

HMS CAMBRIA

- 0.1 This drawing is to be read with all other civil and structural drawings, Architect's drawings and NBS Specification. Preliminaries and general conditions. This drawing Spec-01 should be regarded as a contract document.
- 0.2 All structural work shall be completed to the satisfaction of the Building Inspector.
- 0.3 Works not constructed in accordance to the specification and drawings, or where dimensions and other information conflict, must be reported to the contract administrator at the earliest opportunity.
Non-conformance - where not constructed in accordance with the drawings or specification provide all testing and remedial works to satisfaction of contract administrator.

1.0 STRUCTURAL STATEMENT

HMS Cambria is a three/four storey steel framed building with a flat roof.

Superstructure

The roof structure consists of a lightweight roof system supported by a structural steel deck, which spans between the primary steel rafters. Typically the rafters span between columns which transfer the vertical loads to the foundations. A raised roof deck is utilised to support the roof plant from the main steel frame. The intermediate floors consists of 140mm composite deck that span between secondary beams that transfer the load to the primary beams. Typically primary beams span between columns which transfer the vertical loads to the foundations.

Ground floor & Substructure

Typically the ground floor is a 250mm thick cast in situ suspended slab supported off sleeper walls and ground beams which transfers the loads to piled foundations which are founded on a suitable bearing strata (suitable bearing strata is the bedrock, located 17-21m below ground level).

Lateral Stability

Generally cross braced bays are used to transmit the lateral force to the foundations. The composite deck is used as a diaphragm to transmit lateral loads to the crossed braced bays. Similarly, plan roof bracing is also utilized to transfer the lateral loads to the cross braced bays.

2.0 STRUCTURAL STEELWORK (BS EN 1993-1-1: 2005)

- 2.1 Structural steelwork is to be fabricated and erected in accordance with the latest edition of the National Structural Steelwork Specification (NSSS).
- 2.2 All steelwork has been designed in accordance with BS EN 1993-1-1: 2005. The contractor is to detail/design all connections (UNO). Connections in accordance with EC3 and BCSA recommendations to safely transmit the forces shown on the drawings. The contractor is to produce and make available all shop drawings to fabricate and erect the steelworks.
- 2.3 All steel members to be grade S355 J2 to BS EN 10210 as noted in the member sizes table or agreed with the engineer. All steel plates to be grade S275 J2 to BS EN 10210 as noted in the member sizes table or agreed with the engineer.
- 2.4 All bolts to be Grade 8.8 to BS3692:1967, minimum 16mm dia (incl. for timber frame), unless noted otherwise, and sheradised or spun galvanised. HD bolts to be 4No. M20 galvanised bolts with 100x100 sq washer plates.
- 2.5 Plates to be minimum 10mm thick, unless noted otherwise. Connection design to steel fabricator.
- 2.6 Welds to be minimum 6mm FPPW unless noted otherwise. Connection design to steel fabricator.
- 2.7 All butt welds to be ultrasonic tested in accordance with the requirements of the NSSS.
- 2.8 Paint finishes -
Surface preparation (generally): All blast clean to SA 21/2
Internal exposed and non-exposed steelwork:
shop applied primer: Intercure 200HS at 125µm
site applied (below ground concrete encased): 'RiW Toughseal' on all faces to minimum 50mm above concrete level.
site applied (exposed steelwork): Steelwork located in cavity of external cavity walls:
External visible steelwork:
shop applied: hot-dip galvanised
surface preparation: sweep blasting with non-metallic and chloride-free abrasive
site applied: 1st coat - Intergard 269 at 40µm NDFT, 2nd coat - Intergard 475HS at 125µm NDFT, 3rd coat - Interthane 990 (high-gloss) at 60µm NDFT or Interthane (semi-gloss) at 60µm NDFT
Intumescent paint to all floor beams, columns (full height) and vertical bracing
site applied (in watertight conditions): Interchar 1190
- Note: contractor selection of paints are acceptable subject to approval. All primers to be suitable for temporary steel frame erection in a coastal environment.
- 2.9 Additional requirements for architecturally exposed structural steelworks.
Remove weld splutter and grind welds flush to the satisfaction of the engineer and architect.
- 2.10 Shop drawings shall be submitted in a timely fashion to the Engineer for approval. Two full weeks shall be allowed for review by the engineer. The purpose of the review is to note that details have been developed in accordance with the design intentions as shown in the "construction status" drawings.
Note that detailing dimensions and any site dimensions remain the responsibility of the contractor.
- 2.11 All chemical anchors to be min M16 HILTI HIT-RE-500 with HAS rod U.N.O.

3.0 TIMBER (BS EN 1995-1-1: 2004)

- 3.1 All sawn timber to be grade C24 in accordance with BS EN 1995-1-1: 2004 and supporting standards specified within.
- 3.2 All works should comply with ECS.
- 3.3 For joist spanning over 2.5m strutting should be provided.
For spans 2.5m-4.5m one row of strutting is needed at the mid span position.
For joist spanning > 4.5m two rows of strutting at third points should be provided.
Solid strutting or herring bone strutting may be used. Solid strutting should be minimum 2/3 the joist depth. Herring bone strutting may be used where the span between the joists is less than 3 times the depth of the joist.
- 3.4 All external timber to be treated with a suitable preservative.
- 3.5 All screws to have pre-drilled holes.

4.0 MASONRY (BS EN 1996-1-1: 2005)

- 4.1 Refer to Architects specification for further details.
- 4.2 Brickwork to be FL or FN class below DPC.
Sleeper walls: 100, 140 and 215mm thick block wall to be constructed from 7N/mm², Medium dense masonry. All block units to be less than 20kg.
Lift shaft: 140 thick block wall to be constructed from 10N/mm², Medium dense masonry. All block units to be less than 20kg.
- 4.3 Blocks to conform to the "Special Category of Manufacturing Control" in accordance with BS 5628. Site inspection and testing of mortar to conform to the "Normal Category of Construction Control" in accordance with BS5628.
- 4.4 For cavities < 120mm walls to be tied with type 2 ties in accordance with DD140: part2.
Ties to have a minimum 50mm embedment into mortar bed. Ties to be staggered and spaced at 450mm vertically and horizontally (at unbounded edges, floors and openings space at 225mm horizontally and vertically). Ties to be stainless steel. Ties to start at top of ground beam level.
Frame cramps and Head restraints Ancon SPB or PPV and Ancon IHR or similar approved (scheduling by others).
- 4.5 Damp proof course to be selected and installed to the recommendations of BS5628-3 cl 21.4 & 21.5 and approved by the engineer.
- 4.6 Temporary stability of walls & structure during construction to be considered by contractor. Contractor to provide all temporary support requirements.
- 4.7 Lintels provide minimum 150mm bearing (or as otherwise specified on drawings) on full bed of mortar on full block. Do not fix joists or apply other loads directly to steel lintels - provide min 150mm of masonry between flange and load. Comply with requirements of BSS977 and manufacturers guidelinesExternal Lintels - IG or Catnic standard lintels.
- 4.8 For movement joint locations refer to architects drawings.
- 4.9 Block reinforcement : N/A

5.0 EXCAVATION AND FILLING

- 5.1 Submit method statement for excavation and filling in accordance with clause 612 of the Specifications for Highway Works with reference to table 6/4
- 5.2 All topsoil to be stripped and disposed of accordingly.
- 5.3 Refer to civil engineering drawings for details of hard landscaping build-ups
- 5.4 Refer to architectural drawings for details of soft landscape build-ups. Note that all soft landscaping areas to have minimum 600mm clean cap material with no dig barrier below.
- 5.5 Main building suspended ground floor slab to have minimum 300mm HA Type 1, compacted in layers, sub-base to allow safe installation of slab.
- 5.6 External ancillary structures/buildings slabs to have minimum 600mm HA Type 1, compacted in layers, sub-base.
- 5.7 All excavations without sub-bases to receive concrete foundations (i.e. pile caps and ground beams) to be blinded with min 75mm lean mix concrete. Dig levels to suit.

6.0 FOUNDATIONS AND GROUND CONDITIONS

- 6.1 Refer to CJ associate's "Site Investigation No. AE1176/AE0709 Factual and Interpretative Report". The existing site investigation report is available and should be supplied to the ground works subcontractor.
- 6.2 Founding Strata - Based on the above report, the pile founding strata is located within the bedrock, approximately 17-21m below ground level.
- 6.3 Groundwater - Groundwater was encountered at a depth of 1.5-2.54m.
- 6.4 Stability of Excavations - Provide adequate temporary works to support all excavations or use short term batters at 45 degrees. Inform engineer where horizontal distance to adjacent existing structures is less than the required depth of excavation.
- 6.5 Radon and Ground Gases - No radon protection is required. Low risk from ground gases (Gas Characteristic Situation 2) requiring a gas proof membrane (min 2000 guage polythene) installed in accordance with Ciria C735
- 6.6 Contamination - Significant levels of soil contamination have been encountered on site which exceed guideline values for residential end use, public open spaces and commercial end use. Refer to site investigation report.
- 6.7 Piles - driven precast concrete to suitable founding depth and minimum working capacity of 750kN. All piles to be designed, installed and tested in accordance with the ICE Specification for Piling and Embedded Retaining Walls (latest edition). Pile tests to be undertaken in accordance with the Federation of Piling Specialist's Handbook on Pile Load Testing
- 6.8 Pile testing - all piles to be integrity tested. Complete minimum 1No preliminary pile test, and 2No working pile tests.

7.0 STRUCTURAL CONCRETE (BS EN 1992-1-1: 2004)

- 7.1 The following designated concrete mixes shall be used conforming to BS EN 1992-1-1: 2004:
- Mass concrete foundations (including concrete surround at base of column) to be designated mix FND2 and cast against blinding. Generally reinforced concrete to be C32/40 concrete reinforced as shown on drawings, 50mm nominal cover when cast against blinding or formwork (75mm cover when cast directly against earth).
Waterproof reinforced concrete (including lift pit) to be C32/40, reinforced as shown on drawings, 50mm nominal cover when cast against blinding or formwork (75mm cover when cast directly against earth).
- 7.2 Ready mixed concrete to be supplied from QSRMC certified producer.
- 7.3 Transportation, placement and curing:
Place concrete within the temperature range 5°C to 30°C. Do not place on frozen surfaces. Ensure works free from obstructions/water. Avoid contamination, do not add additional water, prevent segregation and loss of ingredients, place in one continuous operation up to construction joints. Fully compact concrete to full depth to remove entrapped air until bubbles cease to appear at top surface. Do not use pokers to make concrete flow horizontally into position. Revibrate concrete to remove plastic settlement cracks.
Curing: Prevent loss of moisture on all surfaces. Retain formwork for specified curing period. Cover top surfaces immediately after placing with suitable sheeting or curing compounds at no impediment to subsequent finish for specified curing period (allow for subsequent light sand blasting prior to applying surface finishes). Curing period = 5 days.
- 7.4 Reinforcement (Annotated H on schedules) to be high yield (fy = 500 N/mm²) deformed type 2 bars to BS 4449, ductility grade B. Mesh reinforcement to be high yield (fy = 500 N/mm²) to BS 4483, ductility grade B. Cut and bend reinforcement to BS 8666. (Do not cut or re-bend without approval from the engineer). All reinforcement to be supplied with CARES certificate. Prior to concrete placement ensure reinforcement is clean and free from oil, looserust and other substances that may impair the bond with the concrete.
- 7.5 Cover to reinforcement as stated above (maximum deviation = 5mm). Increase cover to 75mm if directly cast against earth. Lap lengths for mesh = 400mm (avoid 4-layer build up - use flying ends as necessary). For all other reinforcement laps to be 40 x bar diameter min generally and 52 x bar diameter at tops of beams.
- 7.6 Dimensional / construction tolerances to be in accordance with the National Structural Concrete Specification. Maximum permissible deviation of concrete floors/screeds: SR1 TO BS 8204.
- 7.7 Finish to top surfaces:
All surfaces - compatible with applied finishes (prior to commencement confirm with manufacturers). Carry out finishing operations at optimum times in relation to hardening of concrete, do not add water or sprinkle cement.

8.0 COMPOSITE FLOORS

- 8.1 All composite floor decks to be 140mm thick Comflor 51, 1.2mm guage, with A193 mesh throughout.
- 8.2 Deck to tek screwed to all beams at 300mm centres at first installation.
- 8.3 Shear studs to be 105mm long, 19dia, and site welded through deck to composite beams at centres as noted on drawings.
- 8.4 All composite beams to have transverse reinforcement of H8 loose bars, 1000mm long, at 150mm centres.
- 8.5 Composite decks to be installed to manufacturer's recommendations.

9.0 EXISTING BUILDINGS AND DEMOLITION

Refer to Hydrock Demolition Survey Report 161526-HYD-00-XX-SU-S-1001 for information relating to the demolition of existing buildings and structures.

Refer to 2017_04_24 - Fuel Tank Technical Note (contained within Appendix A of 161526-HYD-00-XX-SU-S-1001) for details on the de-commissioning of on site fuel tank.

The contractor is responsible for the safe demolition, removal and decommissioning of all buildings and structures on site.

10.0 STRUCTURAL SUBCONTRACTOR DESIGNED ITEMS

See section 11.0 for loadings

- 10.1 ALL steelwork connections. Visible connections subject to aesthetic review by design team.
- 10.2 Lightweight roof system.
- 10.3 Cold rolled wall framing including SFS (internal lightweight perimeter wall) and cladding rails (depths to match drawing, gauge to sub-contractors design).
- 10.4 External canopies not part of main structural frame.
- 10.5 Design of all lintels and windposts (inc.scheduling of lintels) not part of main structural frame.
- 10.6 Tensile fabric elements including secondary steelwork, plates, tracks and associated elements (e.g. feature fin cladding).
- 10.7 Specialist framed roof ventilation structures and rooflights.
- 10.8 Piles. Note that the design and installation method of the piles should be such that contamination within the made ground does not migrate to nearby waters.
- 10.9 Pile mat
- 10.10 Temporary works of any kind, including excavation support, temporary frame bracing, propping etc.

11.0 LOADINGS

- 11.1 Permanent Actions

Ground Floor:
250thk cast-in-situ slab = 6.25 kN/m²
Architectural finishes inc. insulation = 0.20 kN/m²
75mm screed = 2.00 kN/m²
Total Permanent Actions = 8.45 kN/m²

Intermediate Floors:
140thk composite deck slab = 3.12 kN/m²
Architectural finishes = 0.15 kN/m²
Ceiling and services = 0.50 kN/m²
Total Permanent Actions = 3.80 kN/m²

Roof:
Lightweight roof system/liner tray/insulation = 0.40 kN/m²
Ceiling & Services = 0.50 kN/m²
Total Permanent Actions = 1.10 kN/m²

External Walls:
150 SFS (Inner Leaf) = 0.20 kN/m² x height
Cavity (Insulation etc.) = 0.5 kN/m² x height
Duraline and Plasterboard = 0.3 kN/m² x height
102.5 Thk Low-Level Brickwork = 2.31 kN/m² x height
Paneling = 0.2 kN/m² x height

Note: 140mm blockwork used to replace 150 SFS inner leaf on ground floor

- 11.2 Variable Actions:

Ground Floor (inc Partitions) = 8.7kN/m²
Intermediate Floors (inc Partitions) = 6.2 kN/m²
Roof Load General = 0.6 kN/m²
Roof Plant Room Load = 7.5 kN/m²
Wind Load to BS EN1991-1-4
Snow Load to BS EN1991-1-3

KEY PLAN

NOTES

1. DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS DRAWINGS.

REVISIONS

P1	TENDER ISSUE				
	C WILLIAMS	10/07/17	L PALMER	10/07/17	M ACE
					10/07/17

REV	REVISION NOTES/COMMENTS				
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY

CLIENT	ABP
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PROJECT	HMS Cambria
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TITLE	Brief Specification Notes
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HYDROCK PROJECT NO.	SCALE @ A1
C-04330-C	
STATUS DESCRIPTION	D2
SUITABLE FOR TENDER	
DRAWING NO. (PROJECT - ORIGINATOR - VOLUME - LEVEL - TYPE - ROLE - NUMBER)	REVISION
C161526-HYD-XX-ZZ-DR-S-0001	P1