCRETE GRADE TO BE C28/35.

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| REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION | REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. | | | | | | | | | | | | | | | | | | | | | | | | |
| – | 04/10/2023 | TWA | ST09 NOA RECEIVED | | | | | | | | | | | | | | | | | | | | | | | | |



BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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(name & signature)

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SENIOR PROGRAMME MANAGER
EDMUND TEO
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C&S CONSULTANT

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SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE

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DRAWING TITLE

BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 9

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
| Scale | AS SHOWN | | Sources | |

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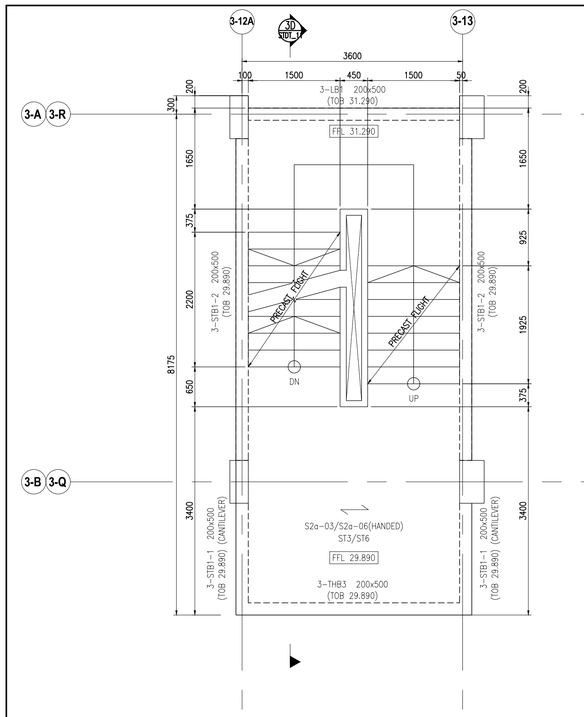
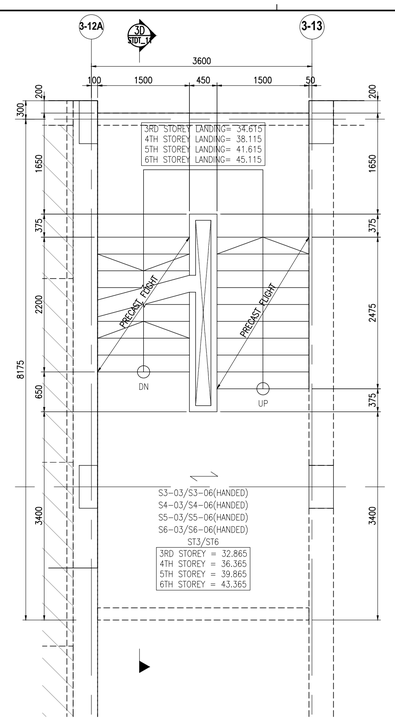
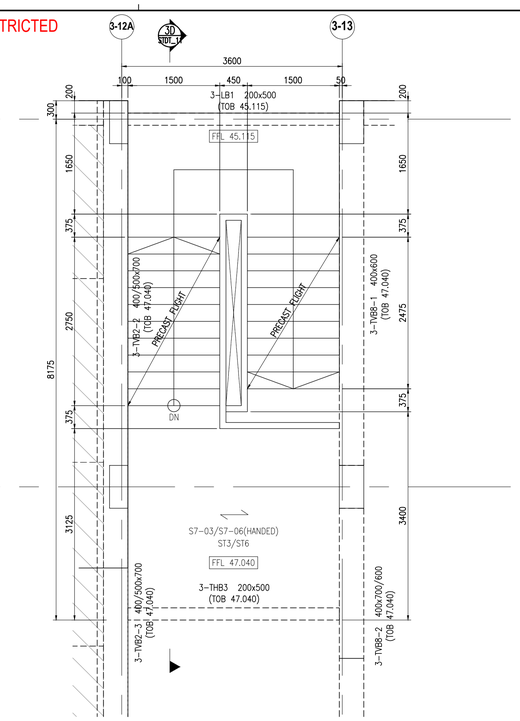


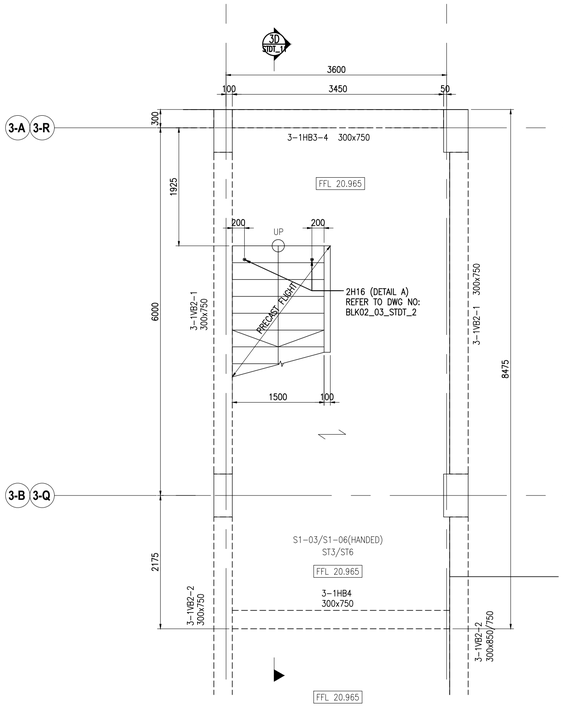

BLOCK 3 – INTERMEDIATE LANDING 2
STAIRCASE S2a-03/S2a-06 (HANDED)
SCALE: 1:50



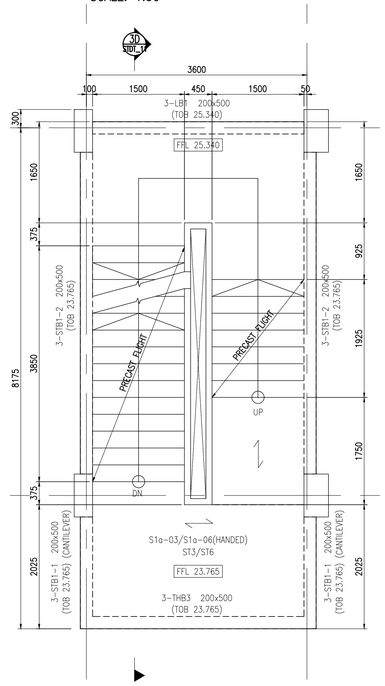

BLOCK 3 – 3RD TO 6TH STOREY PLAN
STAIRCASE S3-03/S3-06 (HANDED)
STAIRCASE S4-03/S4-06 (HANDED)
STAIRCASE S5-03/S5-06 (HANDED)
STAIRCASE S6-03/S6-06 (HANDED)
SCALE: 1:50



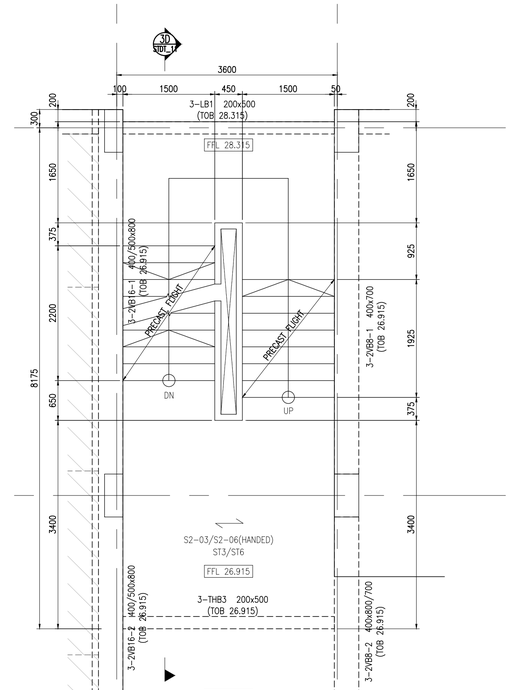

BLOCK 3 – LOWER ROOF
STAIRCASE S7-03/S7-06 (HANDED)
SCALE: 1:50




BLOCK 3 – 1ST STOREY PLAN
STAIRCASE S1-03/S1-06 (HANDED)
SCALE: 1:50




BLOCK 3 – INTERMEDIATE LANDING 1
STAIRCASE S1a-03/S1a-06 (HANDED)
SCALE: 1:50




BLOCK 3 – 2ND STOREY PLAN
STAIRCASE S2-03/S2-06 (HANDED)
SCALE: 1:50

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| REV. | DATE | APPR. | DESCRIPTION |
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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 10

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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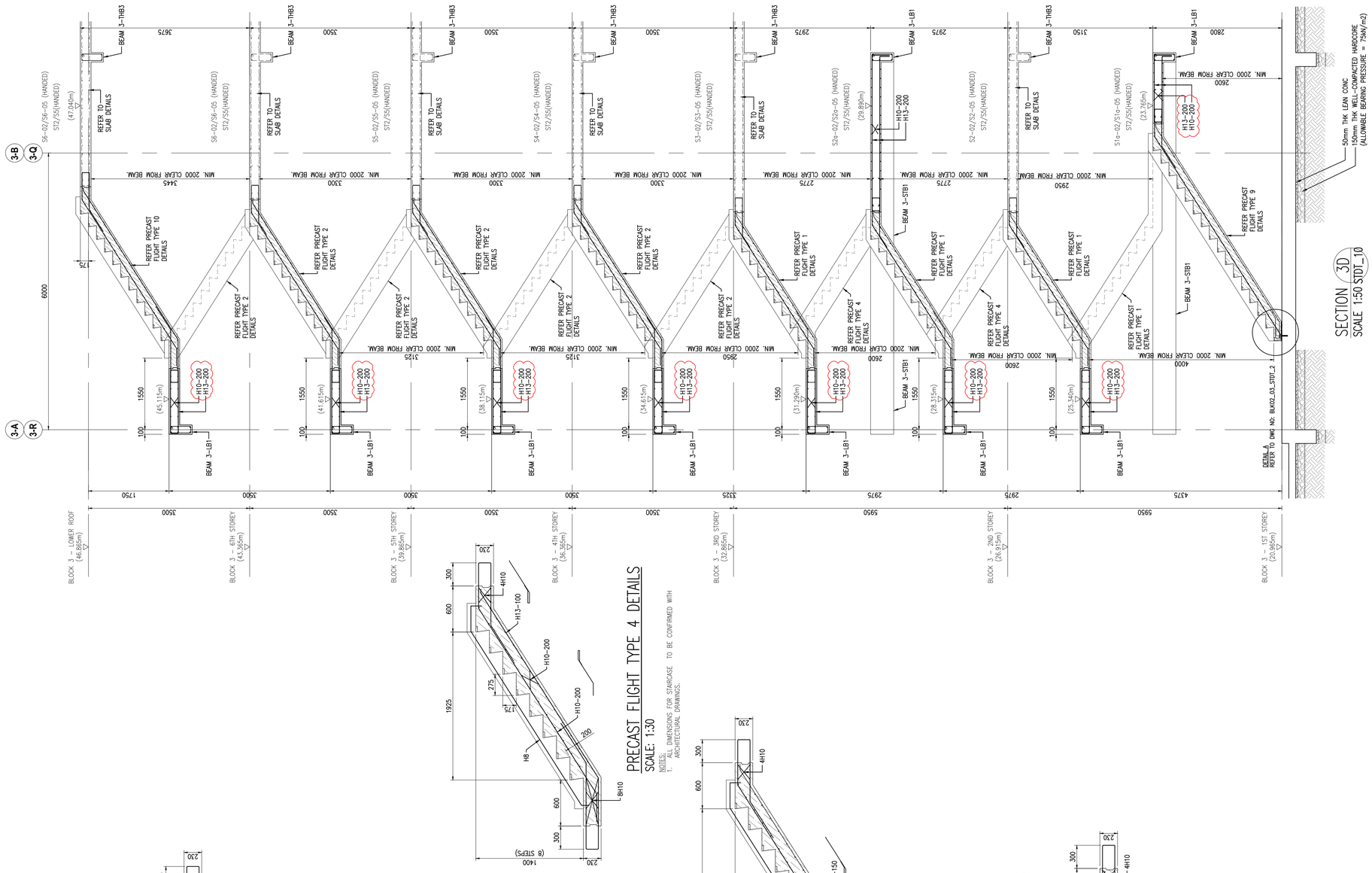





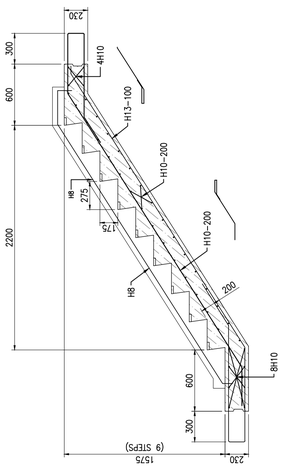


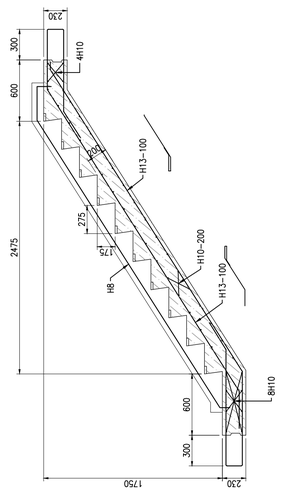


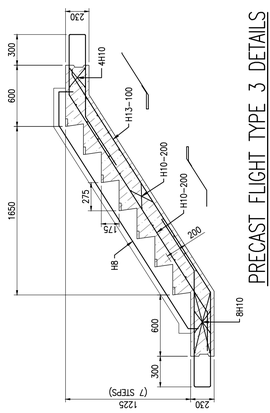


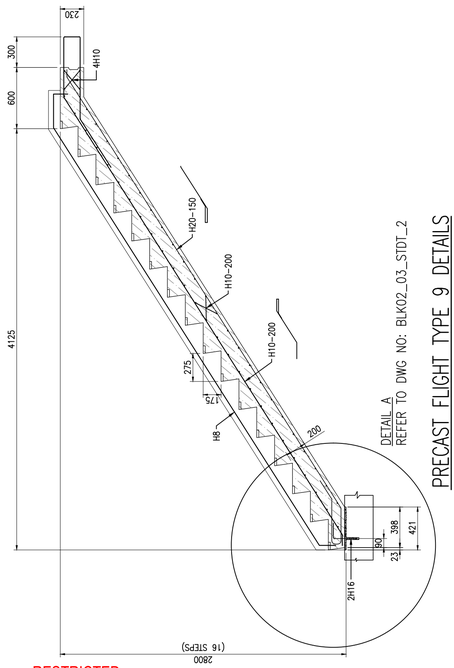


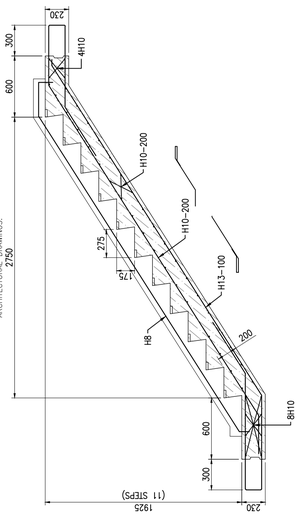


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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

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DSTA Defence Science & Technology Agency

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(name & signature)

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SENIOR PROGRAMME MANAGER
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DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 11

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
| Scale | AS SHOWN | | Sources | |

Filename S_WS1416_BLK02_03_SCDT

Drawing no.
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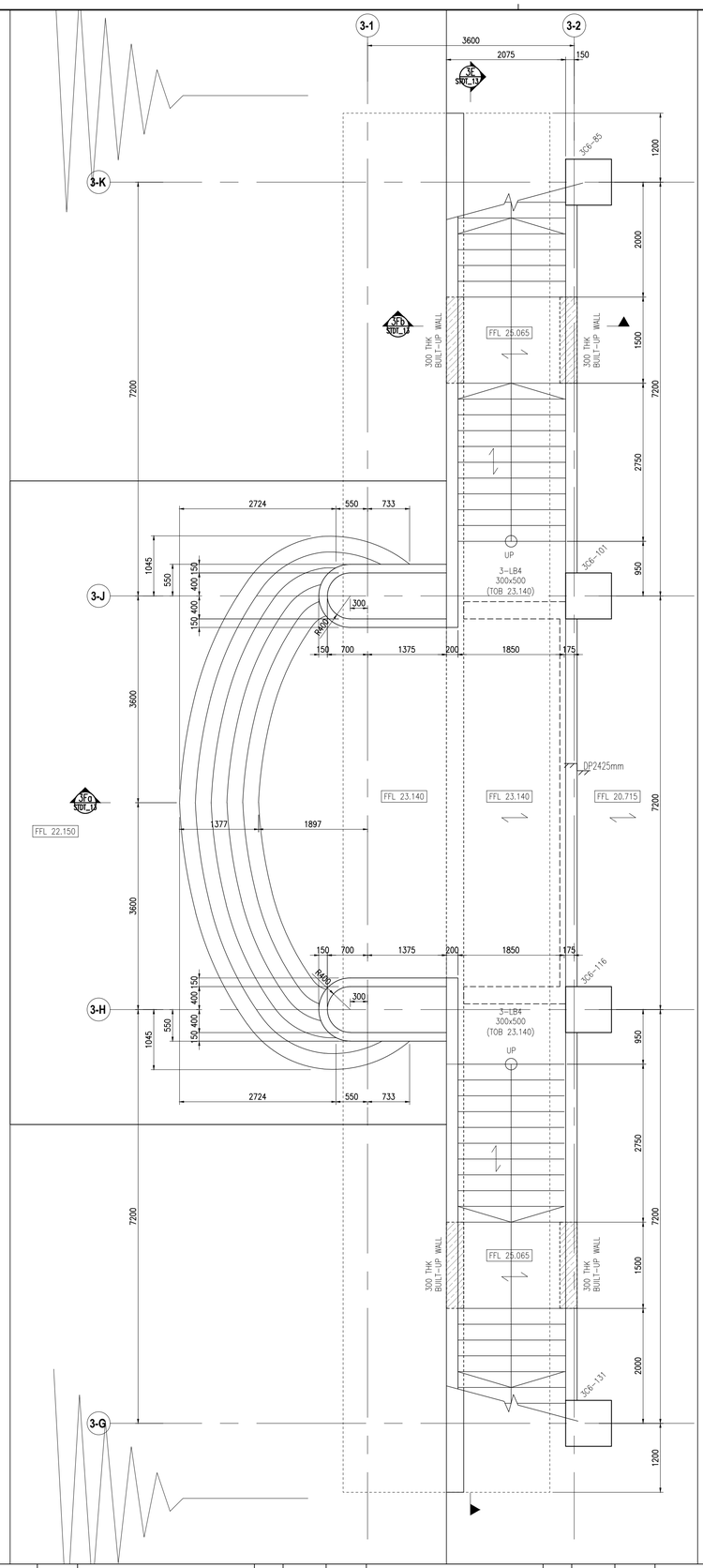
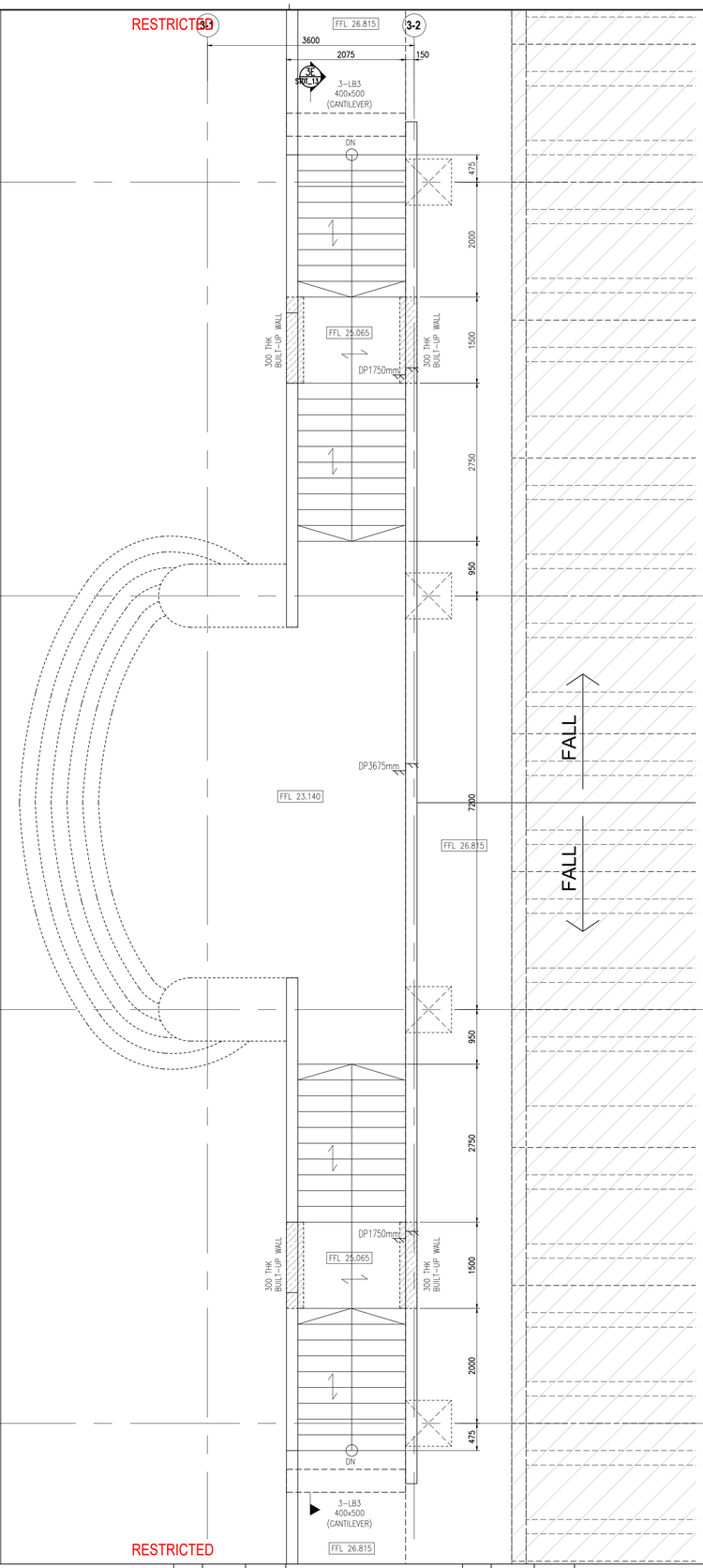



BLOCK 3 – STAIR 1-1
PART PRINT OF 1ST STOREY
SCALE: 1:50

RESTRICTED




BLOCK 3 – STAIR 1-1
PART PRINT OF 2ND STOREY
SCALE: 1:50

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NOTES:
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2. ALL CONCRETE GRADE TO BE C28/35.

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87 sheet of 90

BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

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VYNNA PEH SEOH CHIN
(name & signature)

HCD ( Architecture )
LOH JU-HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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Registration No: A068
BUILDING CONTROL ACT
SINGAPORE

C&S CONSULTANT
TW-ASIA Consultants Pte Ltd
NO. 28 SIN MING LANE #04-137 MIDVIEW CITY
SINGAPORE 573972 TEL : 62916292 FAX : 62932196

PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 12

| | Initial | Date | Job ref no. | |
|---|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 | |
| Checked | TWA | 5/2022 | | |
| Drawn | TWA | 5/2022 | Revision | – |
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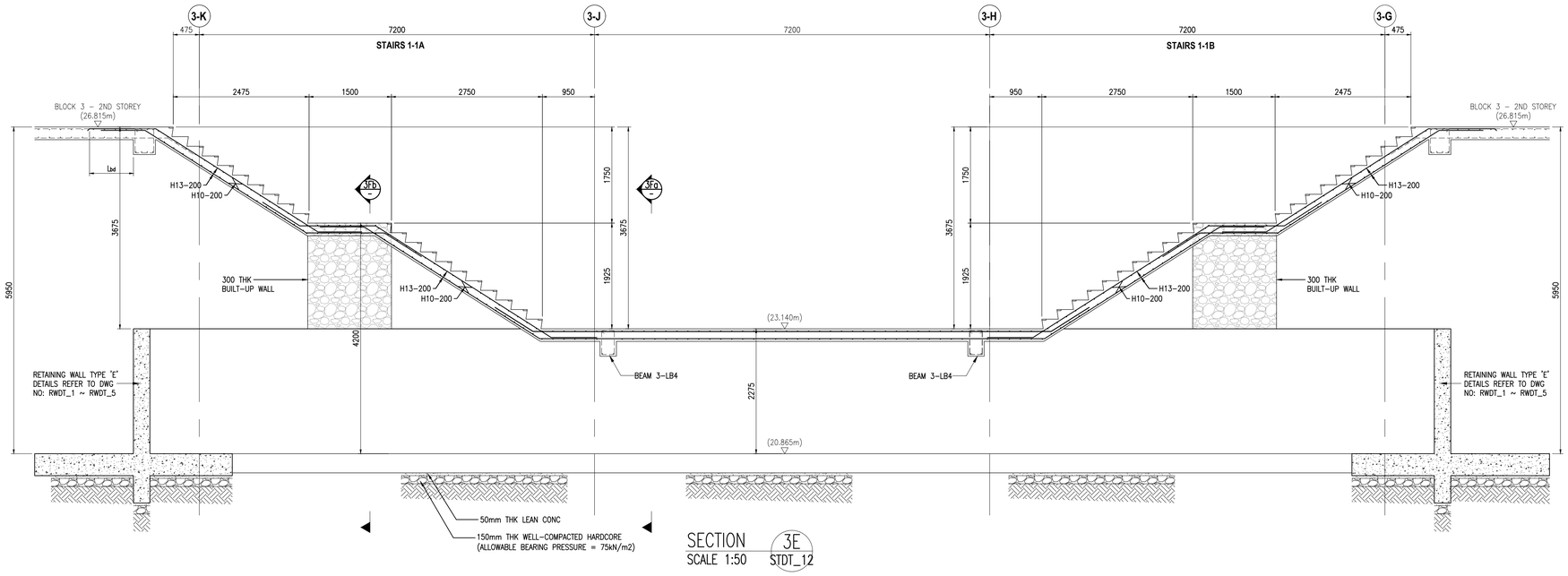
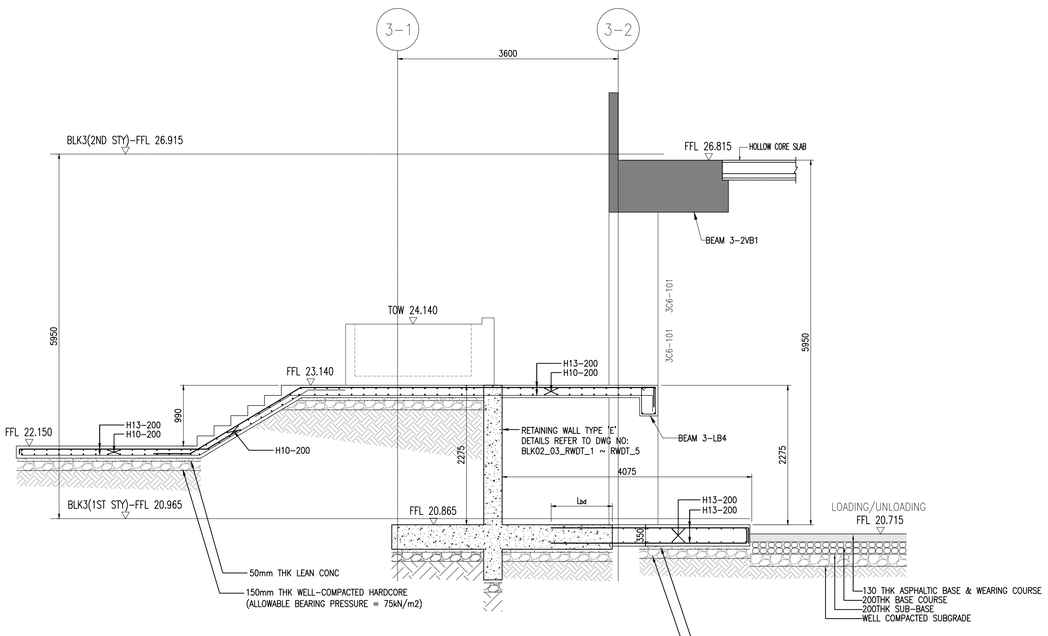
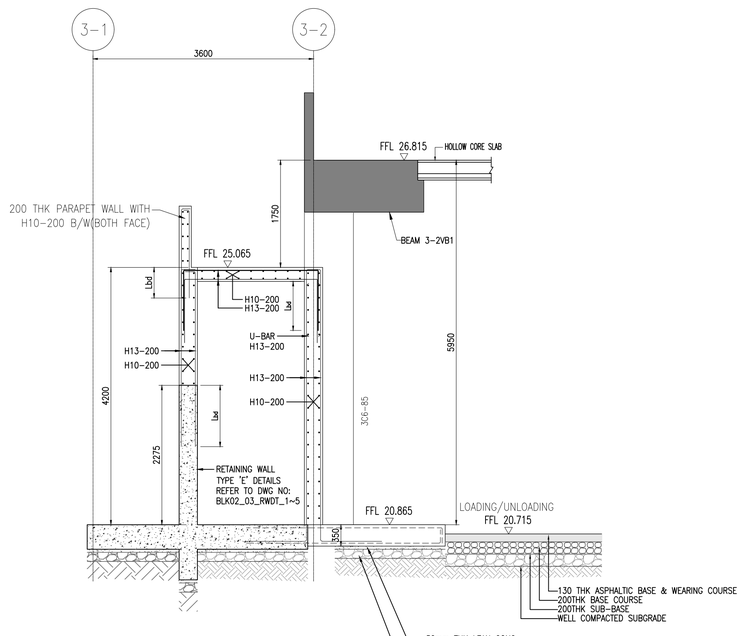



SECTION 3E
SCALE 1:50 STDT_12




SECTION 3Fa
SCALE 1:50 STDT_12




SECTION 3Fb
SCALE 1:50 STDT_12

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| C0 | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
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BUILDING AND CONSTRUCTION AUTHORITY
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PROJECT REF NO : A2105-00599-2022-ST06, ST09, ST19

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Date : APR 2024

| Amendment | Requested by | Updated by | Date |
|---|---|---|---|

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PROJECT TITLE
**PROPOSED ADDITIONS OF 1 BLOCK OF 3-STOREY OFFICE BUILDING (BLK 2), 1 BLOCK OF 6-STOREY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STOREY ACCOMMODATION BUILDING (BLK 4), 1 BLOCK OF 2-STOREY TRAINING MULTIPLEX(BLK 9), 1 BLOCK OF MSVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) AND DEMOLITION OF BLKS 1A, 1B, 2, 3, 3A, 4, 4A, 5, 5A, 6, 6A, 6B, 7, 7A, 8, 9, 10, 14, 18, 18A, 19, 20, 23, 23B, 23C, 24, 25, 25A, 25B, 26, 26A, 26B, 26C, 26D, 27A, 31, 31B, 32, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 37, 37A, 37B, 41, 44, 44A & 131 TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)**

DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 13

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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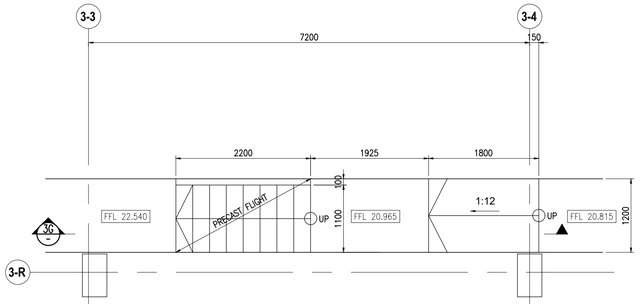
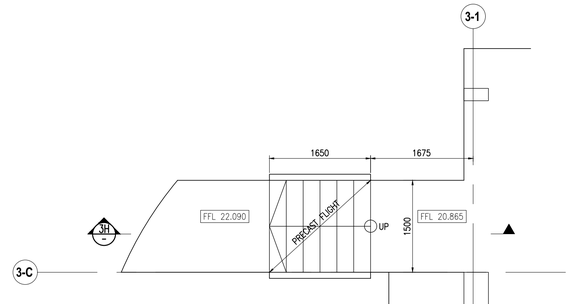
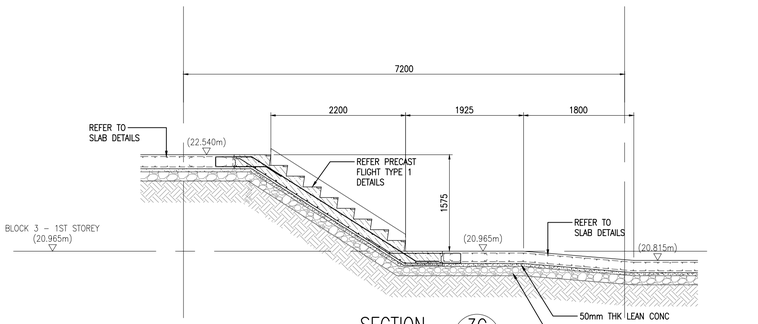


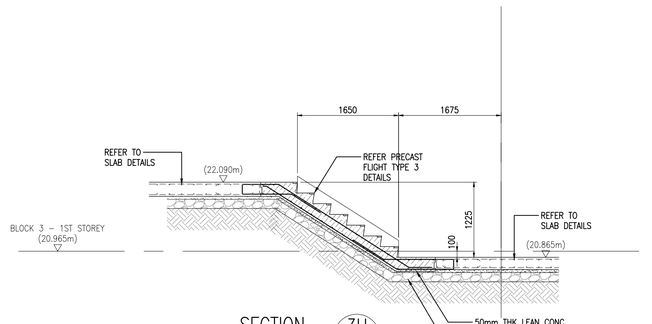

## BLOCK 3 – STAIR 1–2
SCALE: 1:50



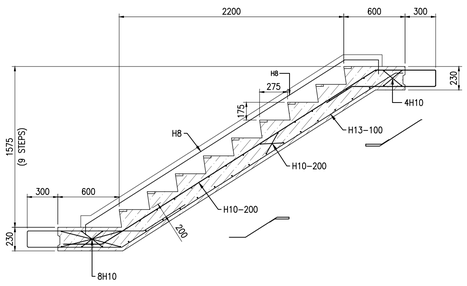

## BLOCK 3 – STAIR 1–5
SCALE: 1:50




SECTION 3G
SCALE 1:50

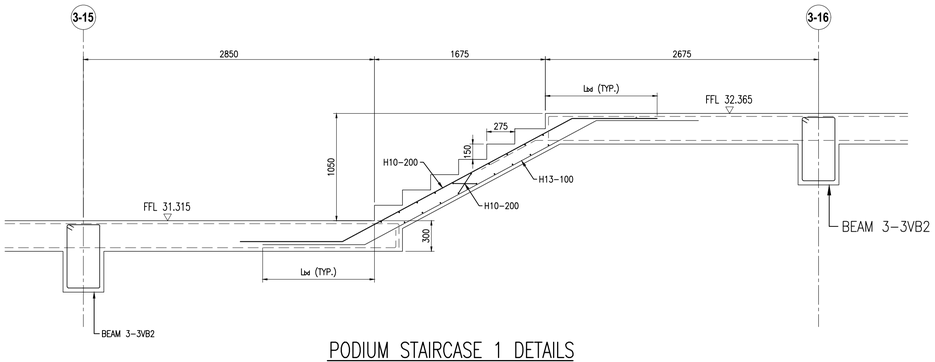



SECTION 3H
SCALE 1:50



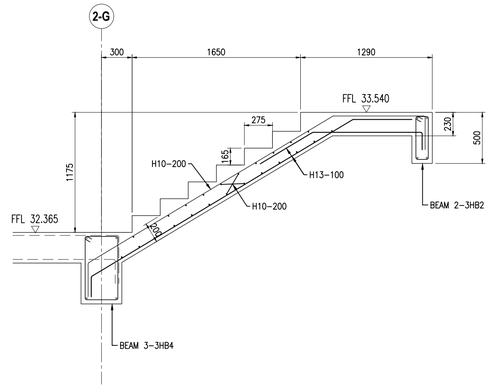

## PRECAST FLIGHT TYPE 1 DETAILS
SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.



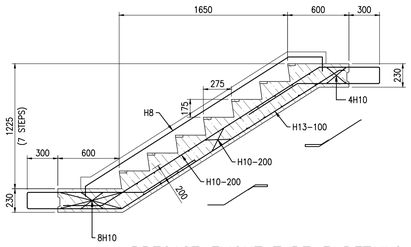

## PODIUM STAIRCASE 1 DETAILS
SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PODIUM STAIRCASE 2 DETAILS
SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.




## PRECAST FLIGHT TYPE 3 DETAILS
SCALE: 1:30

NOTES:
1. ALL DIMENSIONS FOR STAIRCASE TO BE CONFIRMED WITH ARCHITECTURAL DRAWINGS.



| REV. | DATE | APPR. | DESCRIPTION |
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PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

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(name & signature)

HCD ( Architecture )
LOH JIJ–HON
(name & signature)

SENIOR PROGRAMME MANAGER
EDMUND TEO
(name & signature)

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PROJECT TITLE
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DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 14

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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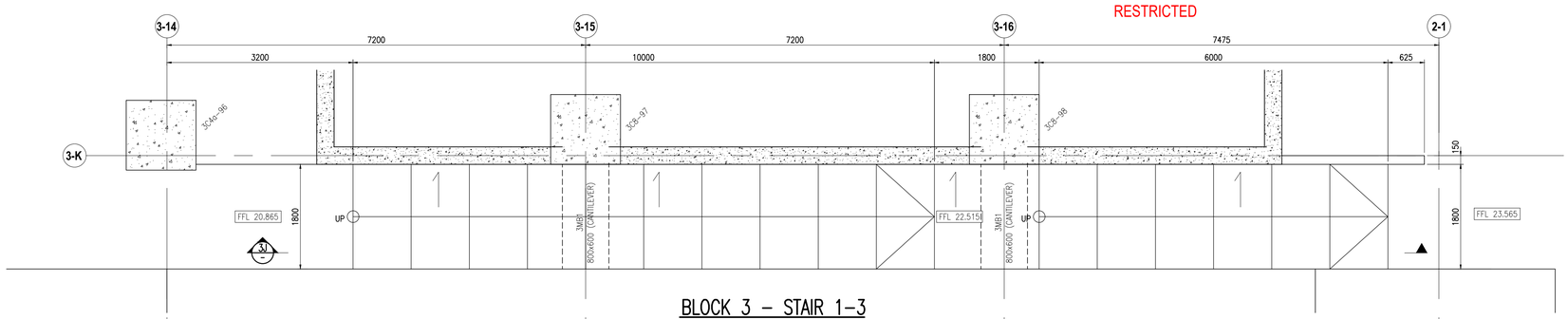
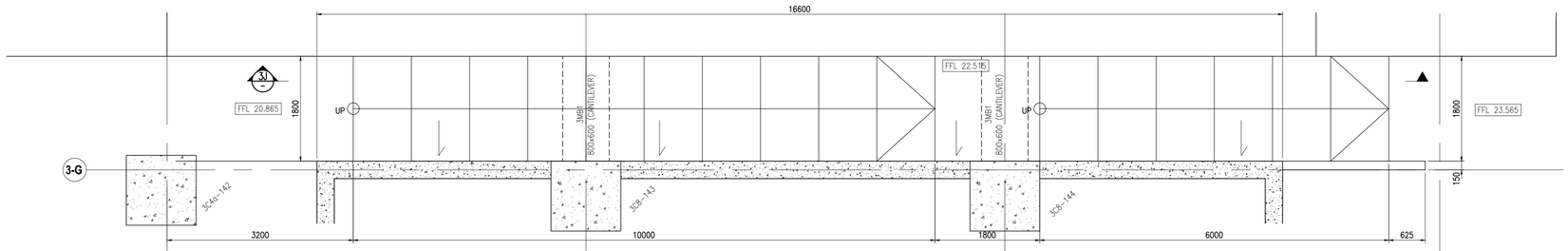
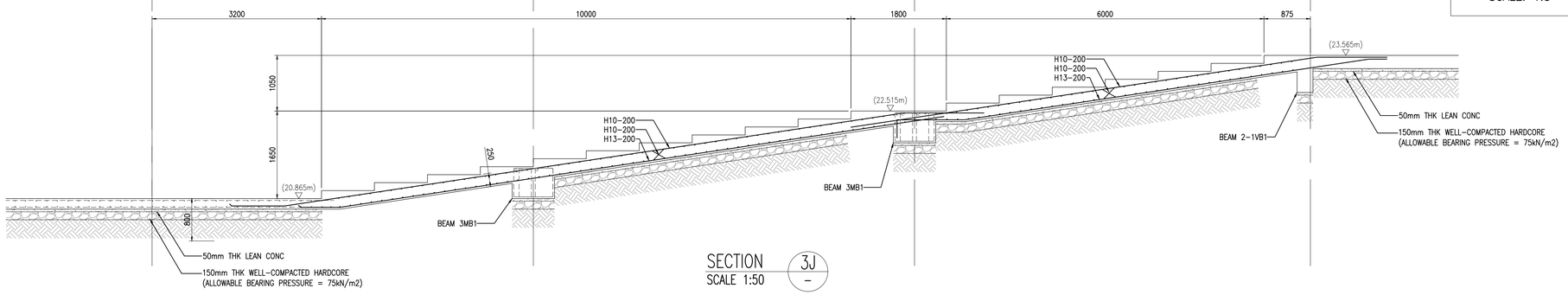


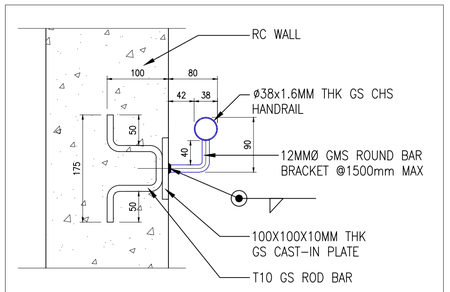

## BLOCK 3 – STAIR 1–3
SCALE: 1:50



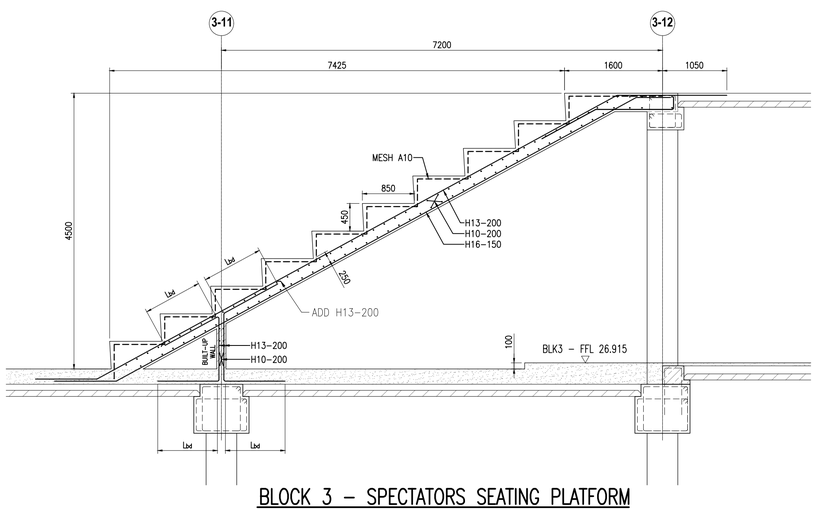

## BLOCK 3 – STAIR 1–4
SCALE: 1:50



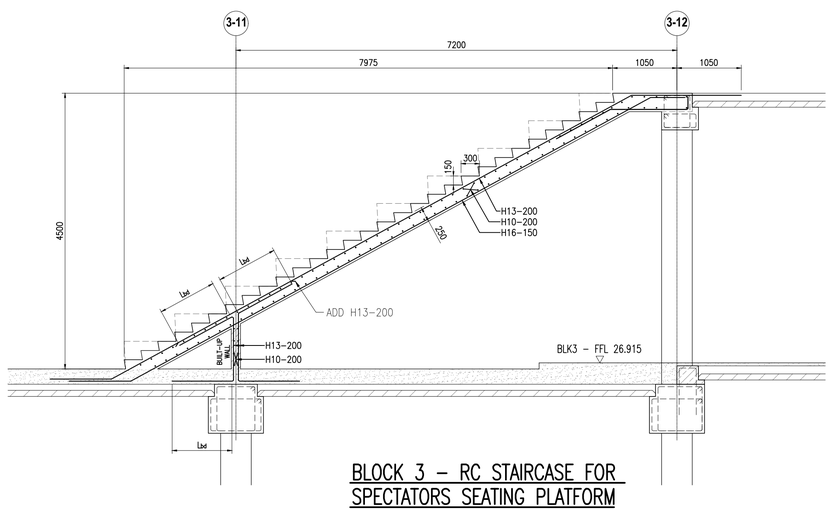

## SECTION 3J
SCALE 1:50




## TYPICAL CONNECTION HANDRAIL TO WALL DETAILS
SCALE: 1:5




## BLOCK 3 – SPECTATORS SEATING PLATFORM
SCALE: 1:50




## BLOCK 3 – RC STAIRCASE FOR SPECTATORS SEATING PLATFORM
SCALE: 1:50

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| REV. | DATE | APPR. | DESCRIPTION |
|---|---|---|---|
| CO | 30/10/2023 | TWA | ISSUED FOR CONSTRUCTION. |
| – | 04/10/2023 | TWA | STO9 NOA RECEIVED |

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BUILDING AND CONSTRUCTION AUTHORITY
APPROVED UNDER SECTION 5 / SECTION 5A OF THE BUILDING CONTROL ACT (CHAPTER 29)

PROJECT REF NO : A2105–00599–2022–ST06, ST09, ST19

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Date : APR 2024

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PROJECT TITLE
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DRAWING TITLE
BLOCK 2 & BLOCK 3
PRECAST STAIRCASE 15

| | Initial | Date | Job ref no. |
|---|---|---|---|
| Designed | TWA | 5/2022 | WS1416 |
| Checked | TWA | 5/2022 | |
| Drawn | TWA | 5/2022 | Revision – |
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