A. **PROPORTION OF BROKEN ROCK:**
   The percentage by weight of material in each of the fractions between the 19mm and 4.75mm sieves having two or more broken faces shall not be less than 70%.

B. **CRUSHING RESISTANCE:**
   The crushing resistance shall not be less than 130kN.

C. **WEATHERING RESISTANCE:**
   The aggregate shall fall into one of the following weathering resistance categories: AA AB AC BA BB CA.

D. **SAND EQUIVALENT:**
   The sand equivalent shall not be less than 40 when the aggregate is tested according to NZS 4407: 1991.

**NELSON CITY COUNCIL**

20mm BASECOURSE AGGREGATE

**INFRASTRUCTURAL ASSETS**

APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

**SD 401**
A. **PROPORTION OF BROKEN ROCK:**
The percentage by weight of material in each of the four fractions between the 3.75 mm and 4.5 mm sieves having two or more broken faces shall not be less than 70%.

B. **CRUSHING RESISTANCE:**
The crushing resistance shall not be less than 130 kN.

C. **WEATHERING RESISTANCE:**
The aggregate shall fall into one of the following weathering resistance categories: AA, AB, AC, BA, BB, CA.

D. **SAND EQUIVALENT:**
The sand equivalent shall not be less than 40 when the aggregate is tested according to NZS 4407: 1991.
A. **PROPORTION OF BROKEN ROCK:**
   The percentage by weight of material in each of the four fractions between the 63.5mm and 4.5mm sieves having two or more broken faces shall not be less than 70%.

B. **CRUSHING RESISTANCE:**
   The crushing resistance shall not be less than 110kN.

C. **WEATHERING RESISTANCE:**
   The aggregate shall fall into one of the following weathering resistance categories:– AA AB AC BA BB CA.

D. **SAND EQUIVALENT:**
   The sand equivalent shall not be less than 40 when the aggregate is tested according to NZS 4407: 1991.
EXAMPLE: (SHOWN IN DOTTED LINE)
RESIDENTIAL ROAD
OBSERVED DEFLECTIONS 3.6mm ADDITIONAL DEPTH OF METAL COURSE REQUIRED = 210mm

NOTE: MINIMUM M/4 AP40 BASE COURSE LAYER REQUIRED IS 100mm FOR CONCRETE FOOTPATHS, 150mm FOR ASPHALTIC CONCRETE FOOTPATHS & RESIDENTIAL ROW's, 200mm FOR ROADS & COMMERCIAL/INDUSTRIAL PRIVATE WAY

DESIGN GRAPH FOR FLEXIBLE PAVEMENTS
BENKLEMAN BEAM DEFLECTIONS
SENIOR EXECUTIVE INFRASTRUCTURE 29/07/2010 SD 404
NOTE: MINIMUM M/4 AP40 BASECOURSE LAYER REQUIRED IS 100mm FOR CONCRETE FOOTPATHS, 150mm FOR ASPHALTIC CONCRETE FOOTPATHS & RESIDENTIAL PRIVATE WAY's, 200mm FOR ROADS & COMMERCIAL/INDUSTRIAL PRIVATE WAY's
NOTE: MINIMUM M/4 AP40 BASECOURSE LAYER REQUIRED IS 100mm FOR CONCRETE FOOTPATHS, 150mm FOR ASPHALTIC CONCRETE FOOTPATHS & RESIDENTIAL PRIVATE WAY’s, 200mm FOR ROADS & COMMERCIAL/INDUSTRIAL PRIVATE WAY’s
NELSON CITY COUNCIL

INFRASTRUCTURAL ASSETS

STANDARD KERB & CHANNEL PROFILES

APPROVED: 29/07/2010

SD 407

KERB & CHANNEL

MOUNTABLE KERB

UNMOUNTABLE KERB

MOUNTABLE KERB & CHANNEL

DISH CHANNEL
* NOTE

For local roads where the vehicle design speed is 40km/hr or less, and the footpath is adjacent the kerb, then full height mountable kerb must be used.
NOTE:
1. FOR LOCAL ROADS WHERE THE VEHICLE DESIGN SPEED IS 40km/hr or LESS, AND THE FOOTPATH IS ADJACENT THE KERB, THEN FULL HEIGHT MOUNTABLE KERB & CHANNEL MUST BE USED.
2. VEHICLE ENTRANCE & FOOTPATH TRANSITION MUST COMPLY WITH FIGURE 15.1 & TABLE 15.2 OF THE LAND TRANSPORT NZ ‘PEDESTRIAN PLANNING & DESIGN GUIDE’

* NOTE:
1. FOR LOCAL ROADS WHERE THE VEHICLE DESIGN SPEED IS 40km/hr or LESS, AND THE FOOTPATH IS ADJACENT THE KERB, THEN FULL HEIGHT MOUNTABLE KERB & CHANNEL MUST BE USED.
2. VEHICLE ENTRANCE & FOOTPATH TRANSITION MUST COMPLY WITH FIGURE 15.1 & TABLE 15.2 OF THE LAND TRANSPORT NZ ‘PEDESTRIAN PLANNING & DESIGN GUIDE’
STORMWATER CONTROL
BREAKOVER HEIGHT = 45mm
FROM THE TOP OF THE KERB CROSSING

DIMENSIONS OF STORMWATER BREAKOVER CONTROL FOR ACCESSES BELOW THE ROAD

START OF ACCESS
HEIGHT OF STANDARD KERB
CARRIAGEWAY
KERB CROSSING

ANY CHANGE IN GRADE DIRECTION ALONG THE ACCESS MUST COMPLY WITH 90% ILE CAR APPROACH DEPARTURE AND BREAKOVER DIMENSIONS

GRADIENT OF ACCESS AND BREAKOVER ANGLES FOR ACCESS TO SITES WHERE THERE IS NO EXISTING OR PROPOSED FOOTPATH

NELSON CITY COUNCIL
ACCESS BREAKOVER ANGLES WHERE NO PROPOSED FOOTPATH

INFRASTRUCTURAL ASSETS
APPROVED
SENIOR EXECUTIVE INFRASTRUCTURE
DATE
SD 411
NOTE: FOR LAYOUT and INSTALLATION OF TACTILE PAVING & DIRECTIONAL INDICATORS, SEE SECTION 4.3.12.8
WIDTH VARIES ACCORDING TO ROAD TYPE
(SEE TABLE 4-3 & 4-4)

FOR CROSS FALL TO CARRIAGeway
SEE CAMBER TABLE SD 420

WEARING SURFACE
(ASPHALTIC CONCRETE OR 2 COAT CHIPSEAL)

KERB & CHANNEL

AP40 BASECOURSE
- TNZ M/4 2006 (NELSON)

SUBGRADE
(NATURAL GROUND OR BULK FILL MATERIAL)

SUBSOIL DRAIN
(WHERE REQUIRED TO SPECIFIC DESIGN)

DEPTHS OF BASECOURSE AND SUBBASE
(WHERE REQUIRED) TO BE AS DETAILED IN
SPECIFIC PAVEMENT DESIGN FOR EACH
INDIVIDUAL STREET
1. SERVICES BERM CAN BE REDUCED TO 0.5m WHERE SERVICES ARE UNDER THE FOOTPATH PROVIDED THEY DO NOT PRECLUDE THE INTRODUCTION OF STREET TREES

2. THE DEPTH OF CABLES MAY VARY. SEE SECTION 10 FOR POWER, & SECTION 11 FOR COMMUNICATION CABLE RETICULATION

3. SEE SECTION 4.4.15.3 REGARDING ALTERNATIVE OPTIONS TO GRASS SURFACES & PLANTING WITHIN LANDSCAPE AREAS
NOTE:

1. SERVICES BERM CAN BE REDUCED TO 0.5m WHERE SERVICES ARE LOCATED UNDER THE FOOTPATH PROVIDED THEY DO NOT PRECLUDE THE INTRODUCTION OF STREET TREES

2. THE DEPTH OF CABLES MAY VARY. SEE SECTION 10 FOR POWER, & SECTION 11 FOR COMMUNICATION CABLE RETICULATION

3. SEE SECTION 4.4.15.3 REGARDING ALTERNATIVE OPTIONS TO GRASS SURFACES & PLANTING WITHIN LANDSCAPE AREAS
* NOTES:*

BATTER SLOPES MAY BE REPLACED BY RETAINING WALLS TO SPECIFIC DESIGN WHERE APPROVED BY THE COUNCIL. RETAINING WALLS WHICH ARE NOT FOR SUPPORTING THE ROAD CARRIGEWAY OR FOOTPATH MUST BE LOCATED OUTSIDE LEGAL ROAD RESERVE

THE 1.0m DISTANCE FROM BACK OF FOOTPATH/KERB MAY BE INCREASED WHERE THE AREA IS REQUIRED AS SERVICE STRIPS BY TABLE 4.3 & 4.4
TYPICAL CROSS SECTIONS
RURAL CARRIGEWAY

NELSON CITY COUNCIL

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 417
NOTE:
SUBSOIL DRAIN TO BE INCLUDED IN ROAD FORMATION WHERE A HIGH WATER TABLE & NON FREE DRAINING SUBGRADE MATERIALS EXIST

100mm Φ PIPE TO TNZ F/5 N.B IF DRAIN IS LOCATED UNDER CARRIAGEWAY A TNZ F/2 PIPE MUST BE USED

DRAINAGE AGGREGATE TO TNZ F/6
GEOTEXTILE SURROUND TO TNZ F/7
IMPERVIOUS MATERIAL

SUBSOIL DRAIN FILTER DETAIL
(WHEN IN CUT)

LANDSCAPING, PLANTING & SURFACING TO SPECIFIC DESIGN

FOOTPATH SWALE DRAIN PARKING SPACE VEHICLE LANE

OFFSET FROM VEHICLE LANE

150mm OF SUBBASE AGGREGATE
MAX. SLOPE 1:9
GOBI GEO GRID/TRAFFIC MATT BLOCKS OR SIMILAR FOR ACCESS CROSSING

150mm SUBSOIL DRAIN
LONGITUDINAL GRADE (SUITABLE FOR TRAFFIC LOADING) MAX. 1:20

CONCRETE EDGE RESTRAINT (SEE INSET 'A')

ROADSIDE SWALE DRAINS – SUBJECT TO SITE CONDITIONS

20mm CHAMFER SEAL
BASECOURSE

COMPACTED AP40 SUBBASE

INSET 'A'

NELSON CITY COUNCIL

TYPICAL DRAINAGE FOR ROADSIDE SWALES & LOW IMPACT STORMWATER

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

SD 418

SENIOR EXECUTIVE INFRASTRUCTURE DATE
NOTE:-
1. NO KERBSIDE PARKING WITHIN THE TURNING CIRCLE
2. FOR RESIDENTIAL DEVELOPMENT ON STEEP HILLSIDE, THE CUL-DE-SAC RADIUS CAN BE REDUCED TO 7.0m OR A 'FISH-TAIL' OR 'HAMMERHEAD' DESIGN PROVIDED THE TURNING AREA PERMITS A 90 PERCENTILE 2 AXLE TRUCK TO UNDERTAKE A 3 POINT TURN
3. THIS DRAWING IS AN EXAMPLE ONLY AND THERE ARE OTHER COMPLYING DESIGNS FOR CUL-DE-SAC TURNING HEADS

*(SPECIFIC DESIGN REQUIRED)*
CROSSFALL FOR ROADWAY 3%-4% (1 IN 33 - 1 IN 25)

Camber Table

NOTE:
CARRIAGEWAY CAMBER ON EITHER SIDE OF OFFSET CROWN SHOULD BE BALANCED IN TERMS OF THE ABOVE CAMBER TABLES.
CARRIAGeway THRESHOLDs
(LONGITUDINAL SECTION)

65mm MINIMUM INTERLOCKING CONCRETE BLOCKS IN 45° HERRINGBONE PATTERN

PART BRICKS MUST BE NO SMALLER THAN HALF A BRICK (50%)

CONCRETE SEPARATING STRIP UNDER SEAL

CARRIAGeway THRESHOLDs
(PART PLAN)

NOTES:

1. CONCRETE BLOCKS SHALL COMPLY WITH NZS 3116: 1981

2. LAYING OF BLOCKS SHALL COMPLY WITH THE CEMENT AND CONCRETE ASSOCIATION OF NZ "INTERLOCKING CONCRETE BLOCK ROAD PAVEMENTS" (SEPT 1988)

3. COLOUR OF BRICKS TO BE NOMINATED ON ENGINEERING DRAWINGS AND APPROVED BY COUNCIL

IN HIGH TRAFFIC AREAS (COLLECTOR ROAD CATEGORY OR HIGHER) THE BLOCKS SHALL BE LAIiD ON 150mm DEPTH OF REINFORCED CONCRETE AS DETAILED ON SD 423
CARRIAGEWAY WIDTH AS REQUIRED

SECTION
FOR STANDARD ROAD SITUATION
3.70m SPEED CONTROL RAMP

25mm ASPHALTIC
CONCRETE WEARING
COURSE

DIRECTION OF TRAFFIC
KERB (FOR STANDARD
ROAD SITUATION)
ROAD SURFACE

SEGMENT OF CIRCLE
-DEPTH VARIES

LENGTH 3.700

SECTION-SPEED CONTROL RAMP PROFILE
FOR KERB AND CHANNEL
STANDARD ROAD SITUATION

SETTING OUT PROFILE
FOR SECTION (ALL CASES)

NELSON CITY COUNCIL

SPEED CONTROL DETAILS

INFRASTRUCTURAL ASSETS
APPROVED
29/07/2010
SD 422

SENIOR EXECUTIVE INFRASTRUCTURE DATE
BRICKS LAID IN 45° HERRINGBONE PATTERN ON 150mm OF CONCRETE (30 MPa) AND 665 MESH. BRICKS TO BE SECURED TO CLEAN SCABBLED CONCRETE WITH AN APPROVED EPOXY BEDDING MORTAR.

1. RAMP HAS MONO CAMBER
2. ONE ROW OF RED PAVERS IN SOLDIER PATTERN TO FACE EACH CONCRETE RAMP
3. JOINTING SAND SHALL BE 'PAVELOCK' OR SIMILAR APPROVED SAND
4. THE MINIMUM SIZE FOR PART BLOCKS/PAVERS SHALL BE 50% OF FULL SIZE

30MPa CONCRETE RAMP WITH 665 MESH MINIMUM THICKNESS 200mm

SAW CUT EXISTING ROAD SURFACE

STREET

EXISTING AC UNDER RAMP TO BE STRIPPED TO BASECOURSE LEVEL. BASECOURSE TO BE RIPPED

150mm MINIMUM AP40 COMPACTED BASECOURSE

ONE CONSTRUCTION JOINT MUST BE FORMED CENTRALLY IN CONCRETE RAMP

STREET CARRIGEWAY
NOTE:
1. MAXIMUM OPENING SPACE
OF THE CHAIN LINK SHALL
BE 35mm or 50mm DIAMETER

2. SEE SECTION 4.4.12.4

NELSON CITY COUNCIL

ALTERNATIVE HANDRAIL CHAIN LINK

INFRASSTRUCTURAL ASSETS

APPROVED 29/07/2010

SD 424

NELSON CITY COUNCIL

ALTERNATIVE HANDRAIL CHAIN LINK

INFRASSTRUCTURAL ASSETS

APPROVED

SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 424

NELSON CITY COUNCIL

ALTERNATIVE HANDRAIL CHAIN LINK

INFRASSTRUCTURAL ASSETS

APPROVED

SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 424
NOTE:
BALUSTRADE TO BE JURALCO VIKING
BALUSTRADE (FULL HEIGHT
BALUSTRADES) POWDERCOATED
ALUMINIUM (INTERPON GHOST GREY)
or SIMILAR APPROVED, PROVIDED
ALTERNATIVE MEETS REQUIREMENTS
B1, B2, & F4 OF THE BUILDING CODE

NOTE:
BALUSTRADE TO BE JURALCO VIKING
BALUSTRADE (FULL HEIGHT
BALUSTRADES) POWDERCOATED
ALUMINIUM (INTERPON GHOST GREY)
or SIMILAR APPROVED, PROVIDED
ALTERNATIVE MEETS REQUIREMENTS
B1, B2, & F4 OF THE BUILDING CODE

TYPICAL ELEVATION

NOTE:
1. MINIMUM COVER TO D10 REINFORCING
FROM EXPOSED SURFACE SHALL BE 50mm
2. FOR TIMBER WALL FIXING DETAIL, SEE
TYPE ‘C’ ON SD 424
3. SEE SECTION 4.4.12.4

NOTE:
BALUSTRADE TO BE JURALCO VIKING
BALUSTRADE (FULL HEIGHT
BALUSTRADES) POWDERCOATED
ALUMINIUM (INTERPON GHOST GREY)
or SIMILAR APPROVED, PROVIDED
ALTERNATIVE MEETS REQUIREMENTS
B1, B2, & F4 OF THE BUILDING CODE
PLASTER CAP PERMANATELY AFFIXED WITH DOWEL STARTER AND PAINTED WHITE.

300mm OF 140mmØ GALVANISED PIPE, 4mm THICK, INSERTED AND PERMANATELY AFFIXED INTO 150mmØ GALVANISED PIPE.

PADLOCK BRACKET (SEE DETAIL BELOW)

150mm GALVANISED PIPE 4mm THICK

FINISHED SURFACE

D12 STIRRUP

4 - D12 BARS MIN 50mm FROM PIPE MIN COVER 50mm

600mm x 500mm DEEP 28 MPa CONCRETE FOUNDATION.

ELEVATION

NOTES:
1. ALL STEELWORK SHALL BE PRIMED AND PAINTED WHITE WITH REFLECTORISED STRIPS VISIBLE FROM BOTH WAYS
2. PADLOCK TO BE POSITIONED FACING DIRECTION OF CYCLE TRAFFIC

NELSON CITY COUNCIL

REMOVABLE CYCLE BOLLARD

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

SD 426

SENIOR EXECUTIVE INFRASTRUCTURE DATE
PLASTER CAP PERMANATELY AFFIXED WITH DOWEL STARTER AND PAINTED WHITE.

150mmØ GALVANISED PIPE, 4mm THICK

FINISHED SURFACE

4 – D12 BARS MIN 50mm FROM PIPE MIN COVER 50mm

600mm x 500mm DEEP 28 MPa CONCRETE FOUNDATION.

ELEVATION

NOTES:
× ALL STEELWORK SHALL BE PRIMED AND PAINTED WHITE WITH REFLECTORISED STRIPS VISIBLE FROM BOTH WAYS
HEIGHT OF RAIL TO BE 1.0m ABOVE
ADJACENT CYCLE PAVEMENT AREA.

50mm DIA. GALVANISED PIPE
PAINTED WHITE WITH APPROVED
(EPOXY OR POWDER COATING)
SYSTEMS

NOTE: USE THIS DETAIL WHEN RAILS ARE
OUTSIDE CARRIAGEWAY AREA AND SEEN
BY CYCLISTS.

100mm HI-RED REFLECTIVE TAPE
(SEE DETAILS)

300mm OF 40mmØ
GALVANISED PIPE,
INSERTED AND
PERMANENTLY
AFFIXED INTO
50mmØ GALVANISED
PIPE.

NOTE: USE THIS DETAIL WHEN RAILS ARE WITHIN CARRIAGEWAY
AREA AND SEEN BY MOTOR VEHICLES.

R=250mm

GALVANISED BOLT
BRACKET WITH M10
GALVANISED NUT &
BOLT

GIVE WAY LINE
IF DESIRED

PAVEMENT

GIVE WAY LINE
IF DESIRED

KERB OR EDGE
OF SEAL

HOLD RAILS TO BE
FREE FROM FOOTPATH
TO PREVENT OBSTRUCTING
PEDESTRIANS

NOTE:

1 RAIL TO BE PLACED
AT EDGE OF CYCLEWAY
PAVEMENT OR 300mm
FROM EDGE OF
PEDESTRIAN REFUGES.

2 TOP RAIL SHALL BE 1.0m RED
ABOVE ADJACENT PAVEMENT

50mmØ GALVANISED
PIPE GROUND
SOCKET

200mm Ø CONCRETE
SURROUND

VARIABLES
600min - 1500max
VARIABLES
300-600
325

PLAN

HOLDING RAIL ELEVATION

NELSON CITY COUNCIL

CYCLE HOLDING RAIL

INFRASTRUCTURAL ASSETS

APPROVED

SD 428

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE
**NOTE:**

The pedestrian/cycle access is to be used to link a road to a road or road to reserve. For shared accessways that are on a main route & will have a high use, then the sealed pathway shall be 3.0m & subject to specific design. See Table 4-15 with walkways oriented east/west plant trees on the northern side of the footpath.

If steps are required for grades greater than 1:5 then street lighting shall be provided as well as a handrail to one side. Also, a half-round open concrete channel shall be formed adjacent the steps to assist cycle movement.

Steps shall be no narrower than 300mm tread with 150–180mm riser. A landing shall be provided every 20 steps. No less than 3 steps shall be provided in any one area.

For bollard details see SD 426 & SD 427.