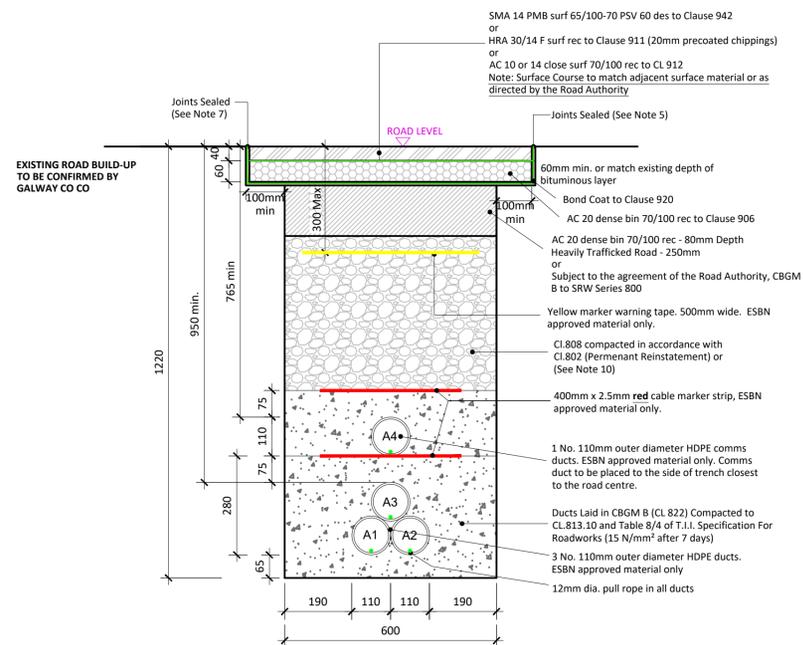


# Permanent Reinstatement

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD4

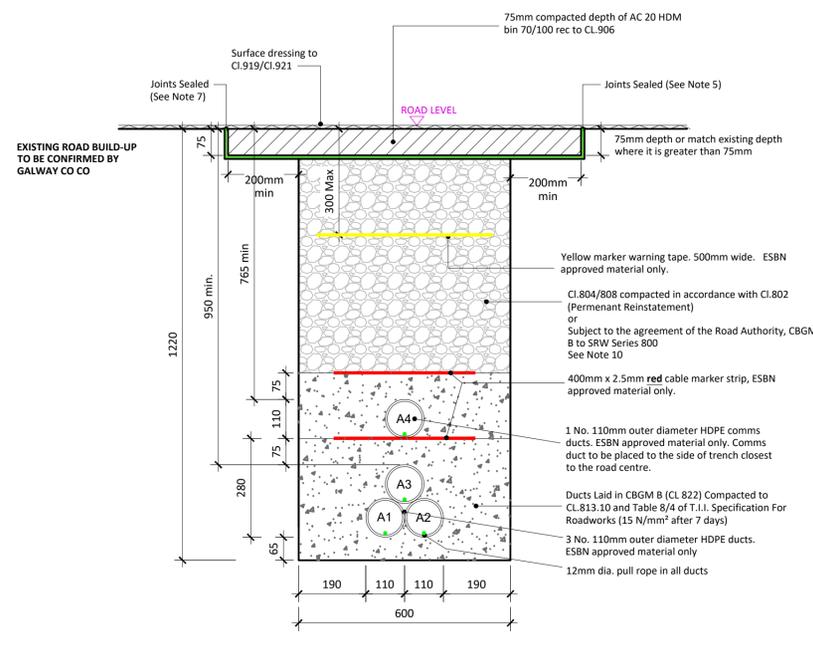


A = 110mm: Outer diameter HDPE ESB Approved Duct, SDR=17.6;

**Typical Section Through Permanent Reinstatement of Longitudinal Opening in Roadway**

SCALE 1:10

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD5



A = 110mm: Outer diameter HDPE ESB Approved Duct, SDR=17.6;

**Typical Section Through Permanent Reinstatement of Longitudinal Opening in Dressed Rural Unbound Roadway**

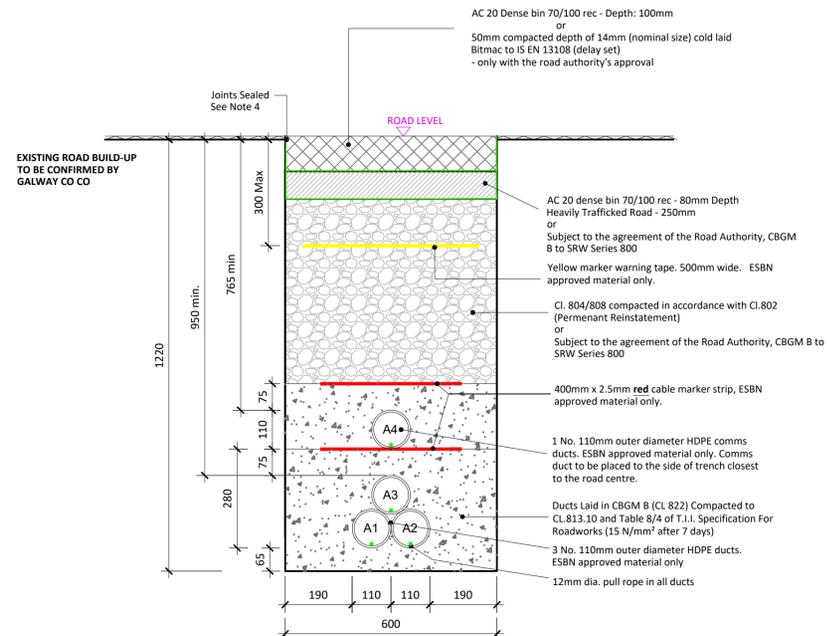
SCALE 1:10

**ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LOCAL AREA ENGINEERS REQUIREMENTS AND GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS**

- Note:
- Refer to Guidelines for managing Openings in Public Roads (Purple Book - April 2017), Chapter 6 'Specifications' for guidance on Duct type / colour and Marker Tape type / colour.
  - All bound edges shall be saw cut to expose the full vertical thickness of each layer prior to excavation. All edges shall be essentially straight, smooth and vertical.
  - Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machined laid and mechanically compacted with a vibrating roller.
  - Where the trimmed edge of excavation is within 400mm\* of a joint / edge of ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly (\* increase to 800mm where this is pre-existing practice).
  - Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
  - Clause 808 or Cement Bound Granular Material surface to be sprayed per clause 920 prior to application of Asphalt Concrete Layer.
  - Joint sealer shall be a hot 50 pen bitumen binder or cold thixotropic bitumen 50-70 pen to be applied to all vertical cuts in accordance with B.S.594987 prior to application of bituminous materials.
  - For roads without asphalt concrete surface (e.g. may be CL 804 with double surface dressing), the road authority may as its discretion permit the temporary reinstatement surface of asphalt concrete to be regulated in lieu of excavation and reinstatement; and subsequently surface dressed.
  - On highly trafficked roads services must have a minimum cover of 750mm.
  - Where required by the Road authority the trench may be reinstated with a Cement Bound Granular Material.

# Temporary Reinstatement

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD1

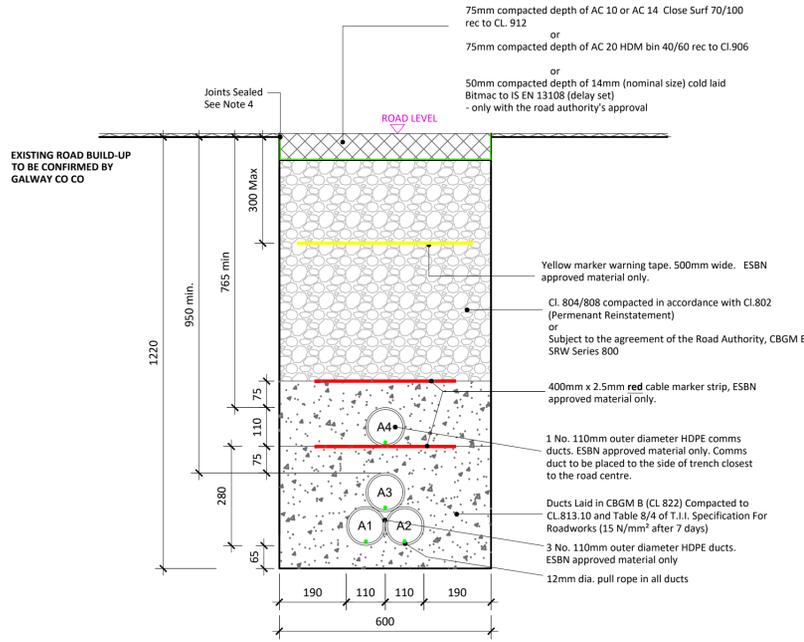


A = 110mm: Outer diameter HDPE ESB Approved Duct, SDR=17.6;

**Typical Section Through Temporary Reinstatement of Longitudinal Opening in Roadway**

SCALE 1:10

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD2



A = 110mm: Outer diameter HDPE ESB Approved Duct, SDR=17.6;

**Typical Section Through Temporary Reinstatement of Longitudinal Opening in Dressed Rural Unbound Roadway**

SCALE 1:10

**ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LOCAL AREA ENGINEERS REQUIREMENTS AND GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS**

- Note:
- Refer to 'Guidelines for managing Openings in Public Roads (Purple Book - April 2017)', Chapter 6 'Specifications' for guidance on Duct type / colour and Marker Tape type / colour.
  - All bound edges shall be saw cut to expose the full vertical thickness of each layer prior to excavation. All edges shall be essentially straight, smooth and vertical.
  - Clause 808 surface to be sprayed per clause 920 prior to application of Asphalt Concrete Layer.
  - Joint sealer shall be a hot 50 pen bitumen binder or cold thixotropic bitumen 50-70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
  - Licence holder must maintain temporary reinstatement to a safe and acceptable standard.
  - Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
  - Temporary Road Surface warning signs must be used in accordance with the Traffic Signs Manual (Chaper 8 - Temporary Traffic Measures and Signs for Roadworks).
  - Refer to detail Permanent Reinstatement of Road for advice on permanent reinstatement - all permanent reinstatement shall be carried out when adequate settlement has occurred as determined by the Road Authority.

PROJECT

**Tullaghmore Wind Farm  
38kV Grid Connection**

CLIENT

**EMpower**

CONSULTANTS

NOTES: -

- This design is subject to ESB approval and should not be used for construction.
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise. Drawings are not to be scaled use figured dimensions only.
- Existing road build up and reinstatement requirements to be confirmed with Galway Co. Co.
- Geogrid may be implemented along the cable trench route where deemed necessary by the contractor or as required by Galway County Council.

LEGEND: -

ISSUE/REVISION

NO.	DATE	DESCRIPTION

P/O	DATE	DESCRIPTION

PROJECT NUMBER

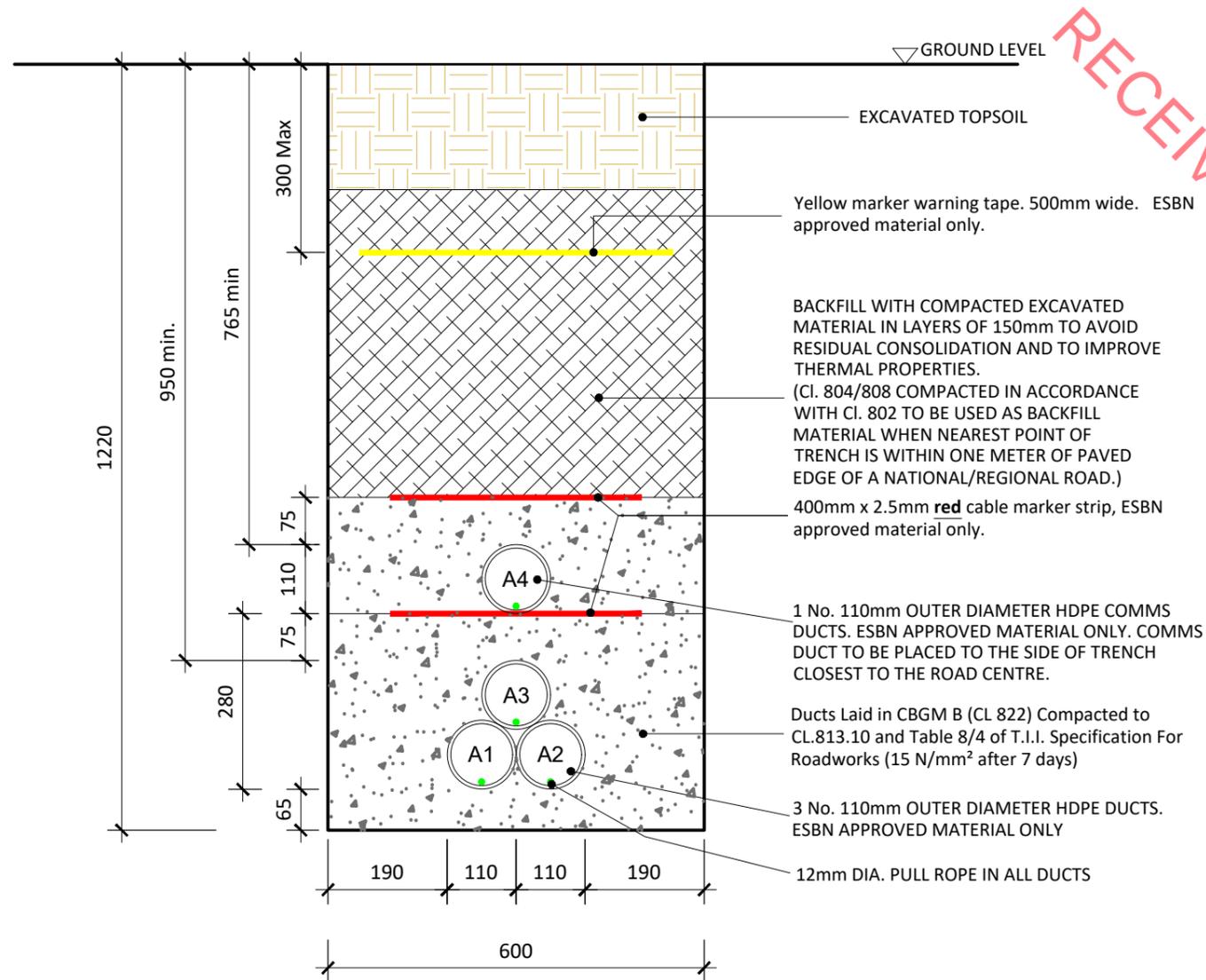
05-830

SHEET TITLE

Ducting Through  
Regional / Local Roadways

SHEET NUMBER

05830-DR-150



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A = 110mm: Outer diameter HDPE ESB Approved Duct, SDR=17.6;

### Typical Section Through Off Road

SCALE 1:10

**Note:**

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**ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LANDOWNERS/GALWAY CO CO REQUIREMENTS**



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PROJECT

Tullaghmore Wind Farm  
38kV Grid Connection

PROJECT NUMBER  
05830

SHEET NUMBER  
05830-DR-151

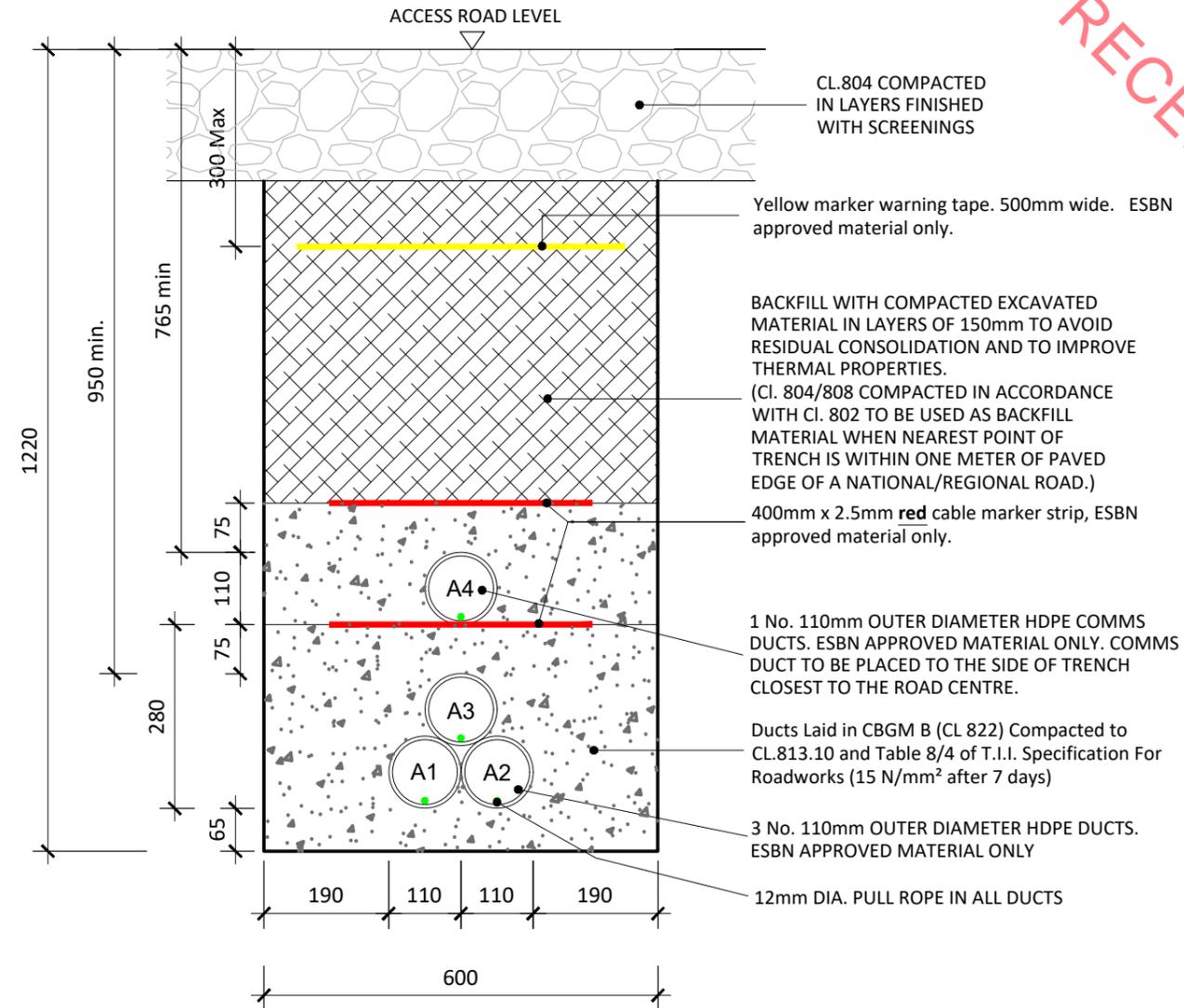
SHEET TITLE

Ducting through  
Off Road Section

DRAWING STATUS  
For Planning

ISSUE/REVISION

ISSUE/REVISION	DATE	DESCRIPTION
P00	31.03.22	Issued For Planning
I/R	DATE	DESCRIPTION



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A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

### Typical Section Through Access Road

SCALE 1:10

**Note:**

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- This drawing is to be read in conjunction with relevant drawings, specifications and reports
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ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LANDOWNERS/GALWAY CO CO REQUIREMENTS



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PROJECT

Tullaghmore Wind Farm  
 38kV Grid Connection

PROJECT NUMBER  
 05-830

SHEET NUMBER  
 05830-DR-152

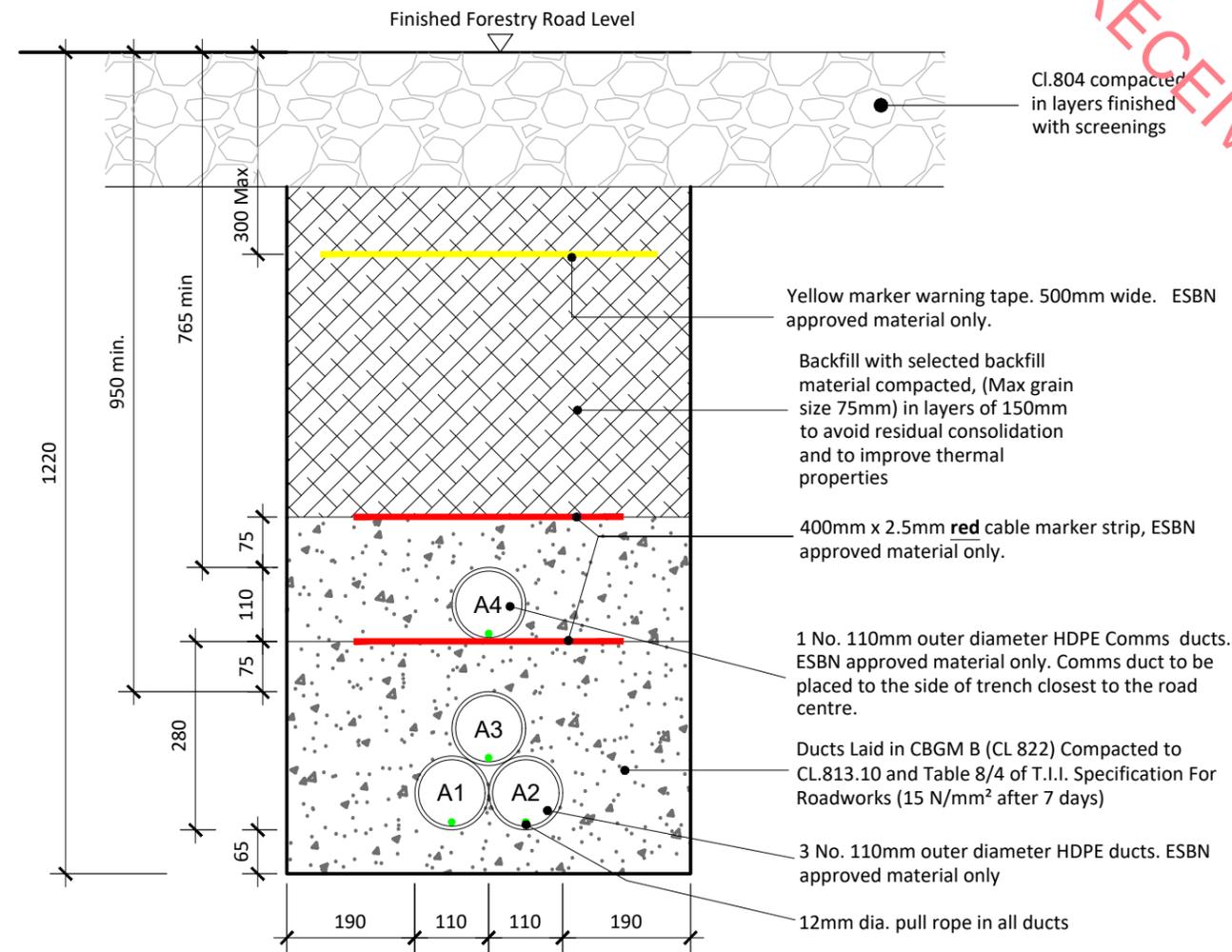
SHEET TITLE

Ducting through Access Road

DRAWING STATUS  
 For Planning

ISSUE/REVISION

ISSUE/REVISION	DATE	DESCRIPTION
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## Typical Section Through Forestry Road

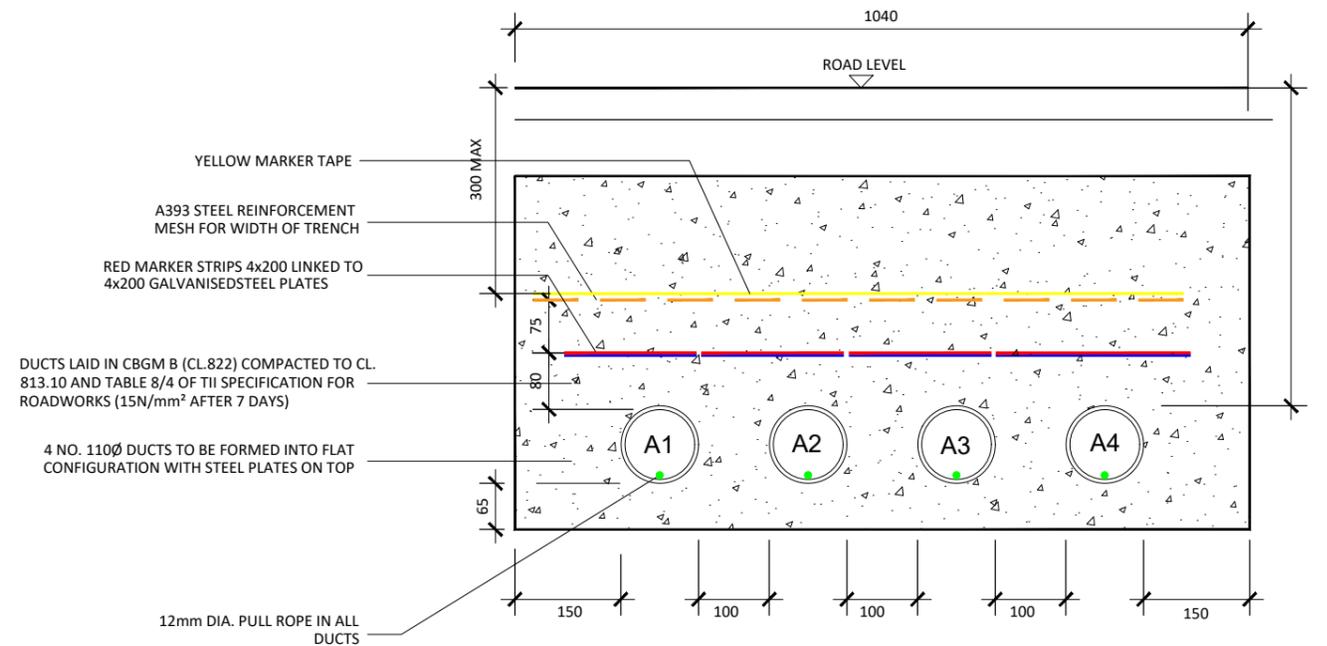
SCALE 1:10

**Note:**

- The proposed design is subject to ESB design approval and should be used for planning purposes only.
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise.
- Drawings are not to be scaled use figured dimensions only.

**ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LANDOWNERS REQUIREMENTS**

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**Typical Ducting Detail in Flat Formation**  
**SCALE - 1:10**

**Note:**

- This design is subject to ESB approval and should not be used for construction.
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise.
- Drawings are not to be scaled use figured dimensions only.



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PROJECT NUMBER  
 05-830

SHEET NUMBER  
 05830-DR-154

SHEET TITLE

Typical Ducting Details  
 in Flat Formation

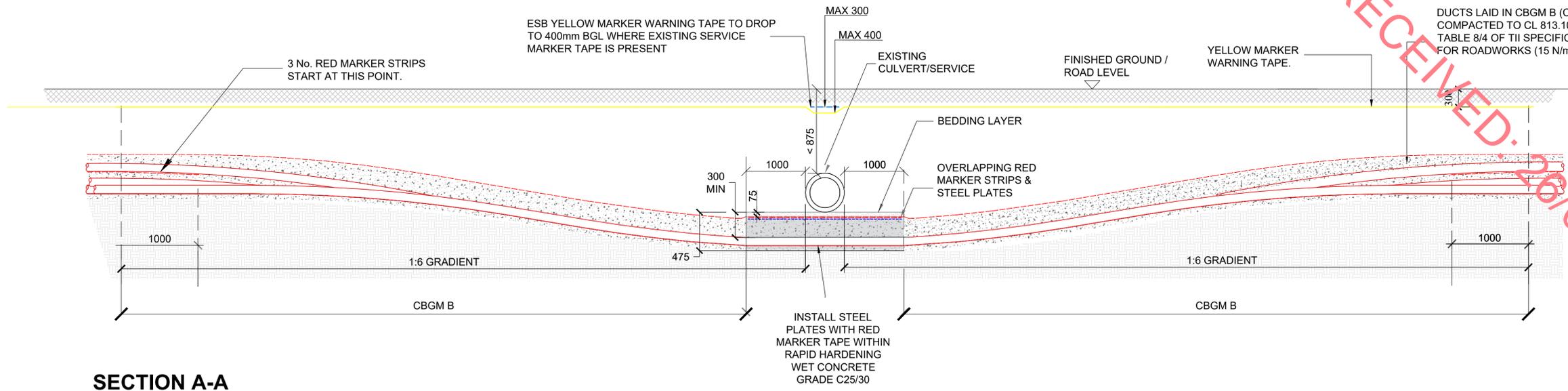
DRAWING STATUS  
 For Planning

ISSUE/REVISION

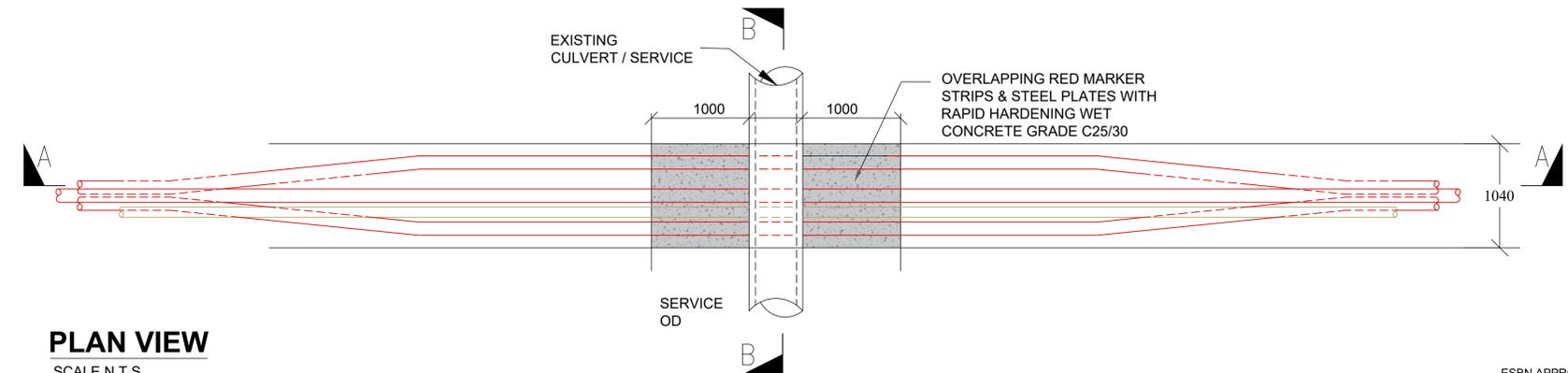
I/R	DATE	DESCRIPTION
P00	31.03.22	Issued For Planning

NO	DATE	DESCRIPTION
P00	31.03.22	Issued for Planning
I/R	DATE	DESCRIPTION

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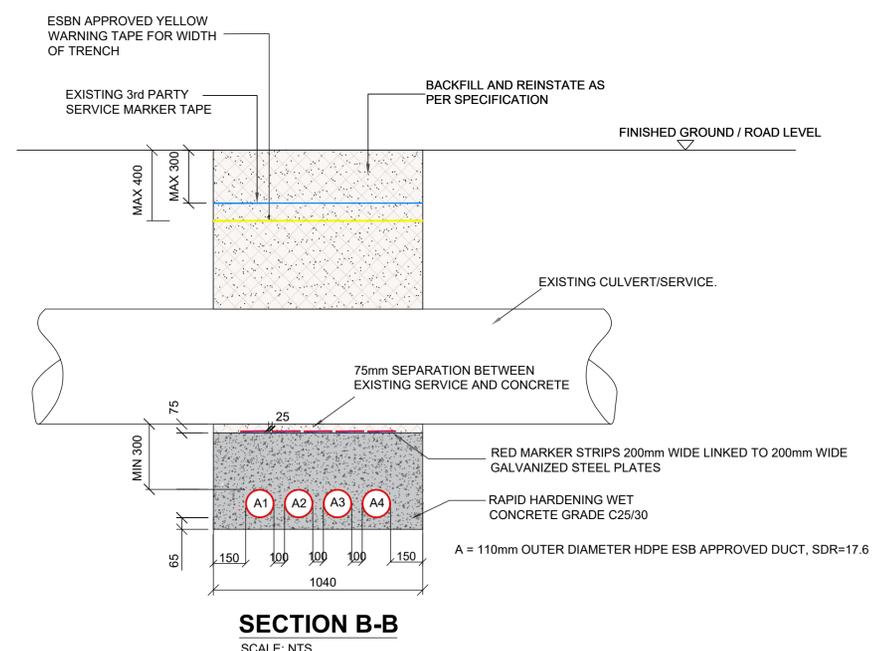


**SECTION A-A**  
SCALE N.T.S



**PLAN VIEW**  
SCALE N.T.S

- NOTES:**
- THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE AND IS SUBJECT TO AMENDMENT.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT INFORMATION AND DOCUMENTATION.
  - DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
  - ALL DIMENSIONS ARE IN MILLIMETRES. ALL CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
  - NO EXCAVATION SHALL COMMENCE UNTIL THE CONTRACTOR HAS CONSULTED UP TO DATE SERVICES DRAWINGS AND CARRIED OUT AN ELECTROMAGNETIC LOCATOR (EML) SCAN.
  - HAND DIG ONLY WITHIN 500mm OF EXISTING SERVICES.
  - IF COMPACTING CBGM B COULD CAUSE DAMAGE TO THE CULVERT / SERVICE BELOW, USE RAPID HARDENING CEMENT GRADE C25 / 30 FOLLOWING ENGINEERS PRIOR APPROVAL.
  - FOR STANDARD TRENCH CROSS SECTION DRAWINGS SEE 05830-DR-150
  - WHERE DEPTHS EXCEED 3000mm TO THE TOP OF THE DUCT THE CONTRACTOR SHALL CONSULT THE CABLE SYSTEM DESIGN ENGINEER
  - BACKFILL AS PER GUIDELINES FOR THE OPENING, BACKFILLING AND REINSTATEMENT OF OPENINGS IN THE PUBLIC ROADS.
  - FOR WATERMAIN CROSSINGS SEE 05830-DR-157.
  - THE PROPOSED DESIGN IS SUBJECT TO ESB APPROVAL AND SHOULD NOT BE USED FOR CONSTRUCTION
  - ESB'S PREFERENCE IS TO CROSS UNDER ALL SERVICES WHERE IT IS NOT POSSIBLE TO MAINTAIN STANDARD COVER WHEN CROSSING OVER THE SERVICE
  - THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ALL TEMPORARY WORKS REQUIRED. THE CONTRACTOR WILL APPOINT AN APPROVED TEMPORARY WORKS DESIGNER AND SUBMIT PROPOSED TEMPORARY WORKS DESIGNS TO THE PSDP.



**SECTION B-B**  
SCALE: N.T.S

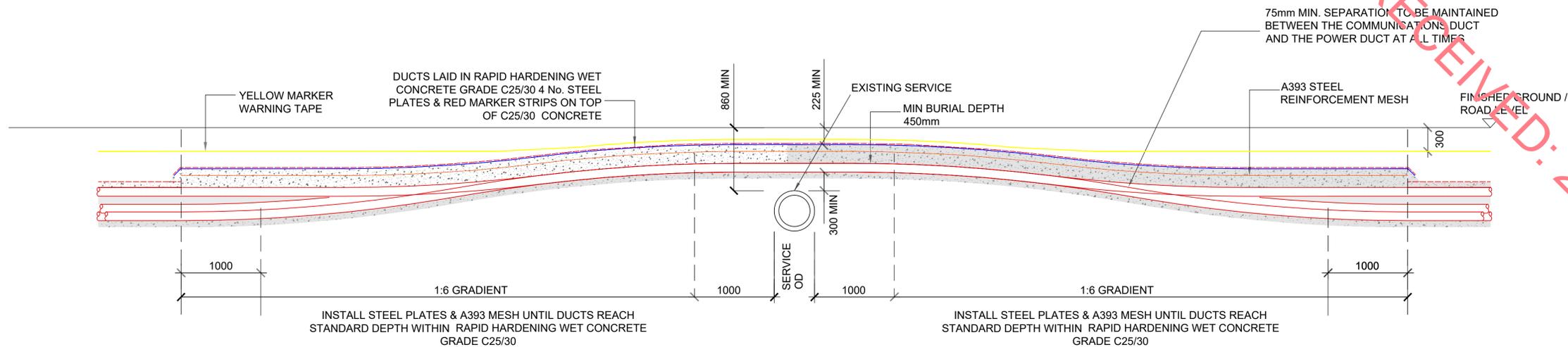
- 110mm Ø HDPE DUCT WITH 12mm DIAMETER PULL ROPE
- RED MARKER STRIP WITH STEEL PLATES
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICES MARKER TAPE
- A393 REINFORCEMENT MESH

NO	DATE	DESCRIPTION
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I/R	DATE	DESCRIPTION

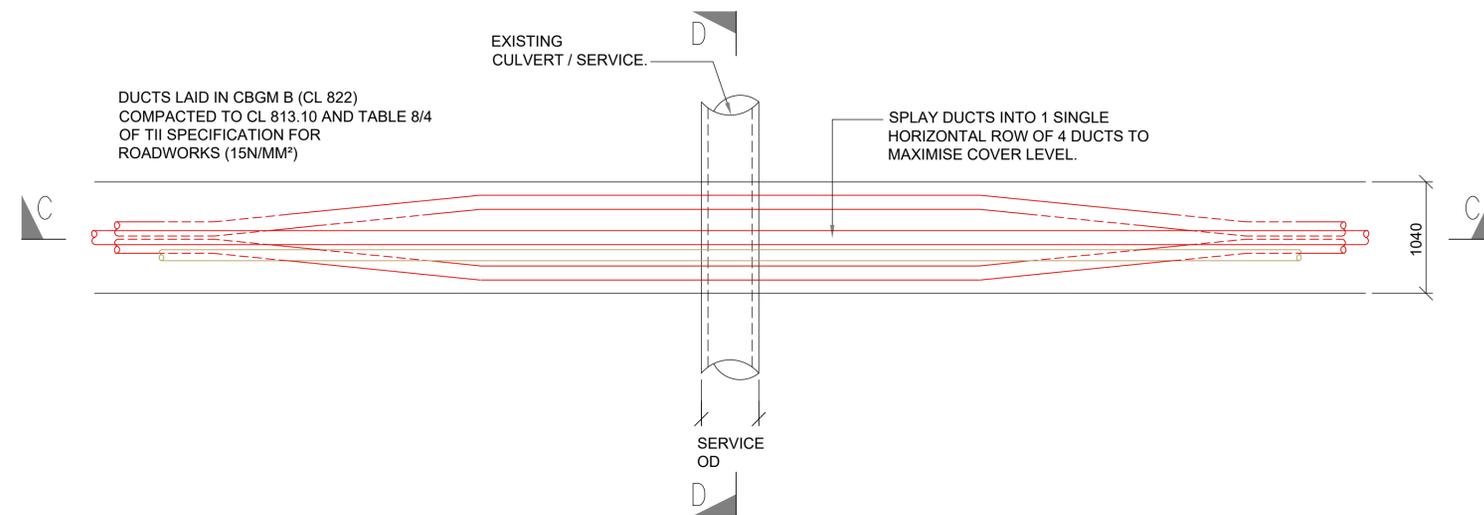
05-830

**38kV Service/Culvert  
 Over Crossing Detail**

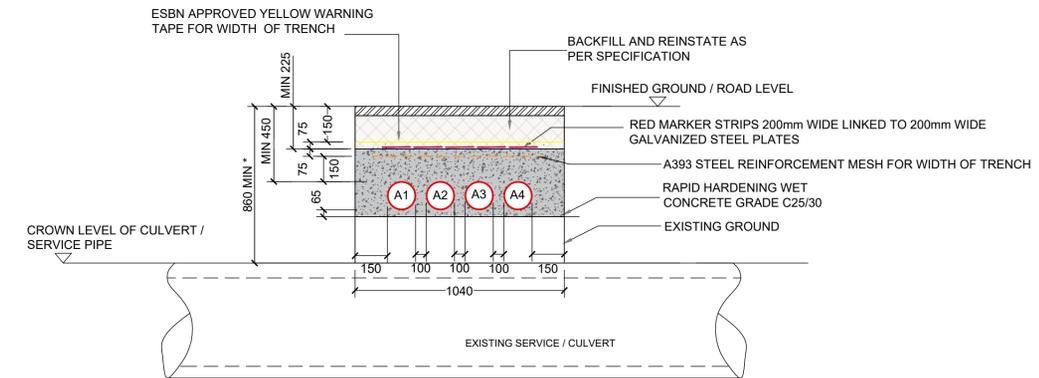
05830-DR-156



**SECTION C-C**  
 SCALE N.T.S



**PLAN VIEW**  
 SCALE N.T.S



\* ALL EXISTING SERVICES WITH COVER LESS THAN MIN. DIMENSIONS ABOVE SHALL BE CROSSED BY UNDERCROSSING METHOD  
**SECTION D-D**  
 SCALE: NTS  
 A = 110mm OUTER DIAMETER HDPE ESB APPROVED DUCT, SDR=17.6

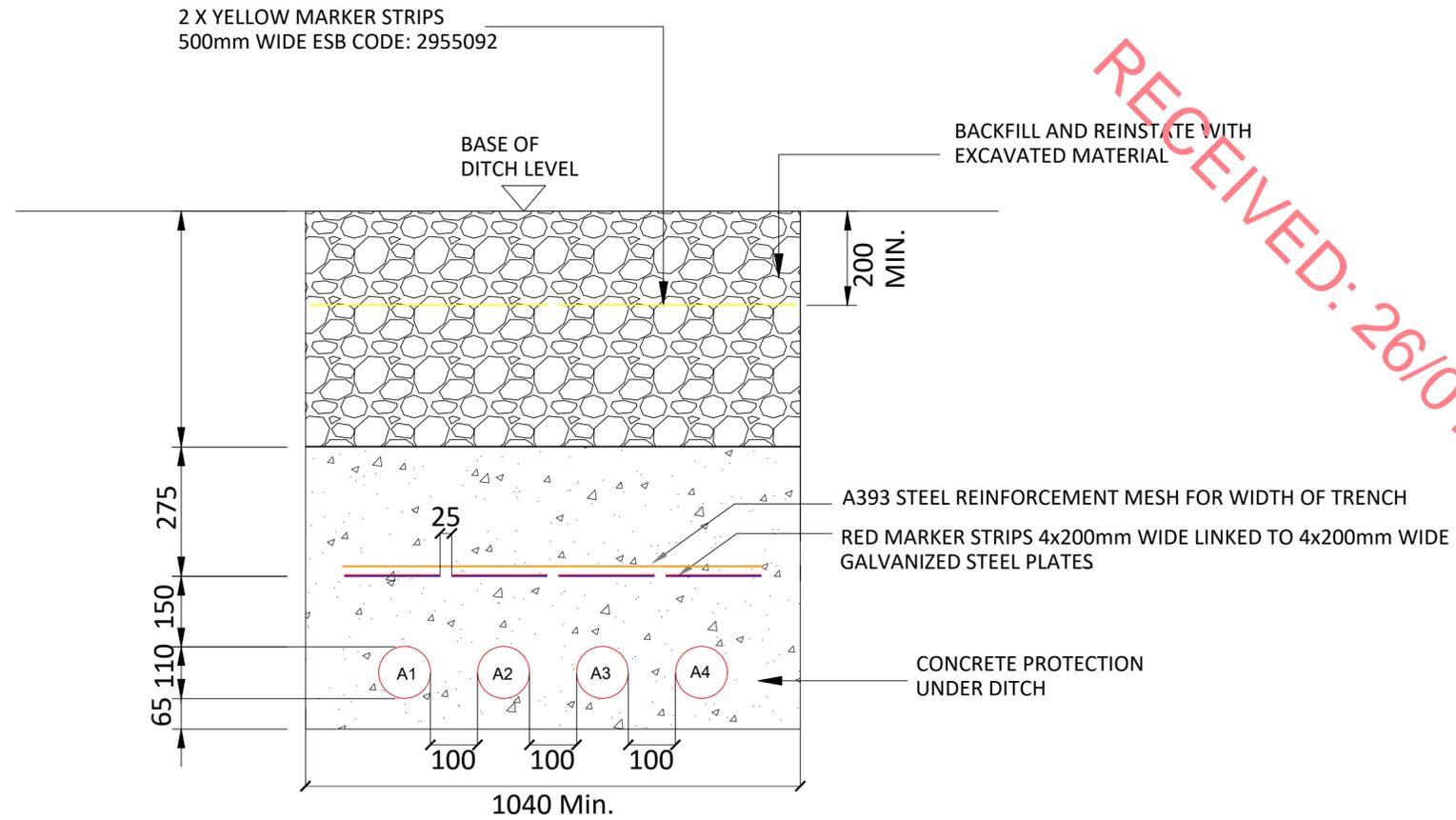
**NOTES:**

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- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT INFORMATION AND DOCUMENTATION.
- DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.
- ALL DIMENSIONS ARE IN MILLIMETRES. ALL CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
- NO EXCAVATION SHALL COMMENCE UNTIL THE CONTRACTOR HAS CONSULTED UP TO DATE SERVICES DRAWINGS AND CARRIED OUT AN ELECTROMAGNETIC LOCATOR (EML) SCAN.
- HAND DIG ONLY WITHIN 500mm OF EXISTING SERVICES.
- IF COMPACTING CBGM B COULD CAUSE DAMAGE TO THE CULVERT / SERVICE BELOW, USE RAPID HARDENING CEMENT GRADE C25 / 30 FOLLOWING ENGINEERS PRIOR APPROVAL.
- FOR STANDARD TRENCH CROSS SECTION DRAWINGS SEE 05830-DR-150
- WHERE DEPTHS EXCEED 3000mm TO THE TOP OF THE DUCT THE CONTRACTOR SHALL CONSULT THE CABLE SYSTEM DESIGN ENGINEER
- BACKFILL AS PER GUIDELINES FOR THE OPENING, BACKFILLING AND REINSTATEMENT OF OPENINGS IN THE PUBLIC ROADS.
- FOR WATERMAIN CROSSINGS SEE 05830-DR-157.
- THE PROPOSED DESIGN IS SUBJECT TO ESB APPROVAL AND SHOULD NOT BE USED FOR CONSTRUCTION
- ESB'S PREFERENCE IS TO CROSS UNDER ALL SERVICES WHERE IT IS NOT POSSIBLE TO MAINTAIN STANDARD COVER WHEN CROSSING OVER THE SERVICE
- THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ALL TEMPORARY WORKS REQUIRED. THE CONTRACTOR WILL APPOINT AN APPROVED TEMPORARY WORKS DESIGNER AND SUBMIT PROPOSED TEMPORARY WORKS DESIGNS TO THE PSDP.



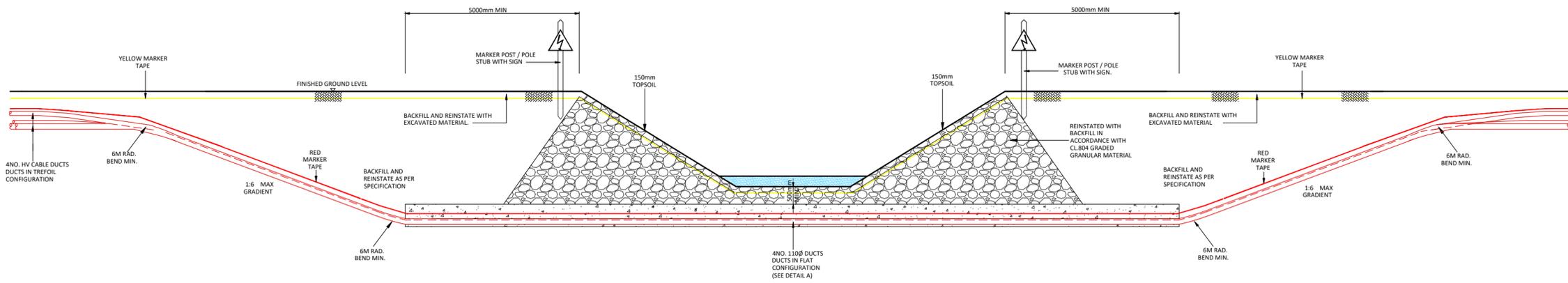
**NOTES:**

1. This design is subject to ESB approval and should not be used for construction.
2. This drawing is to be read in conjunction with all other relevant information.
3. Do not scale from this drawing, use figured dimensions only.
4. All dimensions are in millimeters, unless noted otherwise.
5. This drawing is to be read in conjunction with the Project Health and Safety File for any identified potential risks.
6. No excavation shall commence until the contractor has consulted up to date services drawings and carried out an electromagnetic locator (EML) scan.
7. Hand dig only within 500mm of existing services.
8. Where depths exceed 3000mm to top of duct the contractor shall consult the cable system design engineer for phase spacing requirements.
9. All approvals for watercourse crossing and required minimum cover to be obtained by the contractor prior to commencement of works.
10. ESB marker post (ESB Code: 8327355) or stub pole (2m above ground) and warning sign (ESB Code: 8238339)



**DETAIL A**

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**CONCRETE BED & SURROUND METHOD UNDER WATERCOURSE**  
SCALE 1:100  
(SEE DETAIL A)

**Typical Watercourse Crossing Elevation**  
**SCALE 1:100**



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**PROJECT**

**Tullaghmore Wind Farm  
38kV Grid Connection**

**CLIENT**



**CONSULTANTS**

**NOTES: -**

- See notes in drawing window

**LEGEND: -**

**ISSUE/REVISION**

NO	DATE	DESCRIPTION

**PROJECT NUMBER**

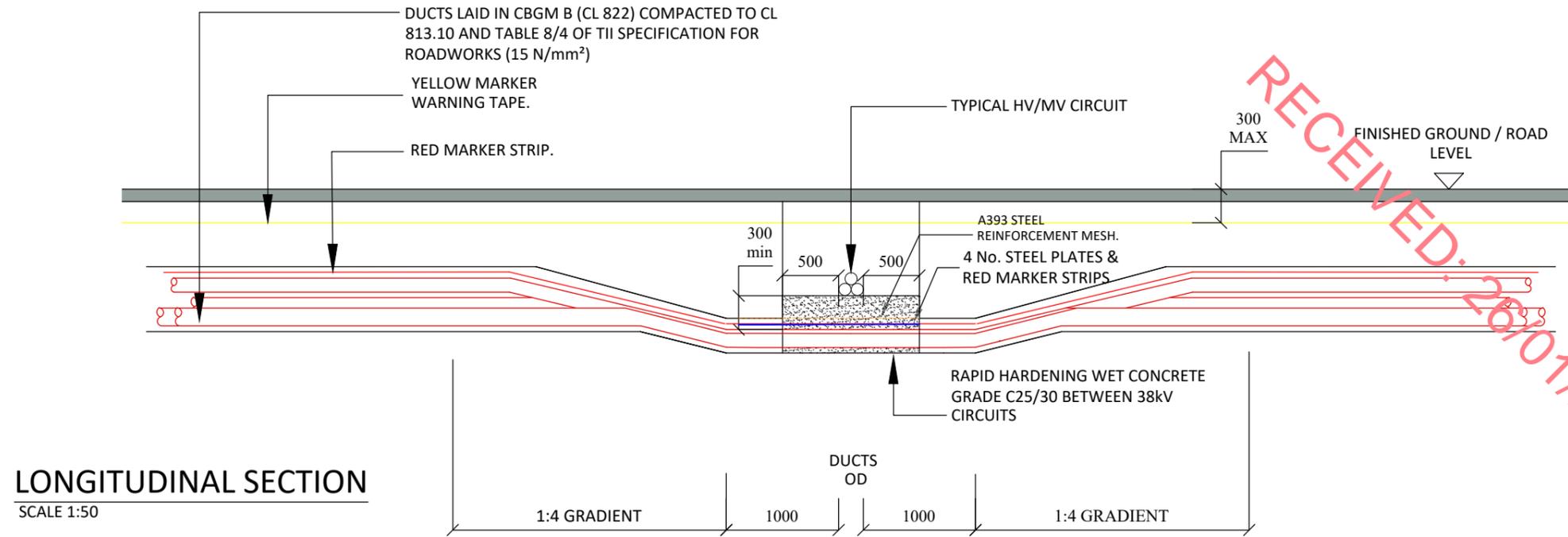
05-830

**SHEET TITLE**

Typical Watercourse/Stream  
Crossing Detail

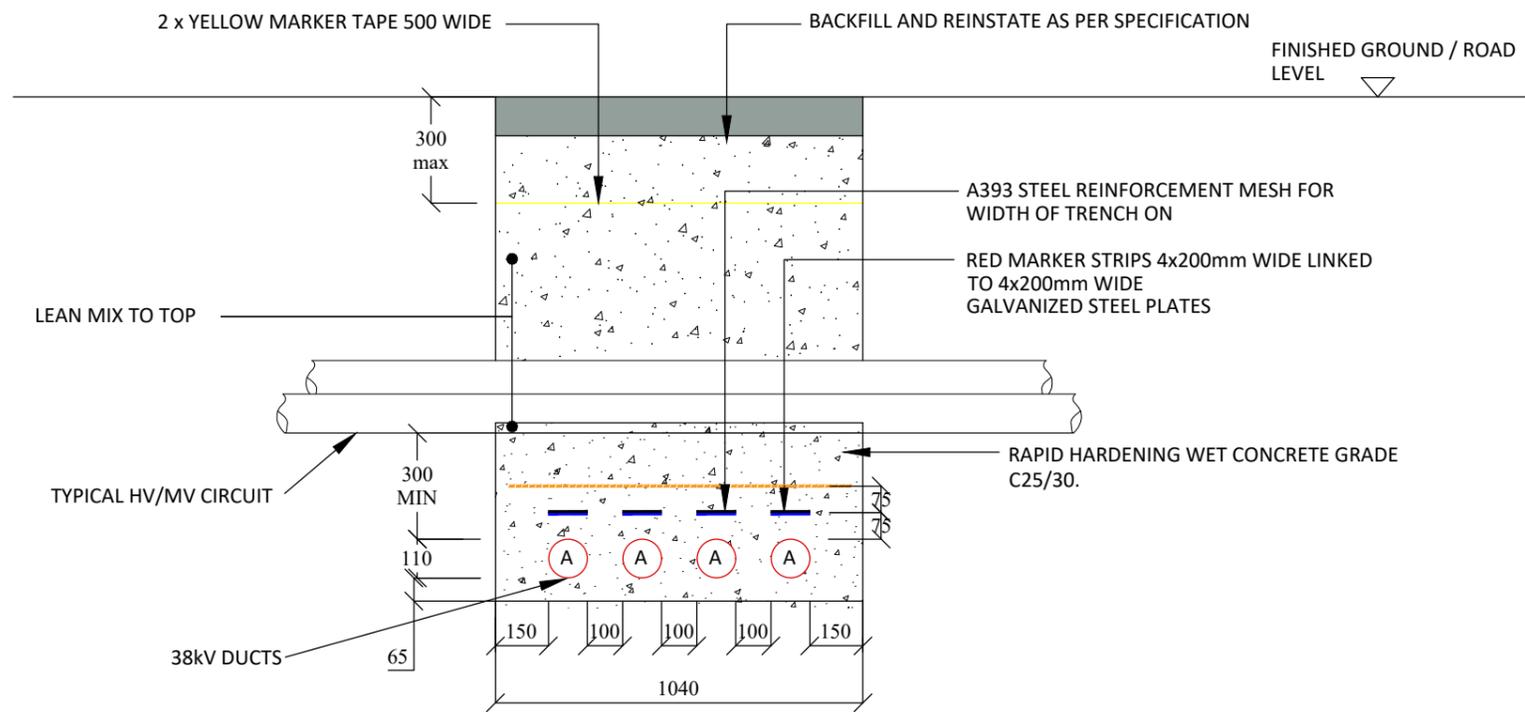
**SHEET NUMBER**

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**LONGITUDINAL SECTION**  
SCALE 1:50

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**CROSS SECTION**  
SCALE 1:20

**NOTES:**

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2. THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED AND IS SUBJECT TO AMENDMENT.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT INFORMATION.
4. DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
5. ALL DIMENSIONS ARE IN MILLIMETRES. ALL CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
6. NO EXCAVATION SHALL COMMENCE UNTIL THE CONTRACTOR HAS CONSULTED UP TO DATE SERVICES DRAWINGS AND CARRIED OUT AN ELECTROMAGNETIC LOCATOR (EML) SCAN.
7. HAND DIG ONLY WITHIN 500mm OF EXISTING SERVICES.
8. ALL OFFSET DIMENSIONS TO PROPOSED CABLE ROUTE IS TO THE CENTRELINE OF THE CABLE TRENCH UNLESS NOTED OTHERWISE.
9. BACKFILL AS PER GUIDELINES FOR THE OPENING, BACKFILLING AND REINSTATEMENT OF OPENINGS IN THE PUBLIC ROADS
10. TEMPORARY SUPPORTING OF EXISTING HV/MV CIRCUIT TO BE PUT IN PLACE DURING WORKS.
11. AGREEMENT WITH ESNB REGARDING OUTAGE TO BE MADE PRIOR TO WORKS TAKING PLACE.



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PROJECT  
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38kV Grid Connection

PROJECT NUMBER  
05-830

SHEET NUMBER  
05830-DR-159

SHEET TITLE  
**38kV Single Circuit  
HV/MV UGC Under Crossing**

DRAWING STATUS  
For Planning

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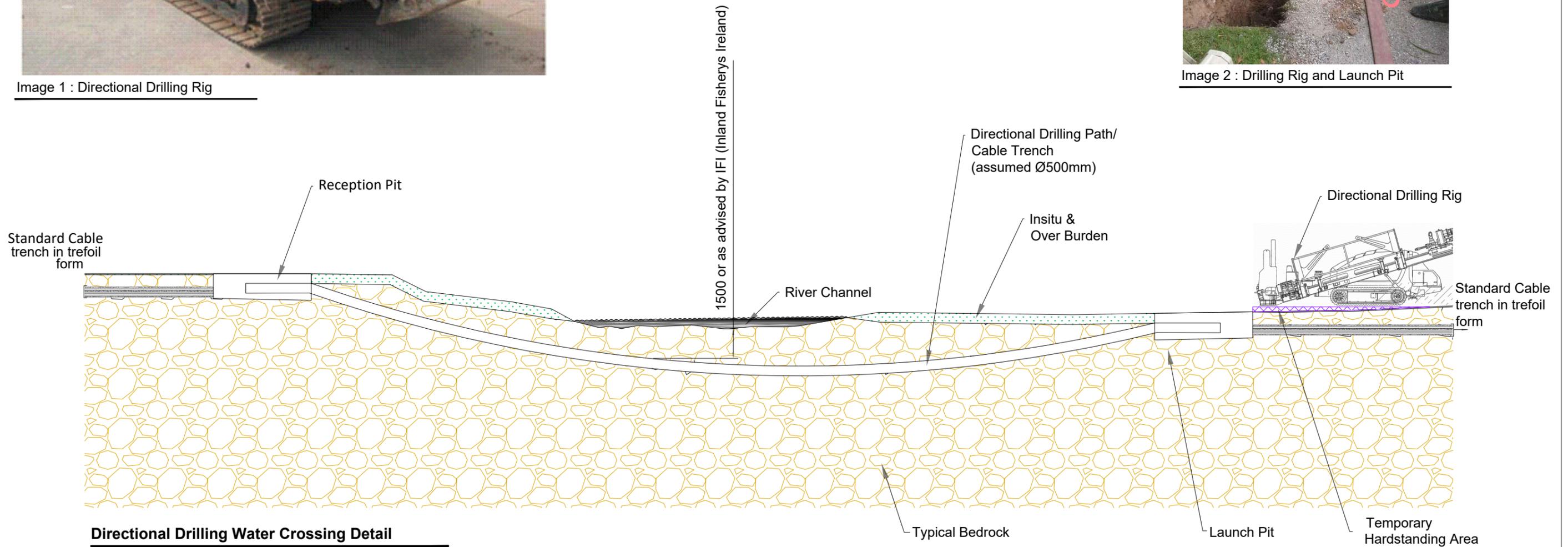
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Image 1 : Directional Drilling Rig



Image 2 : Drilling Rig and Launch Pit



**Directional Drilling Water Crossing Detail**

SCALE - 1:200



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PROJECT

**Tullaghmore Wind Farm  
 38kV Grid Connection**

PROJECT NUMBER  
 05-830

SHEET NUMBER  
 05830-DR-164

SHEET TITLE

**Horizontal Directional Drilling  
 Water Crossing Detail**

DRAWING STATUS  
 For Planning

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