Appendix C – Standard Details
**TYPICAL 1.8m HIGH 6m WIDE PALISADE GATE (1:50)**

(TYPICAL EXTERNAL VIEW)

- **162x152x37 UC POSTS WITH POINTED TOP**
- **GATE FRAME 90x50x3.5 RHS**
- **ANTILIFT GATE HANGING DETAIL**
- **SLIDING LOCKING BAR**
- **6mm THK SLAM PLATE**
- **TRIANGULAR GUSSET PLATE**
- **DROP BOLT**
- **525mm MINIMUM EMBEDMENT INTO 600x600x1100mm CONCRETE FOOTING**

---

**TYPICAL 1.8m HIGH PALISADE FENCE (1:50)**

(TYPICAL EXTERNAL VIEW)

- **162x152x37 UC POSTS WITH POINTED TOP**
- **GATE FRAME 90x50x3.5 RHS**
- **ANTILIFT GATE HANGING DETAIL**
- **SLIDING LOCKING BAR**
- **6mm THK SLAM PLATE**
- **TRIANGULAR GUSSET PLATE**
- **DROP BOLT**
- **525mm MINIMUM EMBEDMENT INTO 600x600x1100mm CONCRETE FOOTING**

---

**SPECIFICATION:**

**PALISADE FENCING**

- All steel palisade fence shall be security type GP18 in accordance with BS EN 1022: PART 12 and hot dip galvanised in accordance with BS EN ISO 1461.
- All rolled steel sections shall be of steel grade S275 to BS EN 10025: 1993 unless otherwise specified.
- All bolts shall comply with BS 3692 and shall be strength grade 8.8. Nuts shall be strength grade 8 and washers shall conform to BS 4532. All bolts, nuts and washers shall be zinc coated.
- All connections shall be bolted in accordance with BS 1722: PART 12.
- **Optional items required for additional security are to be specified in a project specific form A/B.**
- All bedding concrete for vertical fence posts to be mass concrete minimum grade ST2 to BS 8500-1.

**INSTALLATION GUIDANCE - PALISADE FENCING**

To limit deflection in fence rails, the bottom horizontal rail shall be supported so that after tightening of the bolts, aligning and plumbing to the fence there is a slight upward camber. This support should be removed only once the concrete has set.

**CONCRETE**

- CONCRETE: C30/37, AC-4, DC-4, AGGREGATE: 20mm (MAX.)
- SULPHATE AND CHLORIDE RESISTANT CONCRETE: C30/37, AC-4, DC-4, AGGREGATE: 20mm (MAX.)
- CONCRETE MINIMUM GRADE ST2 TO BS 8500-1.

**TABLE 1**

**SAFETY, HEALTH & ENVIRONMENT RISK ASSESSMENT**

<table>
<thead>
<tr>
<th>RISK</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTACT WITH OVERHEAD WIRES OR BURIED SERVICES</td>
<td>C</td>
</tr>
<tr>
<td>DAMAGE TO ROOTS OR PROTECTED TREES</td>
<td>C</td>
</tr>
<tr>
<td>INJURY TO ADJOINING LANDOWNERS</td>
<td>C</td>
</tr>
<tr>
<td>FAILURE OF FENCE DUE TO SUB-STANDARD MATERIALS</td>
<td>D/C</td>
</tr>
<tr>
<td>FAILURE OF FENCE DUE TO SUB-STANDARD INSTALLATION</td>
<td>D/C</td>
</tr>
</tbody>
</table>

**NOTE:** C=CONSTRUCTION, D=DESIGN

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**GENERAL NOTES:**

- ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
- ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF NETWORK RAIL COMPANY PROCEDURES:
  - NR/PR/PHS/011: PREVENTION OF DAMAGE TO AND DANGER FROM SURFACE AND BURIED SERVICES.
  - NR/PR/CMIC/0024: CONTROL AND USE OF METAL PINS AND SPIKES ON NETWORK RAIL INFRASTRUCTURE
  - NR/PR/CMIC/0025: PROCESS FOR LOCATING EXISTING Vs NEW SERVICES.
- FENCES JOINED TO EXISTING FENCES, WALLS OR OTHER STRUCTURES TO PROVIDE A COMPLETE BARRIER TO PERSONS OR ANIMALS AS APPROPRIATE.
- FENCES SHALL BE ACCURATELY SET OUT AND ERECTED TO PROVIDE A SMOOTH ALIGNMENT IN PLAN AND ELEVATION, FOLLOWING THE CONTOURS OF THE GROUND AS CLOSELY AS IS PRACTICAL.
- THE LINE OF THE FENCING SHALL BE CLEARED OF ALL IMPENDING VEGETATION AND TRIMMED TO REMOVE ANY IRREGULARITIES TO ENABLE FENCE INFILL PANELS TO BE ERECTED AT A CONSTANT DISTANCE FROM THE GROUND.

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**TYPICAL 1.8m HIGH 6m WIDE PALISADE GATE & FENCE DETAILS - SECURITY LEVEL 1 & 2**

**PROPERTY AND INFRASTRUCTURE ACCESS POINTS BEST PRACTICE DESIGN GUIDE STANDARD DETAILS**

**DRAWING TITLE**

1.8m HIGH 6m WIDE PALISADE GATE & FENCE DETAILS - SECURITY LEVEL 1 & 2

**DRAWING NO.**

P.J.

**CHECK**

S.C.

**DESIGNER'S NOTE - CDM REG. 13(2)(b)**

The following are significant hazards which might affect the health and safety of those undertaking the works outlined in this set of drawings or railway structures or those affected by these activities. A site specific risk assessment should always be undertaken prior to commencing any of the works described on site.

**IT IS ASSUMED THAT A COMPETENT CONTRACTOR IS AWARE OF THE RISKS ASSOCIATED WITH GENERAL CONSTRUCTION ACTIVITIES UNDERTAKEN WITHIN THE RAILWAY ENVIRONMENT.**

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**SPECIAL PROJECTS @ Capita.co.uk**

[Image of Construction Site]
SPECIFICATION:

PALISADE FENCING

ALL STEEL PALISADE FENCE SHALL BE SECURITY TYPE SP30 IN ACCORDANCE WITH BS 1722 - PART 12 AND HOT DIP GALVANISED IN ACCORDANCE WITH BS EN ISO 1461.

ALL ROLLED STEEL SECTIONS SHALL BE OF STEEL GRADE S275 TO BS EN 10025 : 1993 UNLESS OTHERWISE SPECIFIED.

ALL BOLTS SHALL COMPLY WITH BS 3692 AND SHALL BE STRENGTH GRADE 8.8. NUTS SHALL BE STRENGTH GRADE 8 AND WASHERS SHALL CONFORM TO BS 4320. ALL BOLTS, NUTS AND WASHERS SHALL BE ZINC COATED.

ALL CONNECTIONS SHALL BE BOLTED IN ACCORDANCE WITH BS 1722 - PART 12.

OPTIONAL ITEMS REQUIRED FOR ADDITIONAL SECURITY ARE TO BE SPECIFIED IN A PROJECT SPECIFIC FORM A.

ALL BEDDING CONCRETE FOR VERTICAL FENCE POSTS TO BE MASS CONCRETE MINIMUM GRADE ST2 TO BS 8500-1.

INSTALLATION GUIDANCE: PALISADE FENCING

TO LIMIT DEFLECTION IN FENCE RAILS, THE BOTTOM HORIZONTAL RAIL SHALL BE SUPPORTED SO THAT AFTER TIGHTENING OF THE BOLTS, ALIGNING AND PLUMBING TO THE FENCE THERE IS A HORIZONTAL CLEARANCE BETWEEN RAILS.

THIS SUPPORT SHOULD BE REMOVED ONLY ONCE THE CONCRETE HAS SET.

CONCRETE:

CONCRETE: C30/37, AC-4, DC-4, AGGREGATE: 20mm (MAX.)

SULPHATE AND CHLORIDE RESISTANT CONCRETE: C30/37, AC-4, DC-4, AGGREGATE: 20mm (MAX.)

CONCRETE MINIMUM GRADE ST2 TO BS 8500-1.

ALL STEEL PALISADE FENCE SHALL BE SECURITY TYPE SP30 IN ACCORDANCE WITH BS 1722 - PART 12.

APPROVED FOR CONSTRUCTION - NETWORK RAIL CIVIL ENGINEER

Name: P.J.

Signature: P.J.

Date:

075481/CV/002
6m LIGHTING COLUMN 168mm Ø

300mm Ø RIGID DUCT

SECTION A-A (1:20)

TYPICAL 6m ABACUS T061RLS LIGHT DUTY LIGHTING COLUMN FOUNDATION DETAILS

NOTE: LIGHTING POSITION MAY VARY TO SUIT SITE LOCATION
HINGED COLUMN TO BE INSTALLED TO FALL AWAY FROM TRACK FOR MAINTENANCE PURPOSES.

CABLE ENTRY (150X50)
100mm Ø DUCT

MASS CONCRETE FOUNDATION GRADE ST2. CONCRETE TO BE RAMMED AS FILLING PROCEEDS.
3000 RIGID DUCT FILLED WITH CONCRETE ON 25mm SAND BLINDING

6m LIGHTING COLUMN 168mm Ø

GROUND LEVEL

PLAN (1:20)

SECTION A-A (1:20)

6m LIGHTING COLUMN 168mm Ø

300mm Ø RIGID DUCT

PLAN (1:20)

SECTION B-B (1:20)

TYPICAL 8m ABACUS T081RLS LIGHT DUTY LIGHTING COLUMN FOUNDATION DETAILS

CABLE ENTRY (150X50)
100mm Ø DUCT

MASS CONCRETE FOUNDATION GRADE ST2. CONCRETE TO BE RAMMED AS FILLING PROCEEDS.
3000 RIGID DUCT FILLED WITH CONCRETE ON 25mm SAND BLINDING

8m LIGHTING COLUMN 168mm Ø

300mm Ø RIGID DUCT

GROUND LEVEL

5. The vertical edge of the concrete foundation shall be formed to a Class F2 finish in accordance with Section 80 Clause 80.033 of the specification. The top of the foundation shall have a swept brush finish with floated edges, 100mm wide.

6. The top surface of the foundations shall be set to level with a tolerance of ±1.5mm. No point shall have a sag greater than 3mm from a 2m straight edge.

7. Refer to ABACUS Drawings for details.

8. For further details of Civil Engineering works refer to - NR/L3/CIV/140-MODEL CLAUSES. For further details of technical approval of design, construction & maintenance of Civil Engineering infrastructure refer to - NR/SP/CIV/003.

Approved for Construction - Network Rail Civil Engineer

Signature: Name: Date:

1. All dimensions in millimetres unless noted otherwise.

2. Do not scale this drawing.

3. Ground under concrete foundation to be well compacted prior to laying concrete. Any soft spots to be excavated out and backfilled with Type 1 fill well compacted in 150mm layers.

4. Concrete to be designed mix in accordance with BS8500-2.

Compressive Strength Class C32/40
Design Chemical Class DC-Z2
Max Aggregate Size 20mm
Chloride Class C1-G40
Consistency Class S3
Concrete Blinding to be designated mix GEN 1 in accordance with BS 8500-2.
Reinforcement to be grade 500 bar in accordance with BS4449, or mesh fabric in accordance with BS4483.
Cover to all reinforcement to be 50mm. Mass concrete fill to base to be compressive strength Class C16/20.

General Notes:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

2. DO NOT SCALE THIS DRAWING.

3. GROUND UNDER CONCRETE FOUNDATION TO BE WELL COMPACTED PRIOR TO LAYING CONCRETE. ANY SOFT SPOTS TO BE EXCAVATED OUT AND BACKFILLED WITH TYPE 1 FILL WELL COMPACTED IN 150MM LAYERS.

4. CONCRETE TO BE DESIGNED MIX IN ACCORDANCE WITH BS8500-2.

COMPRESSIVE STRENGTH CLASS C32/40
DESIGN CHEMICAL CLASS DC-2Z
MAX AGGREGATE SIZE 20mm
CHLORIDE CLASS C1-40
CONSISTENCE CLASS S3
CONCRETE BLINDING TO BE DESIGNATED MIX GEN 1 IN ACCORDANCE WITH BS 8500-2.
REINFORCEMENT TO BE GRADE 500 BAR IN ACCORDANCE WITH BS4449, OR MESH FABRIC IN ACCORDANCE WITH BS4483.
COVER TO ALL REINFORCEMENT TO BE 50MM. MASS CONCRETE FILL TO BASE TO BE COMPRESSIVE STRENGTH CLASS C16/20.

6m & 8m LIGHT DUTY HINGED LIGHTING COLUMN FOUNDATION DETAILS
5. The vertical edge of the concrete foundation shall be formed to a Class F2 finish in accordance with Section 80 Clause 80.033 of the Specification. The top of the foundation shall have a swept brush finish with floated edges, 100mm wide.

6. The top surface of the foundations shall be set to level with a tolerance of +/- 5mm. No point shall have a sag greater than 3mm from a 2m straight edge.

7. Refer to Abacus Drawings for details.

8. For further details of civil engineering works refer to - NR/L3/CIV/140-MODEL CLAUSES. For further details of technical approval of design, construction & maintenance of civil engineering infrastructure refer to - NR/SP/CIV/003.

9. All dimensions in millimetres unless noted otherwise.

10. Do not scale this drawing.

11. Ground under concrete foundation to be well compacted prior to laying concrete. Any soft spots to be excavated out and backfilled with type 1 fill well compacted in 150mm layers.

12. Concrete to be designed mix in accordance with BS8500-2. Compressive strength class C32/40, chemical class DC-2Z. Max. aggregate size 20mm, Chloride class C1 0.40, consistence class S3. Concrete blinding to be designated mix GEN 1 in accordance with BS 8500-2. Reinforcement to be grade 50B bar in accordance with BS4449, or mesh fabric in accordance with BS4483. Cover to all reinforcement to be 60mm. Mass concrete fill to base to be compressive strength class C16/20.

13. The vertical edge of the concrete foundation shall be formed to a Class F2 finish in accordance with Section 80 Clause 80.033 of the Specification. The top of the foundation shall have a swept brush finish with floated edges, 100mm wide.

14. The top surface of the foundations shall be set to level with a tolerance of +/- 5mm. No point shall have a sag greater than 3mm from a 2m straight edge.

15. Refer to Abacus Drawings for details.

16. For further details of civil engineering works refer to - NR/L3/CIV/140-MODEL CLAUSES. For further details of technical approval of design, construction & maintenance of civil engineering infrastructure refer to - NR/SP/CIV/003.

17. All dimensions in millimetres unless noted otherwise.

18. Do not scale this drawing.

19. Ground under concrete foundation to be well compacted prior to laying concrete. Any soft spots to be excavated out and backfilled with type 1 fill well compacted in 150mm layers.

20. Concrete to be designed mix in accordance with BS8500-2. Compressive strength class C32/40, chemical class DC-2Z. Max. aggregate size 20mm, Chloride class C1 0.40, consistence class S3. Concrete blinding to be designated mix GEN 1 in accordance with BS 8500-2. Reinforcement to be grade 50B bar in accordance with BS4449, or mesh fabric in accordance with BS4483. Cover to all reinforcement to be 60mm. Mass concrete fill to base to be compressive strength class C16/20.

21. The vertical edge of the concrete foundation shall be formed to a Class F2 finish in accordance with Section 80 Clause 80.033 of the Specification. The top of the foundation shall have a swept brush finish with floated edges, 100mm wide.

22. The top surface of the foundations shall be set to level with a tolerance of +/- 5mm. No point shall have a sag greater than 3mm from a 2m straight edge.

23. Refer to Abacus Drawings for details.

24. For further details of civil engineering works refer to - NR/L3/CIV/140-MODEL CLAUSES. For further details of technical approval of design, construction & maintenance of civil engineering infrastructure refer to - NR/SP/CIV/003.

25. All dimensions in millimetres unless noted otherwise.

26. Do not scale this drawing.

27. Ground under concrete foundation to be well compacted prior to laying concrete. Any soft spots to be excavated out and backfilled with type 1 fill well compacted in 150mm layers.

28. Concrete to be designed mix in accordance with BS8500-2. Compressive strength class C32/40, chemical class DC-2Z. Max. aggregate size 20mm, Chloride class C1 0.40, consistence class S3. Concrete blinding to be designated mix GEN 1 in accordance with BS 8500-2. Reinforcement to be grade 50B bar in accordance with BS4449, or mesh fabric in accordance with BS4483. Cover to all reinforcement to be 60mm. Mass concrete fill to base to be compressive strength class C16/20.

29. The vertical edge of the concrete foundation shall be formed to a Class F2 finish in accordance with Section 80 Clause 80.033 of the Specification. The top of the foundation shall have a swept brush finish with floated edges, 100mm wide.

30. The top surface of the foundations shall be set to level with a tolerance of +/- 5mm. No point shall have a sag greater than 3mm from a 2m straight edge.

31. Refer to Abacus Drawings for details.

32. For further details of civil engineering works refer to - NR/L3/CIV/140-MODEL CLAUSES. For further details of technical approval of design, construction & maintenance of civil engineering infrastructure refer to - NR/SP/CIV/003.

33. All dimensions in millimetres unless noted otherwise.

34. Do not scale this drawing.

35. Ground under concrete foundation to be well compacted prior to laying concrete. Any soft spots to be excavated out and backfilled with type 1 fill well compacted in 150mm layers.

36. Concrete to be designed mix in accordance with BS8500-2. Compressive strength class C32/40, chemical class DC-2Z. Max. aggregate size 20mm, Chloride class C1 0.40, consistence class S3. Concrete blinding to be designated mix GEN 1 in accordance with BS 8500-2. Reinforcement to be grade 50B bar in accordance with BS4449, or mesh fabric in accordance with BS4483. Cover to all reinforcement to be 60mm. Mass concrete fill to base to be compressive strength class C16/20.
SECTION A-A GRP GUARD RAIL ELEVATION (1:20)

MASS CONCRETE FOUNDATION
GRADE ST2, 400x400x700mm DEEP.
CONCRETE TO BE RAMMED AS FILLING PROCEEDS & TOP TO BE CHAMFERED AT 1:40.

50mm OD (40mm ID) GRP POSTS.
50mm OD (40mm ID) GRP RAILS.

BASE MOUNTED GRP POST FIXED WITH 4 NO. M12 GALVANISED STEEL RESIN ANCHORS, OR IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION.

SECTION B-B ALTERNATIVE POST FIXING DETAIL (1:20)

ALL EXCAVATED MATERIAL TO BE REINSTATED IN 150mm COMPACTED LAYERS

GROUND LEVEL

50mm OD (40mm ID) GRP POSTS.

BASE MOUNTED GRP POST FIXED WITH 4 NO. M12 GALVANISED STEEL RESIN ANCHORS, OR IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION.

SECTION A-A GRP GUARD RAIL ELEVATION (1:20)

50mm OD (40mm ID) GRP POSTS.

50mm OD (40mm ID) GRP RAILS.

Noted:
1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. DO NOT SCALE THIS DRAWING.
2. GUARD RAIL TO BE IN ACCORDANCE WITH NETWORK RAIL DOCUMENT NR/GN/SIG/11210 APPENDIX 2G05
3. ALL COMPONENTS TO BE SECURED WITH EPOXY IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION.
4. GUARD RAIL TO BE GREY - RAL 7047
5. FOR FURTHER DETAILS OF CIVIL ENGINEERING WORKS REFER TO :- NR/L3/CIV/140-MODEL CLAUSES. FOR FURTHER DETAILS OF TECHNICAL APPROVAL OF DESIGN, CONSTRUCTION & MAINTENANCE OF CIVIL ENGINEERING INFRASTRUCTURE REFER TO :- NR/SP/CIV/003.
6. HANDRAIL SHALL BE CAPABLE OF WITHSTANDING A HORIZONTAL FORCE OF 400N/m ACTING AT THE HEIGHT OF HANDRAILS. IN ACCORDANCE WITH NETWORK RAIL COMPANY STANDARD NR/SP/06/069

NOTES

APPROVED FOR CONSTRUCTION - NETWORK RAIL CIVIL ENGINEER
Signature: P.J. JENYON
Name: Signature: Date: 17.12.14
075481/CV/006

01
STONE ACCESS ROAD DETAILS
(Subject to site specific design)

Note:
All soft spots encountered are to be removed and replaced by 6F2/6F5 material in accordance with specification for Highway Works' series 600.

Alternate option
N.R. approved manufacturer surfacing (i.e. Truck Pave).

General Notes:
ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF NETWORK RAIL COMPANY PROCEDURES.
NEW CARRIAGEWAY CONSTRUCTION
STANDARD DETAIL

Table A: Foundation thickness based on selected subgrade CBR values - pavement and track form designed in accordance with HD26/06 foundation class 2.

<table>
<thead>
<tr>
<th>Subgrade CBR (%)</th>
<th>2.5</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>7</th>
<th>10</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Base (1 mm)</td>
<td>450</td>
<td>420</td>
<td>360</td>
<td>320</td>
<td>290</td>
<td>250</td>
<td>200</td>
</tr>
<tr>
<td>Total Thickness</td>
<td>450</td>
<td>420</td>
<td>360</td>
<td>320</td>
<td>290</td>
<td>250</td>
<td>200</td>
</tr>
</tbody>
</table>

Table A: Foundation thickness based on selected subgrade CBR values - pavement and track form designed in accordance with HD26/06 foundation class 2.

<table>
<thead>
<tr>
<th>Subgrade CBR (%)</th>
<th>2.5</th>
<th>3</th>
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<th>5</th>
<th>7</th>
<th>10</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Base (1 mm)</td>
<td>350</td>
<td>320</td>
<td>270</td>
<td>240</td>
<td>220</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td>Capping (series 600)</td>
<td>250</td>
<td>240</td>
<td>220</td>
<td>210</td>
<td>190</td>
<td>170</td>
<td>150</td>
</tr>
<tr>
<td>Total Thickness</td>
<td>600</td>
<td>560</td>
<td>490</td>
<td>450</td>
<td>410</td>
<td>350</td>
<td>300</td>
</tr>
</tbody>
</table>

ACCESS TYPE 2

ACCESS TYPE 3/4
CONCRETE SURFACING DETAIL
(In-situ testing of formation level required - thickening of capping may be required for lower strength values; Soft spots to be replaced by 6F2/6F5 material)

Subject to detail design.
Galvanized mild steel barrier guard rail complete with guard rail system to be installed strictly in accordance with manufacturers details.

Notes:
1. Fishtailed end unit to be fixed to all barrier ends.
2. Post centres as per manufacturers detail, but a minimum of 2m centres.

Mass concrete foundation grade ST2. Concrete to be rammed as filling proceeds.

450Ø rigid duct with concrete on 25mm sand blinding

12mm Thick base plate - see detail

Galvanized mild steel barrier guard rail complete with 127x76UB post and base plate. Guard rail system to be installed strictly in accordance with manufacturers details.

Mass concrete foundation grade ST2. Concrete to be rammed as filling proceeds.

450Ø rigid duct with concrete on 25mm sand blinding

19mm Ø hole

127x76 UB

12mm Thick base plate - see detail

450Ø Rigid Duct

12mm Thk. base plate c/w 4No.16mm Ø holes

100mm wide 8mm Thick stiffener

4No. 185 holes for 16mm Ø anchor bolts

SECTION A-A
PLAN ON FOUNDATION

SECTION B-B
ARMCO BARRIER BASE PLATE DETAIL
PRECAST CONCRETE BOLLARD

- Bollards installed at 1.5m centres
- Concrete to be grade ST4 to BS 8500 and BSEN 206.
- 6mm base plate complete with water outlet
- 20mm clean chippings compacted
- Grass: +50mm (with 50mm chamfer)
- Asphalt conc.: -60mm
- Concrete: integral with slab

NOTES
1. All dimensions in millimetres.
2. Concrete markers and bollards to be ST4 concrete to BS 5328 PT2
3. Bollards to have smooth plain white concrete finish or beadalte finish if required.

PERMANENT STEEL BOLLARD

- Bollard constructed from 103.70 CHS filled with concrete. Painted with yellow and black banding.
- Bottom 500mm to be given 3 coats of RIW and set into C25 concrete bases 200mm minimum surround.

YPL Economy Telescopic Post
- Heavy duty galvanised 100x100 steel section (YPLECO)
- 6mm base plate complete with water outlet

G.L.

YPL Street Furniture
Unit 9 Royal Business Park
King Street
Pontefract
WF8 4AH
Tel: 03(44) 1977 609999
Email: Sales@ypl-streetfurniture.co.uk

REMOVABLE BOLLARD

- Removable steel bollard (YPL889 Galvanised or YPL010m powder coated)
- Grass: +50mm (with 50mm chamfer)
- Asphalt conc.: -60mm
- Concrete: integral with slab

TYPICAL CONCRETE BASE

- Bollards installed at 1.5m centres
- Concrete to be grade ST4 to BS 8500 and BSEN 206.
LIGHTWEIGHT KERBING DETAILS - (DURAKERBS)

DROPPED KERB
Not for use on public highways

HALF BATTER KERB

*For road construction details refer to typical details*

EDGING KERB

*For road construction details refer to typical details*

GENERAL NOTES:
ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF NETWORK RAIL COMPANY PROCEDURES
**KERB TYPE HB2**  
(HALF BATTERED KERB  
125x255mm)  

**KERB TYPE BN**  
(BULL NOSED KERB  
125x150mm)  

**DISHED CHANNEL TYPE**  
CD  

**HIGH CONTAINMENT**  
KERB WITH DOWEL HOLES  

**EDGING TYPE EF**  
50mm upstand  
(Edging 50x200mm)  

**EDGING TYPE EF**  
Flush  
(Edging 50x150mm)  

**NOTES**  
1. Do not scale off this drawing.  
2. All dimensions in millimetres unless otherwise stated.  
3. Unless specified otherwise steel dowel bars shall be used where kerb bedding / backing is laid separately. If used, dowel bars shall be 300mm long 20mm diameter mild steel at 450mm centres.  
4. Mortar only to be used when kerb laid on cured concrete. Designation (i) mortar to be used.  
5. All kerbs to be precast concrete.  

**NB.** Where insufficient haunching/backing is available, vertical dowel holes are moulded into the unit. Dowel bars should then be put into the unit & anchored securely.
TYPICAL AQUA SOAKWAY DETAILS

For non-vehicle traffic only. Subject to detail design & liaison with manufacture based on Aqua Thieel chamber.
Geotextile filter membrane shall be provided to the top, bottom and all sides of the soak away pit. Geotextile membrane to be Lotrak 2300 or Polyfelt TS50 or approved equivalent.

TYPICAL SECTION THROUGH SOAKAWAY

Subject to detail design.
CONSTRUCTION DETAILS ADJACENT TO EXISTING CARRIAGeway (LONGITUDINAL TIE-IN DETAIL)
CLAUSES REFER TO THE SPECIFICATION FOR HIGHWAY WORKS

REGULATING COURSe IN AREA OF BUILD UP ON EXISTING CARRIAGeway
(TRANSVERSE TIE-IN DETAIL)

The edge of existing carriageway to be cut back 300mm to sound face or as directed by the Engineer

Where this dimension is in a taper section and varies from 0 to 750mm then concrete may be used in lieu of Base course. Concrete to be C7.5, wet lean concrete to CI 1030 with 75mm slump, placed with vibrating poker

 Existing material to be planed or removed with hand tools

FILL
LINEAR DRAINAGE UNIT
DETAIL ASPHALT PAVEMENT

- Slotted ductile iron grating

LINEAR DRAINAGE UNIT
DETAIL CONCRETE PAVEMENT

- Dimensions marked thus
- 100 - load class A15
  150 - load class B125
  200 - load class D400

- Min C25/30 concrete bedding and haunch.

Dimensions marked thus
100 - load class A15
150 - load class B125
200 - load class D400

Slotted ductile iron grating
refer to loading classes

Linear drainage channel
(subject to detail design)

Concrete hardstanding

Linear drainage channel
(subject to detail design)

Concrete hardstanding

Top of channel
3mm below pavement

Top of channel
3mm below pavement

185
150
45
5

Dimensions marked thus
100 - load class A15
150 - load class B125
200 - load class D400

Slotted ductile iron grating
refer to loading classes

Linear drainage channel
(subject to detail design)

Min C25/30 concrete bedding and haunch.
Stopper & chain

150mm bed and surround concrete ST4

150mm diameter outlet

Flexcell joint

Joint between kerb and frame filled and pointed with polyester resin mortar

Concrete ST4 cast in-situ raising piece rebated as necessary and finished smooth and even. Portland cement is to be used when the ambient temperature can be expected to fall below 5°C within 7 days of casting.

450x750x150 concrete gully to BS5911 Part 6

150mm bed and surround concrete ST4

NOTES

1. End hinged ductile iron gully grating and frame to BS EN 124:1994 Class D400 (see note 5) bedded on polyester resin mortar 10 to 20mm thick.

2. Gratings shall be available with either left or right hand hinges as viewed when facing the kerb. Hinged end to be nearest on-coming traffic. The grating shall be captive within the frame.

3. All in-situ concrete to be medium workability / 75mm slump.

4. Precast concrete gully cover slab ST4 with minimum cement content 300 kg/m³ and 0.60 maximum water/cement ratio. Workability to suit method of manufacture.

5. Dimensions of opening on upper face of PC cover slab shall be the same as the clear opening at the underside of the frame. Tolerance is permitted on all other cover slab dimensions.
Finished Level

1000 diameter PCC rings required for maintenance access on separators with a cover of 1.25m and over.

1200*685 multiple cover required

200mm thick R.C. capping slab reinforced with 2 layers of A393 mesh 1 top + 1 bottom (40mm cover)

Profile of P.I. is indicative only. Concrete surround to tank in accordance with manufacturers installation instructions.

Concrete to capping slab to be grade C35/20 with a minimum cement content of 330kg/m³ and a maximum free water/cement ratio of 0.55.

TYPICAL SECTION THROUGH OIL SEPARATOR IN TRAFFICKED AREA

TYPICAL OIL SEPARATOR

GENERAL NOTES:

ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF NETWORK RAIL COMPANY PROCEDURES

NOTE

Concrete to capping slab to be grade C35/20 with a minimum cement content of 330kg/m³ and a maximum free water/cement ratio of 0.55.
FILTER DRAIN DETAIL

Finished ground level

20mm Single size stone

300Ø Upvc perforated pipe (pipes to be laid with perforations at invert).

Teram 1000 lining or similar approved product.

Filter material 10mm clean pea gravel.

Geotextile filter membrane on 50mm thick layer of sand bedding.

Surface to be reinstated to match existing.