BRISTOL CITY COUNCIL
Transport Development Management

HIGHWAYS ACT 1980
HIGHWAY DESIGN CHECKLIST

Typical Drawing Requirements

Depending on the size, complexity and type of Agreement some or all may be required and it may be possible to combine some elements but not if drawing becomes cluttered so clarity is essential.

General Arrangement. 1:200 scale to indicate extent, nature and scope of works. Must show adjacent highway and property to indicate any impact it may have on scheme, please supply GA in CAD format.

Location Plan 1:1250 to show site relationship with surrounding area

Drainage Drawing 1:200 scale layout showing sewer status and routes of discharge. Evidence of a Section 104 agreement with Wessex Water required.

Long Sections

Carriageway:-

Max gradient 1:20
Check levels (proposed & existing & left/right/centreline) gradients, horizontal/vertical alignment

Sewers and drainage systems:-

Indicate proposed & existing ground level.
Pipe and SuDS features to include level/size/gradient/specification/bed & surround landscaping, maintenance requirements
Check 1200 cover level. (From top of pipe to surface)

Cross Sections

Footway and Carriageway:-

Max gradient 1:40
Indicate Proposed back of footway, kerb, channel and Centre Line at relevant intervals along the Long Section please include existing levels and annotate chainages

Engineering Detail Provide specification & typical 1:20/1:50 engineering cross sections of carriageway/ footway specification.

- gully manholes & SuDS features
- Kerbs and reinstatements.
- Structures: Retaining walls, bridges, gantries, signing and other structures
- Street furniture
- Street lighting
- Vehicle Crossovers
- Tactiles / pedestrian crossing points informal and formal.

Typical Drawing Requirements, continued

Services Location Plan	*Provide a General Arrangement drawing showing services i.e. Gas, Water, Electricity, Telecoms, Sewers etc.* • Ensure that there are no clashes with Street Trees, Tactile Crossings, crossovers etc.
Road Markings/Signs.	1:200 scale. Layout drawing showing location of all lining and signing annotating mark number, lining and signing schedule.
TRO Drawing:	**Must be submitted in** CAD format .
Street Lighting.	1:200 scale of layout and location of columns.
Highway Structures. structures.	1:200 scale layout of bridges; retaining walls and underground Check with Structures team whether AiPs are required
Stopping Up Order.	1:1250 scale.
Landscaping.	1:200 scale show adoptable areas, areas that form part of a SuDS drainage train & private areas that may influence the public highway.
Swept Path Analysis. site.	1:200 scale of all vehicle movements into/out and throughout the Swept paths of the following vehicles are required:- • 11.4m Large Refuge vehicle against large sized car. • Pantechnicon • 2 Transit vans passing each other Check all junctions for over run of radii Check all turning heads.

Above drawings to be checked against the following typical check list (overleaf)

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Detail Checklist

Visibility Needs to conform to DMRB/MfS as directed by TDM Engineering

- Forward visibility around corners at appropriate SSD.
- Visiblity splays required at junctions

Surface finishes 1:200 scale of highway layout with surface finishes shown.

Areas of Adopted Public Highway

Existing:

- Check against PinPoint Highway Adoption layer

New:

- Check that proposed new highway is connected to the existing
- Plan to be provided indicating developer's site boundary edged in red & new area to be adopted shaded pink @ 1:200 scale.
- Highway Parking bays: must be connected & adjacent to the highway & not allocated to property
- Services strips that serve no function as highway will not be adopted
- Only adopt carriageways that serve five or more properties and remote footways/cycleway connecting one highway to another.
- Provide demarcation of adoptable area by providing a flush kerb (typically, EF kerb), change of material, edge restraint, laying pattern. Studs are not acceptable.

Drainage

- Check 'Sewers for Adoption' manual for reference
- No private drainage apparatus to be under the highway

Gullies: Check gully drainage area is max 150m² per gully (including footways).
Double gully required at major low points
Gullies to open away from oncoming traffic.
Gully covers and frames to D400
Check gully location conforms to SD250 to intercept at junctions, low spots and tactile.
Check PCC gully pot to BS5911sulphate resisting & vitrified clay pot to BS 65 (*No Plastic Gullies*).
Check pot dia. 450mm & 900mm deep.
Check covers specification to EN124. Covers to be hinged & spring lockable.

Check cover shall be pedestrian/cycle friendly on shared surfacing (heel guard) and on footways. No dished gully covers!
Check connection is max 12m long & route stays within public highway
Check gully connected to sewer or gully connection; do not connect gully to gully. No daisy chaining!
Linear drainage systems can be considered that could provide acceptable means of maintenance

Manholes:
Check Manhole located away from junction & wheel tracks
Check concrete products to BS5911to be sulphate resisting
Check ironwork gully/ manhole covers are to BS EN124
D400 gully covers required in highway
Check Manhole location at change of direction, gradient & change of size
Check Manhole & shaft dimension (factor of depth), configuration of pipes entering shaft
Check Manhole specification, steps irons.
Anti-skid covers throughout

Pipes:
Check pipe specification, material, size, gradients
Check depth; min cover level to soffit is 1.2m deep

Design:
Check hydraulic design

Trenches:
Check pipe bed & surround and backfill is as standard details

SuDS:
Retention systems are supported.
Porous paving and soakaways not supported in public highway.
Check tank/crate design load class and resistance to long term creep – lateral loads
Check soil type suitable, soakaway, ponds, swales, filter strip, planters, and percolation test.
Check construction method is suitable for porous surfacing
Check The SuDS Manual: PUB C753 and BS8582 for reference
Check required suitable maintenance regime

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Road Layout & Construction

Layout:	Check carriageway & lane widths, 2.0m min footway width Check turning head geometry Check location of silt collection/parts/areas are identified in the SUDS train. Check vehicle tracking at junctions & turning heads. Check visibility splays and forward visibility Check radii
Levels:	Check long section for gradient, levels, cross falls, camber etc. Carriageway max gradient 5% (1:20) Min 0:83% (1:120) if flatter provide channel blocks to min 1:200
Kerbs:	Check type and where each is located within design material and where each is located within design New to be annotated bold existing to remain shown feint
Lining:	Check that lining is to latest TSRGD standards Check lining schedule has correct diagram number variant & size noted Check spec and colour of double yellow lines.
Signing:	Must conform with TSRGD/ TSM Check posts & sign plate set back 450mm min from kerb face Check pole diameter appropriate to sign carried Check signing schedule has correct diagram number variant & size noted Check signs do not block each other or visibility Check height to bottom of sign
Tactile:	Check document: 'Guidance on the use of tactile paving surfaces' for reference Check spec 200x133x60 blocks, laying pattern (buff or red) Check geometry meets Guidance Check that tactiles are situated on pedestrian desire line.

Landscaping:	Check approval with Landscape Design & Leisure Services Maintenance of all planting to be confirmed (SuDS requirement)
Planting:	Verges: Soil & grass specification

Street Trees: Check for potential conflicts with services, street lighting etc
Calculate Commuted sums
Check root barriers, soil type & watering method SUD train function

Low planting: Check species and quantity
Check low growing species for visibility.

Materials

Stone / Capping: Check CBR values of subgrade/formation to determine sub base & capping layer thickness.
Check whether formation requires geo grid
Check sub-base is Type 1 (non recycled)
Check capping material, certificates to be provided.
Recycled capping must be inspected prior to use to ensure that it does not contain an acceptable quantity of contaminants
Nb 6F2 usually contains brick

Blacktop: Check Bitumen to BS EN12591
Check mixes to BS594 Check pen values

Concrete: Check to BS EN 14227

Anti-Skid: Check colour in stone rather than dye
PSV to be 68+
Check area & distance to be applied
Check with Road safety if required on approach to formal crossings

Verges: Check gradient no greater than 1 in 3
Ensure that low planting is used
Check any SUDs conveyance (filter strips, swales, French drains, and ponds)

Service Strips: Not generally adoptable as public highway
Must be soft materials, except at vehicle crossovers.

Surface materials: Check against agreed palette of materials

Lighting

BCC Lighting Section does **Not permit** the use of service connections, which will not be in the continuous ownership of the Local Distribution Network Operators (DNO) as the BCC local DNO has a Service Level Agreement (SLA) with BCC. Any Independent Distribution Network Operator (IDNO) should enter into a SLA with BCC Lighting Section.

Design checked by Lighting Section and Section 28 document provided to developer/design team
Check columns set back 450mm from kerb face (preferable back of footway)
Check columns within area to be adopted
Located on plinth adjoining highway (1sqm)
Check columns do not obstruct & restrict visibility or access
Check columns are not within tree canopies.
Column door must face oncoming traffic.

Traffic Signals

To be designed in-house only for a fee

Highway Structures

Bridge & retaining wall design, culverts checked by Structures Section
Check impact of over & under sail issues
AIP may be required early discussions should be sought.
Foundations or any private structure not to be within/ under the highway

Services

Check services positions and conflicts of issues with carriageway and footway chambers and depths on all new accesses and loading bays etc to conform with NJUG.

Combined utilities plan to be provided and checked for conflicts with trees etc

At minimum, a desktop check should be carried out for any services in highway eg BNET etc

As built Plans

Upon completion of the scheme As-Built Drawings shall be submitted prior to Adoption information required are as follows: -

To include all assets to be adopted by BCC:

- Gullies/Drainage - Pot depth of gully (mm), invert pipe depth of gully (mm), type of gully (Top Entry/Chute/Acco etc.), Easting and Northing
- Lighting columns (Easting and Northings) & ducting
- Signage (Easting and Northings)
- Material on surface course
- Types of kerbing