COMMUNITY DIAGNOSTIC CENTRE, PLYMOUTH

EXTERNAL WORKS SPECIFICATION

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[redacted]

1.0 Earthworks

1.0.1 All necessary precautions are to be taken to prevent damage occurring to existing services under or in close proximity to the works and existing buildings.

1.0.2 All temporary works for excavations are to be designed, erected, inspected and dismantled by competent persons and a method statement issued to the engineer for comment.

1.0.3 Reference shall be made to utility surveys and demolition records prior to undertaking any excavation works. The contractor shall undertake all necessary precaution including but not limited to CAT scans and utility searches prior to 'breaking ground'.

1.0.4 Bulk excavation shall be carried out generally in accordance with the recommendations of the Specification for Highway Works. Care should be taken that the formation level shall not be damaged when carrying out bulk excavation works.

1.0.5 Contractor to comply with all relevant HSE guidelines and other statutory requirements and provide method statements for transfer of materials from point of delivery to ensure compliance with permanent works sequencing.

1.0.6 In areas of cut, levels are to be reduced to formation level which should then be proof rolled by 8 passes of a vibratory roller of 2900-3600 kgs mass per metre width of roll (or alternative means of compaction as specified within the ground investigation in relation to the site conditions and materials). Any localised soft spots should be removed and replaced with suitable excavated or imported granular material or type 1 stone. Any large areas of soft material should be reported to the engineer.

1.0.7 All topsoil is to be removed and any existing paving, broken up and removed if necessary. If existing concrete, bricks, blocks or paving material is to be retained for re-use as general fill it must be broken up into pieces no larger than 150mm. If to be used as Type 1 stone it must be crushed to a size and grading similar to Type 1 and certified appropriately by an independent testing company.

1.0.8 In areas of fill, suitable excavated or imported material is to be spread and consolidated in layers in accordance with Tables 6/1 and 6/4 Volume 1 Specification for Highways Works. Where areas of fill include existing embankments, steps are to be cut in the embankment with depth and width being dependant on embankment slope and fill layer thickness.

1.0.9 CBR values must be established or confirmed for all roads, car parks and paved areas by on-site testing at proposed formation levels and minimum 0.5m below formation. Testing shall include saturated testing to verify long term equilibrium condition.

1.1.0 Topsoil spoil heaps:

To be not more than 2m high.
Treat with a suitable herbicide at appropriate times to prevent seeding of weeds.
Do not place any other material on top of spoil heaps.
Do not allow construction plant to pass over spoil heaps.
Prevent compaction and contamination.
To be built in accordance with MAFF Good Practice for Handling Soils (pub. 2000)
Suitable management to prevent surface water run-off shall be utilised

1.2.0 Surplus subsoil:

Stockpile surplus excavated material in temporary spoil heaps.
Treat with a suitable herbicide at appropriate times to prevent seeding of weeds.
Do not place any other material on top of spoil heaps.
To be built in accordance with MAFF Good Practice for Handling Soils (pub. 2000)
Suitable management to prevent surface water run-off shall be utilised

2.0 Ground Water

2.0.1 A site investigation in the form of boreholes and trial pits has been carried out. The contractor shall satisfy himself by reference to the site investigation report and/or by local knowledge of the ground water conditions likely to occur in the excavations and shall make suitable provisions for providing all necessary pumping equipment, etc., for keeping excavations dry and for stopping the ingress of water onto the site. The level of the ground water is known to fluctuate in response to tidal and seasonal conditions.

3.0 Separation (Geotextile) Membrane(s)

3.0.1 All membranes selected shall be checked to ensure compatibility with site conditions and proposed materials to be used on site.

3.0.2 Under adverse weather conditions (i.e. damp ground or raining) or when cohesive soils are noted, a geotextile separating membrane is recommended between sub-grade and sub-base. In accordance with BS 7533-2:2001. Where CBRs of 3% or less are exhibited the use of a suitable separation and reinforcement geo-grid is required, to engineers' specification.

3.0.3 For an impermeable pavement build-up, a membrane requirement between the laying course and sub-base is to the paving manufacturer's specification.

3.0.4 For a permeable pavement build-up, a permeable non-woven, needle-punched separation membrane between the bedding layer and permeable sub-base is required, if treatment of water quality is required an Inbitex or other similar treatment fabric is required, alternatives should be provided to the engineer for approval.

3.0.5 Separation membrane to be lapped by a minimum of 500mm in all cases and up to 1,000mm dependent on ground conditions. For poor conditions, soft uneven ground 1,000mm is required. Other jointing methods are acceptable to manufacturer's specification.

3.0.6 Separation membrane to have suitable mechanical and hydraulic properties for the application.

3.0.7 All separation membranes to be needle punched and non-woven

4.0 Bitmac Access Road

25mm SMA6 SURF to BS EN 13108-1
50mm AC20 DBM 100/150 to BSEN 13108-1
80mm AC32 DENSE BASE 100/150 TO BS EN 13108-1
150mm Sub Base of Type 1 granular material to clause 803 Volume 1 Specification for Highways Works - Sub base to be compacted in accordance with Table 8/4 Volume 1 Specification for Highways Works.
Minimum PSV 57 required.
If binder course is to be used or has been used by traffic then surface to be cleaned and a tack coat applied.
Where levels are to be raised and suitable fill material is used and well consolidated a CBR in excess of 15% would be expected. This results in a 150mm sub base of type 1 granular material to clause 803 Volume 1 Specification for Highways Works.
Where levels are to be reduced, variable ground with variable CBR's is to be expected. Testing is required with the following minimum range of Sub Base thicknesses applying. The Sub Base is to be made up of 150mm Sub Base of Type 1 granular material to clause 803 Volume 1 Specification for Highways Works plus the following range of Capping Layer of Type 6F2 to Clause 613 of Volume 1 Specification for Highways Works. CBR values: - Under 2% Design to be agreed and approved by the Councils Engineer before any works commence : 2%-3% 350mm Capping Layer: 3%-4% 200mm Capping Layer: 4%-8% 150mm Capping Layer: 8%-15% the Sub Base shall consist of 225mm of Type 1 granular material to clause 803 Volume 1 Specification for Highways Works.
Sub base and capping layers to be compacted in accordance with table 8/4 and 6/4 Volume 1 Specification for Highways Works.

One layer permeable hybrid separation and structural geogrid membrane laid at formation

5.0 Bitmac Footways, Footpaths and Pedestrian Areas (if required)

20mm SMA6 close surf 100/150 to BS EN 13108-1
80mm AC20 dense bin 100/150 to BS EN 13108-1
50mm AC20 DBM 100/150 to BSEN 13108-1 (If required to suit construction sequencing)
150mm sub base of Type 1 granular material to clause 803 Volume 1 Specification for Highways Works
Sub base to be compacted in accordance with table 8/4 Volume 1 Specification for Highways Works.

5.0.1 Where pedestrian areas are subject to vehicle traffic or MEWP access, additional build-up may be required.

6.0 Kerbs, Edgings and Channel

Kerb types are subject to approval by the local planning authority – conservation kerb types may be required to provide required landscaping quality

6.0.1 In car parks and on access roads full kerbs to be 255x125 type HB2 to BS EN 1340:2003, with 125mm up-stand, laid on 150mm GEN 0 concrete bed and backing. Kerb types to be confirmed with architect.

6.0.2 Drop kerbs to be 125x150 type BN with 6mm upstand at pedestrian crossing points (unless flush requested by adopting authority) and 12mm at vehicular crossing points. Typically, shared surface edging drop kerbs to have 40mm upstand.

6.0.3 Drop kerbs to be 125x255mm for vehicular crossings.

6.0.4 200mm bed and 150mm backing of GEN 3 concrete to be used where kerbs are to be crossed by vehicles, GEN 0 elsewhere.

6.0.5 Footway/footpath edgings to be 150x50 flat top edging Type EF to BS EN 1340:2003 laid on 100mm GEN 0 concrete bed and haunch.

6.0.6 Quadrants should be used at all external right angles to BS EN 1340.

6.0.7 PCC dished channels shall be 255 x 125 (305 x150) with a 25mm dish laid on 150mm GEN3 concrete bed, where required fluted channels may be preferred to dished channels.

6.0.8 Linear drains are to be hidden ‘slot’ type as supplied by ACO, Gatic or similar. They are to be of the correct grade and size for the proposed location and are to be laid strictly in accordance with the manufacturer’s instructions with special attention being paid to the location of joints in the concrete backing to the channels. Maintenance access points shall be provided in addition to outfall sumps and sil-traps. Details are to be submitted to channel supplier so that they can select the channel with the correct hydraulic characteristics for each location.

7.0 Drainage

7.0.1 Prior to commencement of any drainage works, confirm invert levels, capacities and positions of existing drains, sewers and inspection chambers against information shown on drawings and report any discrepancies found.

7.0.2 All underground services to be identified prior to commencement of the works

7.0.3 All works on existing public sewers must be undertaken strictly in accordance with "Design and Construction Guidance, Appendix C' and with the approval of the local drainage authority.

7.0.4 All works on un-adopted drains to be in accordance with Section H of the Building Regulations, BS EN 752 and BS EN 1610.

7.0.5 Drainage pipes are to be: -
Clay to BS EN 295
Concrete to BS 5911
Ductile Iron to BS EN 598
UPVC to BS EN 1401 Stiffness Class 4 marked 'UD'
Clay perforated to BS 1196
UPVC Field Land Drainage to BS 4962
All pipes are to have flexible joints.

7.0.6 Pipe bedding is to be 150mm granular bed and half depth of pipe (Bedding Class B) for private drains constructed in clay or concrete pipes and 150mm granular bed and surround (Bedding Class S2) for all Upvc pipes and for concrete or clay pipes that are to be adopted as public sewers.

7.0.7 Bedding material to be granular single sized or graded stone maximum size being dictated by pipe size as per Table 5/3 of Highways Agency Specification for Highway Works.

7.0.8 Where depth of cover is less than 1.2m under highway limits or 0.9m under car park and adjoining areas or 0.6m elsewhere then a 150mm GEN3 concrete surround will be provided. Upvc pipes laid with less than 600 mm of cover shall be protected using a reinforced concrete cover slab with a flexible filler and at least 75mm of granular material between the top of the pipe and the underside of the flexible filler below the slabs in accordance with Approved Document H para. 2.44. Pipes that are encased in concrete are to have expansion joints provided at each pipe joint in accordance with Approved Document H para. 2.45.

7.0.9 For adoptable pipes with cover less than 1.2m under highways and less than 0.9m under non trafficked areas seek guidance from the undertaker.

7.0.10 Trench backfill for private drains is to be suitable well consolidated excavated material. When suitable material is not available imported granular material such as quarry waste shall be used.

7.0.11 Trench backfill to public sewers and private drains under a public highway shall be type 1 granular material.

7.0.12 Manholes and inspection chambers on adoptable sewers are to be strictly in accordance with “Design and Construction Guidance Appendix C and as specified drainage details.

7.0.13 Manholes and inspection chambers on private drains are to be PCC rings or rectangular concrete sections to BS 5911, rectangular in class B engineering bricks or polypropylene pre-formed chambers depending on depth and location.

7.0.14 Manhole covers and frames (BS EN124) shall be ductile iron to the class indicated on the manhole schedule and shall have a min. clear opening of 600 mm except on manholes on public sewers, which will have a min. 600 mm clear opening, and shall be 150mm deep and be Kitemarked.

7.0.15 Inspection chamber covers are to be secured (for example with screws) to deter unauthorised access (for example from children). Where inspection chambers are in excess of 1.2m deep, access to the chambers are to be reduced via the use access reducing sections to 300mm diameter.

7.0.16 Base of stack pipes to have rest bends with a minimum radius of 200mm to centreline of pipe and be stabilised by bedding in concrete. Ensure rest bends are set at depths in accordance with Part H of the Building Regulations 2015 i.e. 450mm below lowest branch for buildings up to 3 storeys; 750mm below lowest branch for buildings up to 5 storeys; no connections on ground floor for buildings over 5 storeys. Buildings with 4 to 5 storeys can have a rest bend level 450mm below lowest branch if ground floor are connected to separate stacks.

7.0.17 Where vertical drops and slung drainage are present within car parks, drainage runs and penetrations are to be suitably resistant to impact and suitably fire treated.

7.0.18 All manhole covers on foul water drains will be double sealed.

7.0.19 All works to be in accordance with HSE Information sheet No. 47 and other relevant documents for safe digging near to and adjacent to existing underground services.

7.0.20 The contractor is to apply to and complete all relevant documentation to the local and statutory authorities where applicable.

7.0.21 Prior to final testing or CCTV inspection, remove all silts and debris from the drainage system. Care should be taken to ensure that no debris or silt is flushed into existing sewers, attenuation tanks, silt traps or pumping chambers.

7.0.22 All drainage to be inspected and tested in accordance with Part H of the Building Regulations 2002 or where appropriate in accordance with the statutory authorities’ requirements.

7.0.23 Where outfalls are to be made to public sewers, the relevant permissions and licences will be sought by contractor prior to undertaking works.

7.0.24 Where the permanent drainage system is proposed to be used to serve the construction works, suitable pre-treatment will be utilised and a temporary permit acquired from SWW.

7.0.25 Diversion works on public sewers shall be carried out by suitably qualified contractors approved by the water authority for works on their assets. All works shall be suitably inspected and signed off by water authority inspectors prior to backfill.

7.0.26 Reinstatements of excavations within public land and carriageways shall be undertaken in accordance with SROH 4th edition, to prior approval of the local highway and water authority.