MWP

RESPONSE TO OBSERVATIONS (ABP-PA 92.321454)

Brittas Wind Farm

Orsted

November 2025

Contents

Figures

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Acceptance Code / Status
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1. Introduction

This document provides the responses of the Brittas Wind Farm Limited and Malachy Walsh and Partners (MWP) (the design, planning and environmental assessment consultants on this project) to the Chief Executive (CE) Officers Report received on the proposed Brittas Wind Farm application (ABP-321454-24). This document provides a summary of the key observations and recommendations submitted by Tipperary County Council (TCC) which were deemed to require a response. Each observation/recommendation is followed by our responses. These have been grouped under key related topics raised by TCC CE Report (Section 3).

A number of the queries /concerns raised in the submissions have already been addressed in the EIAR, NIS and planning application documentation. Therefore, where relevant, reference is made to the applicable application documents.

2. Summary of TCC Responses

2.1 Observations Received from TCC CE Report

The CE Officer Report consisted of 9 parts. Which included the following:

- Part 1: Introduction & Purpose of the Report
- Part 2: Site Location & Development Description Overview
- Part 3: Policy Context & Guidance
- Part 4: Planning History
- Part 5: Internal Department Reports
- Part 6: Comments on Environmental Impact Assessment Report (EIAR)
- Part 7: Natura Impact Statement
- Part 8: Key Issues and Overall Considered View
- Part 9 Conditions and Contributions

Part 1,2,3 and 4 required no clarification and were only descriptive elements of the report.

The following section provides clarifications, additional explanations, and responses to the comments raised within Parts 5, 6, 7, 8 and 9 of the CE CO Report. Part 8 of the TCC CE Report sets out the key issues of note, which they suggest the Board may wish to investigate further. This section summarises and repeats some of the issues raised in earlier sections of the CE Officers Report.

The clarifications provided by MWP and Orsted below are intended to ensure that the content and intent of the EIAR are fully understood, and to address any points that may require further elaboration or context.

The subsections which follow provide responses to the key concerns and questions raised. These deal with a broad spectrum of concerns raised (i.e. visual, shadow flicker, traffic, cultural heritage and ecological concerns).

3. Responses to Issues Raised by TCCCO CE Report

3.1 Comments on Chapter 4 regarding grid connection option

Figure 3-1: Extract from Part 6 on page 18 of TCC CE Planning Report on the Grid Route Options

> **6.2.4.2 Comments on Chapter 4**
>
> Tipperary County Country is broadly satisfied with the approach taken to the question of the assessment of alternatives. The option of connecting to the grid via private lands as an alternative to the installation of cabling and joint bays within public roads has not been examined and should be considered noting the impacts of such infrastructure on future road maintenance works.

RESPONSE:

EirGrid policy for grid connections is for the grid cables to be laid under the public road along with other services, where they can be accessed for ongoing maintenance work. Gaining access to private land is problematic. The possibility of diverting part of the proposed grid route across private lands near Thurles would have been considered if the option of putting it in the local roads is not feasible. The viability of such a green fields option would depend on securing landowner agreements, as well as consent from EirGrid and cannot be proposed and assessed with any certainty at this stage.

3.2 Comments on Chapter 5 regarding mitigation measures

Figure 3-2: Extract from page 19 of the TCC CE Planning Report on Mitigation Measures

> There is some confusion in Section 5.5 where in discussing operational mitigation (Table 5-16) construction and decommissioning related mitigation measures are cited.

RESPONSE:

This error is noted. The main operational mitigation measures related to population and human health are the noise and shadow flicker provisions. Traffic will be minimal and there will be no adverse air pollution effects.

3.3 Comments on EIAR Chapter 6 : Biodiversity

Figure 3-3: Extract from page 19 of the TCC CE Planning Report on Biodiversity issues.

> **6.2.6 Chapter 6 – Biodiversity**
>
> It is noted that in Section 6.1.2 the references to townlands in which the development is located does not include all townlands the entire project involves works in. It is noted however that multi disciplinary surveys were undertaken on the proposed grid connection route covering habitat mapping, mammal surveys, bat habitat suitability surveys. Page 6-45 of the EIAR contains an incomplete sentence and there is a formatting error in Section 6.4.3.1.7.1.
>
> The mitigation measures to protect effects on watercourses are noted. The potential risk of flooding impacting on these measures and giving rise to impacts on waters requires evaluation noting the large scale groundworks that will be required that come within the fluvial flood extents.
>
> The extent of drains that may be impacted on by the grid connection infrastructure is unknown.
>
> No bat detector surveys were undertaken along the grid connection route or location of forestry removal at the junction of the N62 and L8017.
>
> The operational mitigation measures for bats is noted. Monitoring of the effects on bats is recommended with further operational mitigation recommended should bat mortality prove high.

RESPONSE:

The comments about townland and incomplete sentence errors are noted and considered minor non-material errors.

See response in section 3.2.5 below on management of flood risk and potential contamination.

Appendix 6B provides a detailed bat report including methodologies for bat surveys conducted at the proposed project site. An initial desk study and site scoping survey (preliminary roost assessment (PRA) and potential roost features (PRF) assessment) in the field were undertaken to gather baseline data on the proposed project site and its potential suitability for bat species. These surveys outlined potential for further surveys and the survey effort required. The initial scoping involved assessing trees and buildings/structures and applying a classification following standard guidance (Collins, 2016 and BTHK, 2018) of suitability for bat roost potential.

The following surveys were undertaken:

- Site Scoping
- Habitat suitability assessments for bats
- Roost emergence/re-entry surveys
- Winter roost inspections
- Bat activity transects

- Seasonal static bat detector surveys, including monitoring at height
- Monitoring of climatic conditions.

With regard to the TCC comment regarding bat detector surveys for the grid route: such surveys were not considered necessary due to the nature of the grid route construction methodology. These works will be confined to the existing road surface, and no removal of structures, trees, or hedgerows containing roosts. Therefore, no impacts will occur that could potentially disturb bat roosts. Additionally, construction activities will not take place during nighttime hours when bats are active, further reducing any potential for disturbance during commuting or foraging.

The forestry removal at the junction of the N62 and L8017 comprise of relatively young plantations which were found to be not suitable for foraging or roosting habitat for bats. While the forestry is suitable for foraging, there is alternative habitat in the surrounding landscape that will not be affected by the proposed development. Consequently, no bat detector surveys were considered necessary for this plantation.

With regard to road drains, the water crossings have been assessed and best practice drainage mitigation measures included in the EIAR, NIS and CEMP. Road drains will mostly not be affected and if so, will be re-instated after works where required. Also, further mitigation measures have been proposed to be used if the drain will be impacted, including managing runoff during works.

3.4 Comments on Chapter 9 Water related to Flooding

Figure 3-4: Extract from page 22 of the TCC CE Planning Report on Water Management and Mitigation

> Having reviewed the details presented the Planning Authority note the water management, mitigation and monitoring measures proposed. The Planning Authority request An Bord Pleanala to assess the effectiveness of the water management and mitigation measures in the context of a significant flood event on the site.

Figure 3-5: Related comment in Section 8 of the TCCCE Planning Report on Flood Risks

> **8.6 Flood Risk and impact on environmental management and mitigation**
>
> - The effectiveness of the proposed environmental management and mitigation measures need to be examined in the context of a significant flood event on the site where works areas may be inundated with flood waters.

Response:

The flood risks for the proposed wind farm site are assessed in detail in the Flood Risk Assessment Report (see Appendix 9A (EIAR Volume 3). This risk assessment informed the design of the proposed Brittas wind farm, the Water Framework Directive Report (Appendix 9B of EIAR Vol. 3) and the Water Impact Assessment Chapter (No. 9) of the EIAR (Vol.2).

The design of the proposed development was informed by a detailed tier 3 flood risk assessment based on a site-specific topographic survey of the River Suir and its tributaries within and around the site. This assessment informed the design and proposed layout of the wind farm which was able to avoid any potential significant water quality or flooding effects. All turbines have been located at least 50m from the banks of the River Suir. The EIAR proposed mitigation measures to be applied to ensure that any potential effect was avoided or minimized and would not result in a significant adverse effect. All these mitigation measures were incorporated into the Construction Environmental Management Plan (CEMP) submitted with the planning application. These measures include a tailored Sustainable Drainage System (SuDS) for the construction, operational and decommissioning phases of the proposed project on this site that would not increase the rate of surface water flow off the site into the River Suir and would not contaminate the water quality in the river system. The mitigation measures also include a provision for construction works to be suspended in the event of heavy rains and flooding.

In the event that ground water pumping for the turbine foundations is needed, the ground water (which is likely to be sediment laden) will be pumped out of the excavation and will be put through a temporary treatment system with swales and sediment ponds close to the site. Once the sediment has been deposited and removed from the water, it will then be discharged over vegetated ground via a level headed spreader unit. This will ensure that there are no adverse effects on water quality, water supply or flooding.

3.5 Comments on Chapter 12 Noise

Figure 3-6: Extract from page 26 of the TCC CE Planning Report on Noise

Section 12.6.3.1 of the EIAR makes reference to comparing the predicted noise levels with noise criteria for day time and night time noise. It is not clear where this information is in the EIAR. The background noise levels for the area recorded at 7 monitoring points is set out in Table 12-15 of the EIAR.

It is noted that night time noise levels in the area are generally less than 30 dB. Day time noise do not exceed 40dBA.

6.2.12.2 Comments on Chapter 12

The applicant has undertaken a detailed analysis of the noise impacts that will arise from the development. The assessment concludes that the development during operation will come within the noise limits set under current Wind Energy Guidelines (2006 Guidelines). It is acknowledged that the noise environment in the area will change as a result of the development with an increase above existing noise levels. Expert review of this chapter of the EIAR is recommended noting the projected noise and existing baseline noise levels.

Figure : Related extract from section 8 of the Tipperary TCC CE Planning Report on the Noise issues.

- Comparison of the projected noise levels from the turbine type against background noise levels show that the noise environment in the area will change as a result of the development with an increase above existing noise levels. Expert review of this chapter of the EIAR is recommended noting the projected noise and existing baseline noise levels.

RESPONSE:

The details of this point are noted. The potential noise effects have been assessed in detail by qualified experts in this field and in compliance with the existing guidelines and best practice as outlined in the Noise Impact Chapter of the EIAR. ACP will need to decide if they want an additional expert review of the assessment to be undertaken. Further noise modelling will be undertaken at construction and operational stages to ensure any changes will be captured and the same standards upheld.

3.6 Comments on Chapter 13 Shadow Flicker

Figure 3-7: Extract from page 28 of the TCC CE Planning Report on Shadow Flicker Mitigation Measures.

> The screening measures Section 13.7.2 of the EIAR may not be implementable as same is dependent on 3rd party consent. These measures recommend:
>
> - Installation of appropriate window blinds in the affected rooms of the residence;
> - Planting of screening vegetation;
> - Other measures.

Figure 3-8: Related extract from section 8 of the TCC CE Planning Report on the Shadow Flicker mitigation measures.

> - The EIAR has identified that shadow flicker impacts may occur. The Planning Authority note the wind turbine control measures proposed to mitigate shadow flicker impacts to ensure same come within Guideline limits and considers same as implementable. However the screening measures set out in Section 13.7.2 of the EIAR may not be implementable as same is dependent on 3rd party consent. These measures should not therefore be relied on.

Response:

As reported in section 13.7 of EIAR (Vol. 2) the initial mitigations mentioned above will require additional case by case assessment, and discussions with 3rd parties, as well as their consent.

If these mitigation options are not obtainable or effective, the developers will utilise the SFCM (shutting down the relevant turbines) during periods when and where there may be shadow flicker effects, and these will be influenced by the weather and sunshine which will be monitored. This will entirely mitigate any shadow flicker impact.

3.7 Comments on Chapter 15 Landscape and Visual

Figure 3-9: Extract from Part 6 of the TCC Submissions on Landscape and Visual Mitigation Measures

> Mitigation of visual and landscape impacts through reduction of the number of turbines should be considered given the dominant appearance of the proposed development in this open low level landscape. Of particular note are the representative views from Clobanna church and graveyard (Viewpoint 28A), View from residences at Brownstown (Viewpoint 27B), Views from the N62 (Viewpoint 6 and 4B) and views from Rossestown Bridge (Viewpoint 4B).
>
> Additional representative views approaching the site from the N62 to the north should be sought together with panoramic views of the development as it would appear from the N62 and L8017.

Figure 3-10: Similar comment in Section 8.2 of the TCC Submission.

> **8.2 Visual Impact**
>
> - The proposed wind turbines will be significant and dominant feature in the landscape particularly to road users (N62 , L8017, L71001 and L4120) and nearby residents and will alter the landscape character. Mitigation of visual and landscape impacts through reduction of the number of turbines should be considered given the dominant appearance of the proposed development in this open low level landscape. Of particular notes are the representative views from Clobanna church and graveyard (Viewpoint 28A), View from residences at Brownstown (Viewpoint 27B), Views from the N62 (Viewpoint 6 and 4B) and views from Rossestown Bridge (Viewpoint 4B).

Response:

The N62 and Brownstown viewpoints are located immediately north and west of the proposed wind farm. The viewpoint from the Rossestown Bridge is in the middle of the proposed wind farm. The visual effects at these locations would not be significantly changed by reducing the number of turbines, only by removing them all.

Photomontages for twenty-five viewpoints have been provided and used in the visual assessment. They are from close and more distant sites all around the proposed wind farm. Providing additional photomontages from additional sites would not change the findings of the visual impact assessment.

This photomontage from the Clobanna Church and Graveyard was requested by the cultural heritage consultant on this application in accordance with best practice, for use within the cultural heritage chapter only. The Clobanna Church and Graveyard is not accessible to the public and is entirely surrounded by, and fenced off from, a private agricultural field. As this monument is not accessible to the public, there is no public view from this location and it was not considered relevant to the visual impact assessment as per standard best practice in landscape and visual assessments.

3.8 Comments on Chapter 16 Traffic

Figure 3-11: Extract from Part 6 of TCC CE Planning Report on Road and Grid Route Issues

6.2.16.2 Comments on Chapter 16

Tipperary County Council is satisfied that all traffic and related impacts have been accounted for in the EIAR. Having examined same the following points of concern arise:

1. Sightlines are not in accordance with County Development plan for commercial entrances, no speed survey submitted for approval.

2. The proposed development will have a significant impact on the local road network with a large volume of HGV's delivering to the site and also a large number of abnormal loads. In particular there is concern in relation to the L-8017 from the junction with the N62 to Site Entrance No.3. A special contribution to be applied to resurface this section of road once the development is complete based on the following cost: 1650m x 6.0m wide = 9900m2 @ €40/m2 = €396,000

3. The applicant needs to explore the option of using private lands to install the proposed cable from the windfarm to the Thurles Substation at Ballygammane.

4. If requirement 3 cannot be achieved then the following must be applied: - The Roads Authority needs unhindered access to its structures (Bridges in particular) – that is without additional risk, cost or delay.

- The Roads Authority needs unhindered access to alter the road structure vertically, ie to depress or elevate

- Roads Authority will not accept one undertaker, sterilising the road bed for another.

- Trench reinstatement will not be to allowed as it is a Special Engineering Difficulty – full road reinstatement will be required.

- TCC require an indemnity from the Energy Producer (and cable owner if its not ESBN/EIRGRID) or, and any future owner of same, that TCC cannot be claimed against for loss of revenue or otherwise, should the cables need to be powered down for TCC to undertake works as a Roads Authority, or for any other reason.

- A condition is required to eliminate jointing bays and mandate the use of temporary removable jointing bays instead, to protect the integrity of the road structure, thereby improving safety for those driving on the public road by eliminating hard spots and preserving the road width for other utilities.

Response:

The responses below are aligned to the numbered points in the TCC submission above.

1. The speed survey data obtained for L8017 during the design process can be submitted. This data is relevant to entrances 1, 2 & 3 which would be the main entrances for the proposed wind farm. The average speed of local traffic according to this survey was 60 km/hr. This aligns with the new speed limits for local roads. The speed limit may need to be reduced to 55 or 50 km/hr for entrances 1, 2 & 3.

   Entrance 4 is primarily for the substation and will not be used for the wind farm. A speed survey can be completed and submitted for L4120 at entrance 4. In designing entrance 4 for the substation a 70 km/hr speed limit was used which does not align with the recent downwardly revised nation speed limits for local roads. We acknowledge that new sightlines may be required and we would potentially need to use 55 or 50 km/hr for entrance 4. We would be happy to provide such at a RFI stage of as part of a condition post planning.

2. The proposal for a special contribution to the TCC for road resurfacing is not unusual and in MWP's experience a better option. In this case the €396,000.00 fee paid to the council would be for the council to complete the reinstatement of the road after construction. This means that the quality, finish and timing of the reinstatement works is not the responsibility of the contractor/ client.

3. If part of the proposed grid connection route that's in planning is found not feasible due to existing services under the road, the potential for routing the cable through 3rd party lands could be investigated and considered. This would require the developer engage with local landowners and obtain land access. An access track over the grid connection route would be required by EirGrid/ESBN for ongoing maintenance/inspection/upgrades etc. The viability of such an option is not assured at this stage and cannot be designed and assessed without the consent of landowners and EirGrid. EirGrid will only enter into such discussions once planning has been granted and there is assurance that the proposed development will proceed.

4. Separate responses are provided below to each individual requirement mentioned in point 4 of the TCC Roads Dept Submission.

   - Re: Bridge access: 110kV grid route would require horizontal directional drilling to avoid all bridges/structures

   - RE: Unhindered access to alter road structure vertically: This is not feasible under the EirGrid standard drawings as lowering the road level more than 300mm would interact with the precast concrete joint bay and require the joint bay to be lowered. Discussions with EirGrid on increasing the cover over the precast concrete joint bay to 1000m may address this issue, however further consultation with MWP's Grid team is required.

   - Re: Road Sterilisation: Understandable and very common with LA due to the size of the joint bays, 6.0m x 2.5m, offsetting the joint bays to the grass verge is an option however this is dependant on the existing services.

   - Re: Trench Reinstatement: The TCC request for full reinstatement of the road is not aligned with current standard practice (Guidelines for Managing Openings in Public Roads 2017, Standard Drawings) and will increase costs under the current grid connection route. Please note that the above guidelines are currently being revised, full reinstatement is limited to 4/5 metres. We are willing to

adhere to the policies and best practices that are in place at the construction phase. If these policies are revised to require full road reinstatement, then this will be adhered to.

- Re: Indemnity: This recommendation is common practice and the developers are willing to adhere to this.
- RE: Joint Bays: Eirgrid's standard drawing XDC-CBL-STND-H-012-007 Rev 00 (see Appendix 1) shows options for temporary and permanent reinstatement of joint bays, temporary joint bays are not included in the standard drawings. The use of temporary joint within roads under the control of the LA will need to be agreed with EirGrid as this option is a deviation from standard practice. This is not very common and very unlikely to be approved by EirGrid based on the experience of MWP's Grid Team.

4. Conclusion

We appreciate the opportunity to provide responses to the issues raised by TCC with respect to the proposed Brittas Wind Farm and Grid Route. We have provided responses to the key issues by TCC that we deemed to require a response. These responses cover the grid route options, the road site entrances, joint bays in the road along the grid route, the biodiversity concerns, water pollution and flooding issues, shadow flicker mitigation measures and the proposed visual impact mitigation measures. We remain open to engaging further with the relevant authorities and stakeholders during the planning and detailed design stage around the practical issues that will require consultation and agreement. We also remain open to undertaking further surveys where these are needed to inform further design decision making.

5. References

Eirgrid's standard drawing XDC-CBL-STND-H-012-007 Rev 00 – Standard drawings for underground grid route joint bays. (2020)

STANDARD 110kV CABLE DRAWINGS
STANDARD CROSSING ABOVE
3rd PARTY SERVICE FOR 125mm DUCTS

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-001	001	STANDARD 3rd PARTY CROSSING 125mm INDEX SHEET	00
XDC-CBL-STND-H-001	002	STANDARD 3rd PARTY CROSSING ABOVE IN FULL FLAT FORMATION 125mm HV DUCTS	00
XDC-CBL-STND-H-001	003	STANDARD 3rd PARTY CROSSING ABOVE IN TREFOIL FORMATION 125mm HV DUCTS	00

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	DA	DG	CF	09/03/2020

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING
125mm
INDEX SHEET

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
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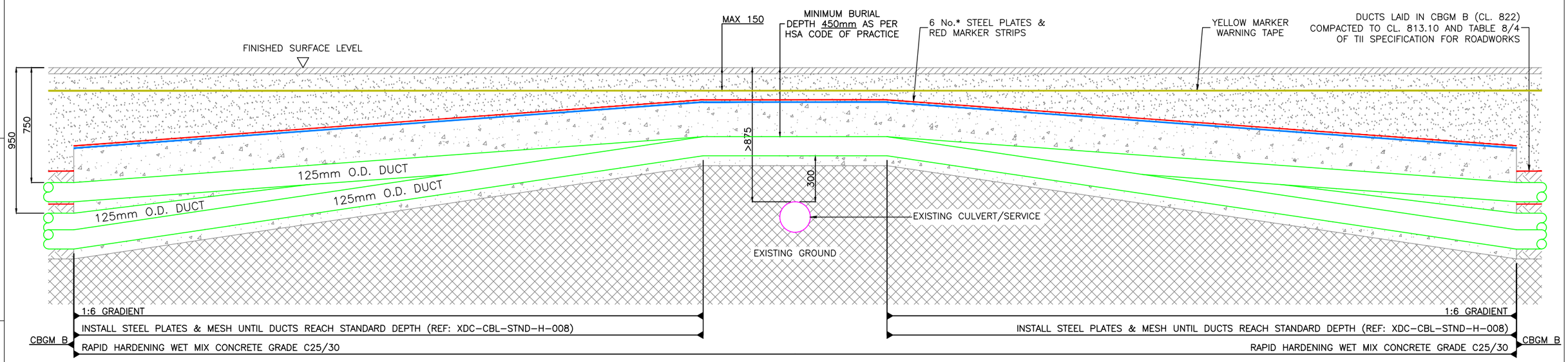
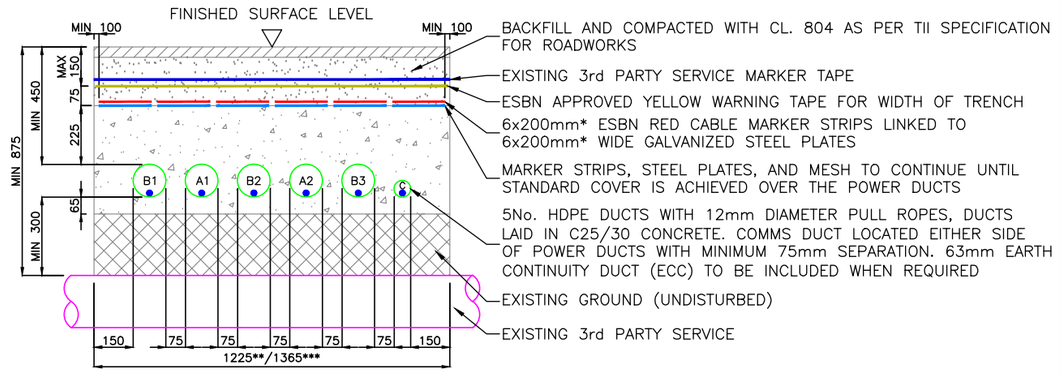


NOTES:

1. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, ESBN STANDARDS, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
2. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 25mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (TO BE CONFIRMED BY DESIGNER CABLE RATING CALCULATIONS).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. MINIMUM BURIAL DEPTH IS 450mm.
8. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
9. WHERE AN EARTH CONTINUITY CONDUCTOR (ECC) IS REQUIRED, A MIN 63mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICE MARKER STRIP
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- BACKFILL, COMPACTED (CL. 804)
- EXISTING GROUND

FULL FLAT FORMATION – REDUCED DEPTH FOR CROSSING OVER 3RD PARTY SERVICE



A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
B= 125mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR

* 5x200mm STEEL PLATES AND RE MARKERS AND WHERE ECC IS NOT REQUIRED
** MIN 1225mm WHERE ECC NOT REQUIRED
*** SEE NOTE 9

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Web: www.eirgrid.com

STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING ABOVE IN FULL FLAT FORMATION 125mm HV DUCTS

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
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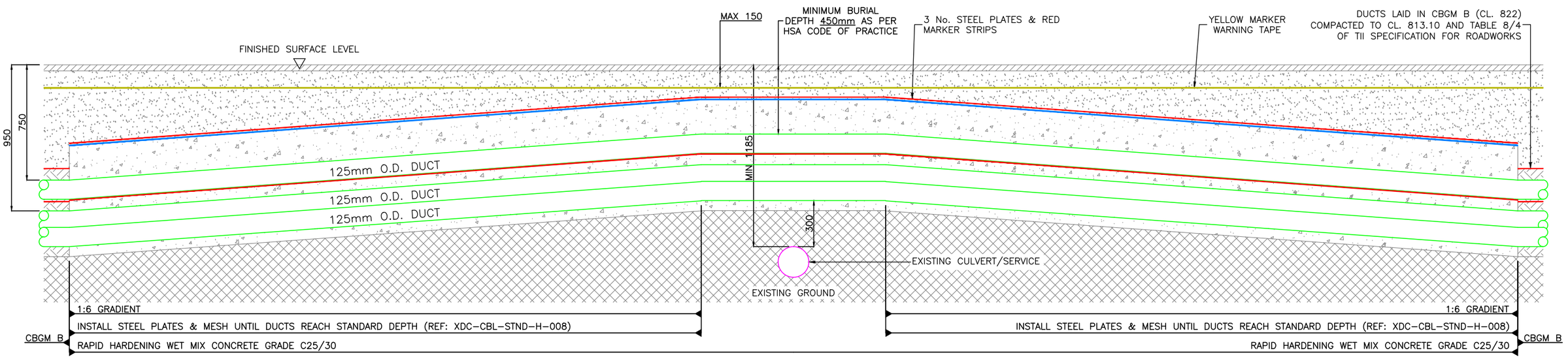

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1. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, ESBN STANDARDS, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
2. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 25mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (TO BE CONFIRMED BY DESIGNER CABLE RATING CALCULATIONS).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. MINIMUM BURIAL DEPTH IS 450mm.
8. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
9. WHERE AN EARTH CONTINUITY CONDUCTOR (ECC) IS REQUIRED, A MIN 63mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.

- RED MARKER STRIP
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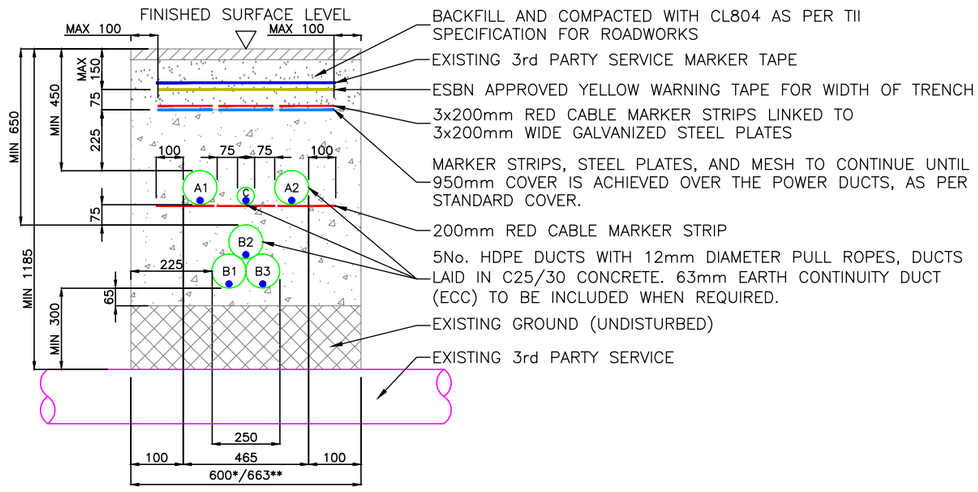
- EXISTING GROUND

TREFOIL FORMATION – REDUCED DEPTH FOR CROSSING OVER 3RD PARTY SERVICE



A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
B= 125mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR

* MIN 600mm WHERE ECC NOT REQUIRED
** SEE NOTE 9

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING ABOVE IN TREFOIL FORMATION 125mm HV DUCTS

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-001	003	00

STANDARD 110kV CABLE DRAWINGS
STANDARD CROSSING ABOVE
3rd PARTY SERVICE FOR 160mm DUCTS

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-002	001	STANDARD 3rd PARTY CROSSING 160mm INDEX SHEET	00
XDC-CBL-STND-H-002	002	STANDARD 3rd PARTY CROSSING ABOVE IN FULL FLAT FORMATION 160mm HV DUCTS	00
XDC-CBL-STND-H-002	003	STANDARD 3rd PARTY CROSSING ABOVE IN TREFOIL FORMATION 160mm HV DUCTS	00

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	DA	DG	CF	09/03/2020

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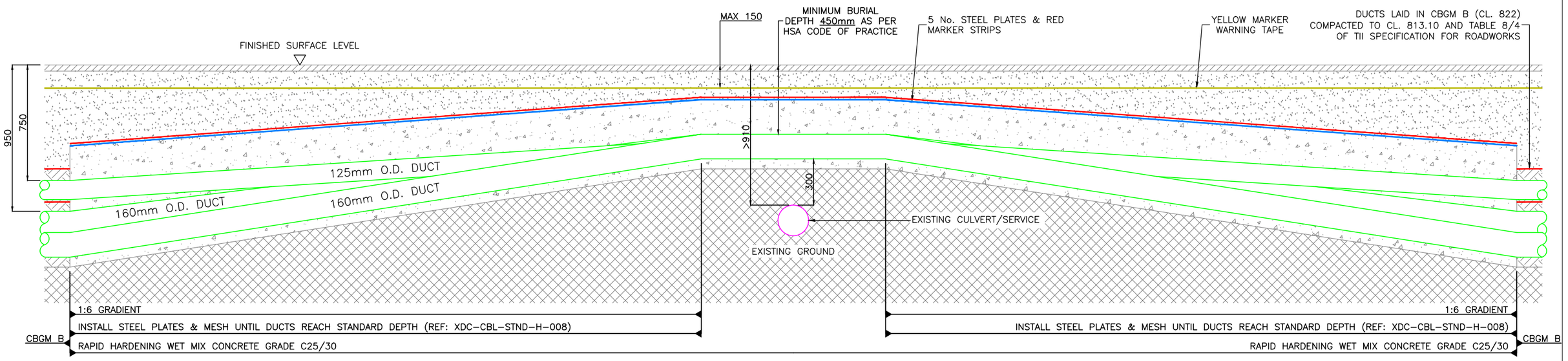
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING
160mm
INDEX SHEET

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-002	001	00

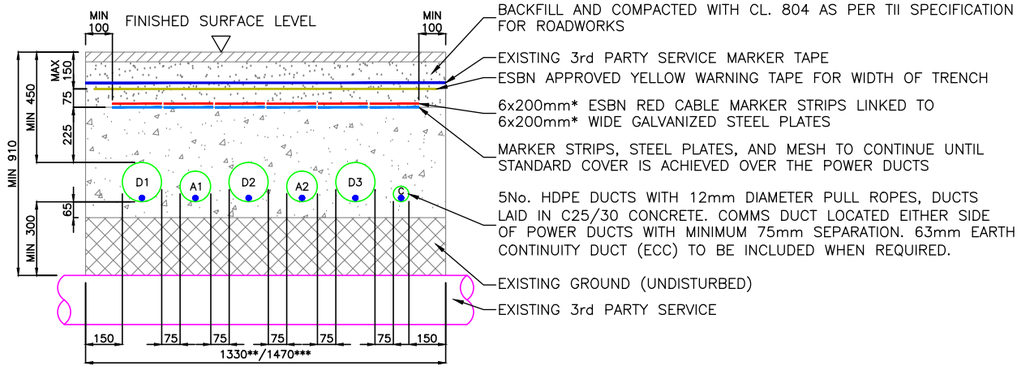


NOTES:

1. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, ESBN STANDARDS, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
2. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 10mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (TO BE CONFIRMED BY DESIGNER CABLE RATING CALCULATIONS).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. MINIMUM BURIAL DEPTH IS 450mm.
8. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
9. WHERE AN EARTH CONTINUITY CONDUCTOR (ECC) IS REQUIRED, A MIN 63mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICE MARKER STRIP
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- BACKFILL, COMPACTED (CL. 804)
- EXISTING GROUND

FULL FLAT FORMATION – REDUCED DEPTH FOR CROSSING OVER 3RD PARTY SERVICE



A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
D= 160mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR

* 5x200mm STEEL PLATES AND RED MARKER WHERE AND ECC IS NOT REQUIRED
** MIN 1225mm WHERE ECC NOT REQUIRED
*** SEE NOTE 9

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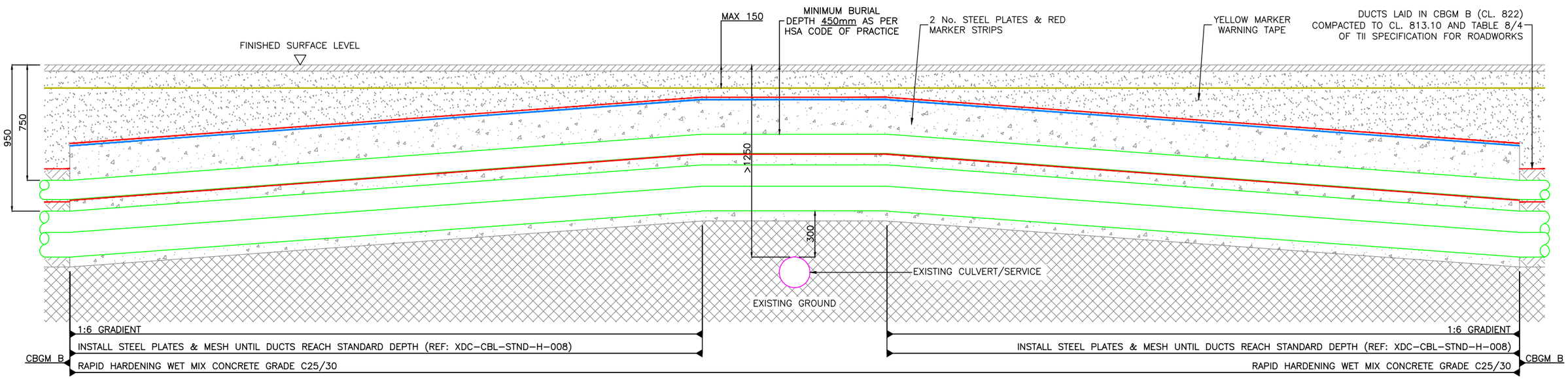
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING ABOVE IN FULL FLAT FORMATION 160mm HV DUCTS

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-002	002	00

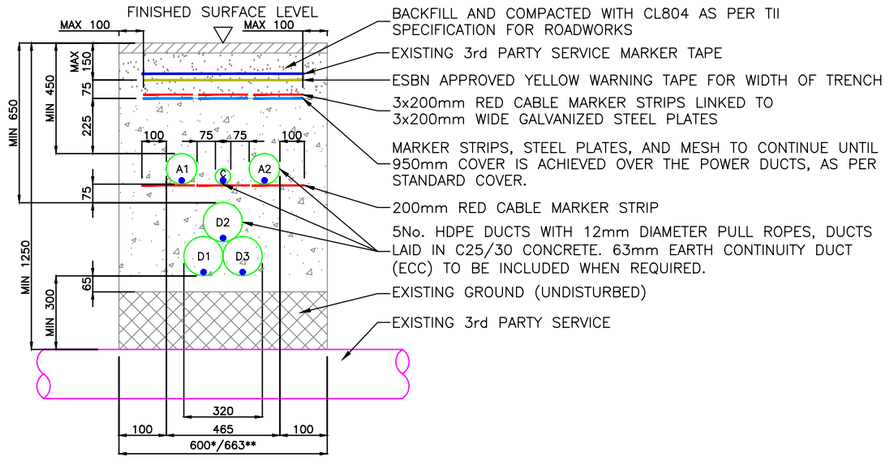


NOTES:

1. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, ESBN STANDARDS, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
2. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 10mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (TO BE CONFIRMED BY DESIGNER CABLE RATING CALCULATIONS).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. MINIMUM BURIAL DEPTH IS 450mm.
8. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
9. WHERE AN EARTH CONTINUITY CONDUCTOR (ECC) IS REQUIRED, A MIN 63mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICE MARKER STRIP
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- BACKFILL, COMPACTED (CL. 804)
- EXISTING GROUND

TREFOIL FORMATION – REDUCED DEPTH FOR CROSSING OVER 3RD PARTY SERVICE



A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
D= 160mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. PVC DUCT FOR EARTH CONTINUITY CONDUCTOR

* MIN 600mm WHERE ECC NOT REQUIRED
** SEE NOTE 9

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING ABOVE IN TREFOIL FORMATION 160mm HV DUCTS

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER: XDC-CBL-STND-H-002
SHEET: 003
REV: 00

STANDARD 110kV CABLE DRAWINGS
STANDARD CROSSING BELOW
3rd PARTY SERVICE FOR 125mm DUCTS

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-003	001	STANDARD 3rd PARTY CROSSING 125mm INDEX SHEET	00
XDC-CBL-STND-H-003	002	STANDARD 3rd PARTY CROSSING 125mm BELOW IN FULL FLAT FORMATION	00
XDC-CBL-STND-H-003	003	STANDARD 3rd PARTY CROSSING 125mm BELOW IN TREFOIL FORMATION	00

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00	FIRST ISSUE	DA	DG	CF	09/03/2020

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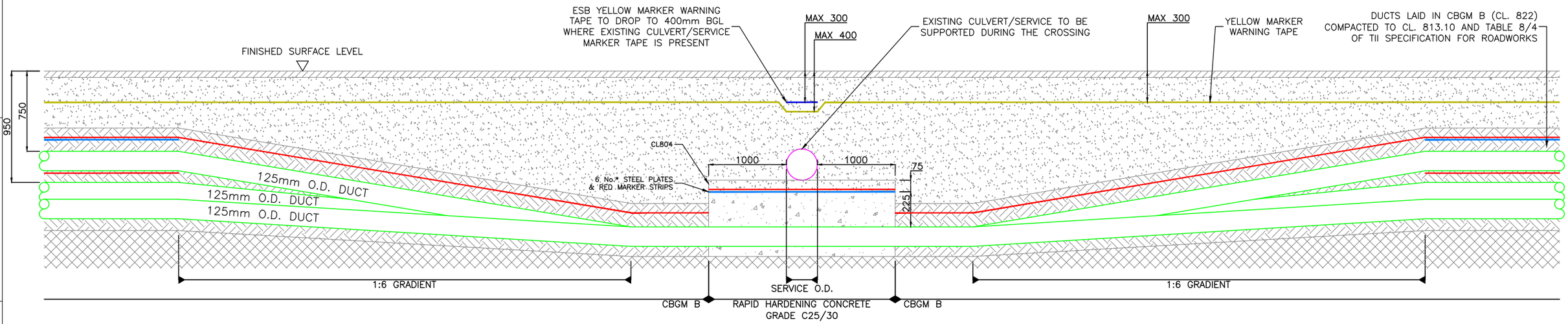
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING
125mm
INDEX SHEET

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-003	001	00



NOTES:

1. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, ESBN STANDARDS, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
2. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 25mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (TO BE CONFIRMED BY DESIGNER CABLE RATING CALCULATIONS).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
8. WHERE AN EARTH CONTINUITY CONDUCTOR (ECC) IS REQUIRED, A MIN 63mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.
9. IF EXISTING SERVICE MARKER TAPE IS NOT PRESENT, THE ESBN YELLOW MARKER TAPE SHOULD BE INSTALLED AT MAXIMUM 300mm BELOW FINISHED SURFACE LEVEL.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICE MARKER STRIP
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- BACKFILL, COMPACTED (CL. 804)
- EXISTING GROUND

FULL FLAT FORMATION FOR CROSSING BELOW 3RD PARTY SERVICE

A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
B= 125mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR

* 5x200mm STEEL PLATES AND RED MARKER WHERE ECC IS NOT REQUIRED
** MIN 1225mm WHERE ECC NOT REQUIRED
*** SEE NOTE 8

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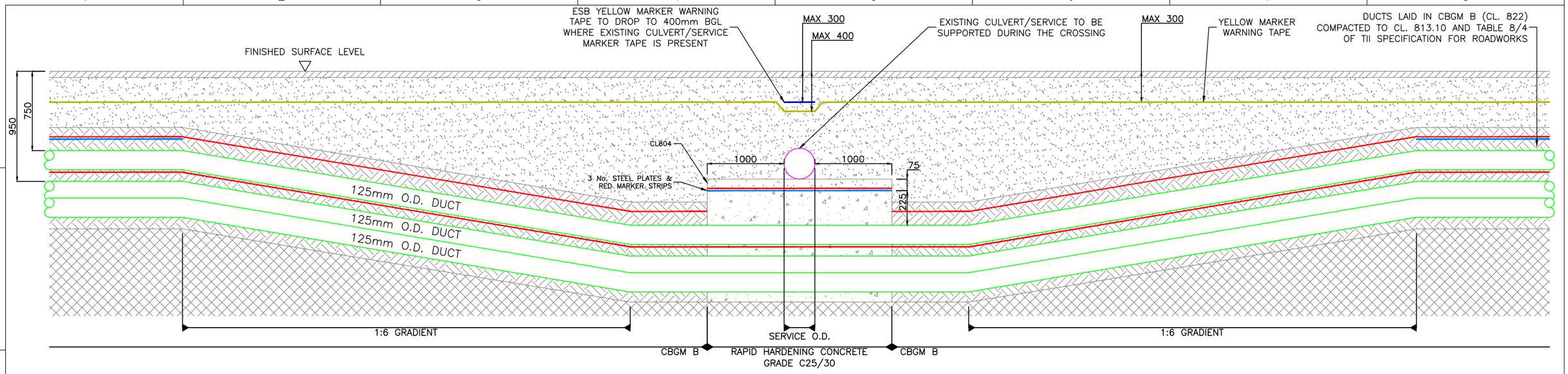
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING 125mm BELOW IN FULL FLAT FORMATION

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-003	002	00



NOTES:

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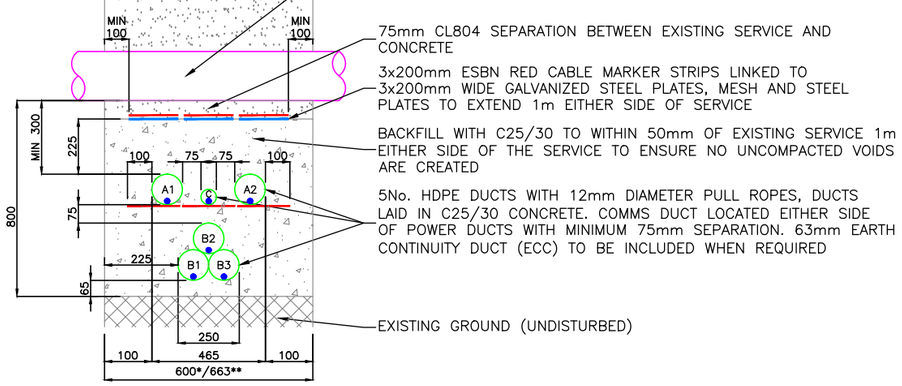
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 25mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, (CABLE RATING CALCULATIONS TO BE REQUIRED FOR ACCEPTANCE).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
8. WHERE AN EARTH CONTINUITY CONDUCTOR (ECC) IS REQUIRED, A MIN 63mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.
9. IF EXISTING SERVICE MARKER TAPE IS NOT PRESENT, THE ESBN YELLOW MARKER TAPE SHOULD BE INSTALLED AT MAXIMUM 300mm BELOW FINISHED SURFACE LEVEL.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICE MARKER STRIP
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- BACKFILL, COMPACTED (CL. 804)
- EXISTING GROUND

TREFOIL FORMATION FOR CROSSING BELOW 3RD PARTY SERVICE



A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
B= 125mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR

* MIN 600mm WHERE ECC NOT REQUIRED
** SEE NOTE 8

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING 125mm BELOW IN TREFOIL FORMATION

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-003	003	00

STANDARD 110kV CABLE DRAWINGS
STANDARD CROSSING BELOW
3rd PARTY SERVICE FOR 160mm DUCTS

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-004	001	STANDARD 3rd PARTY CROSSING 160mm INDEX SHEET	00
XDC-CBL-STND-H-004	002	STANDARD 3rd PARTY CROSSING 160mm BELOW IN FULL FLAT FORMATION	00
XDC-CBL-STND-H-004	003	STANDARD 3rd PARTY CROSSING 160mm BELOW IN TREFOIL FORMATION	00

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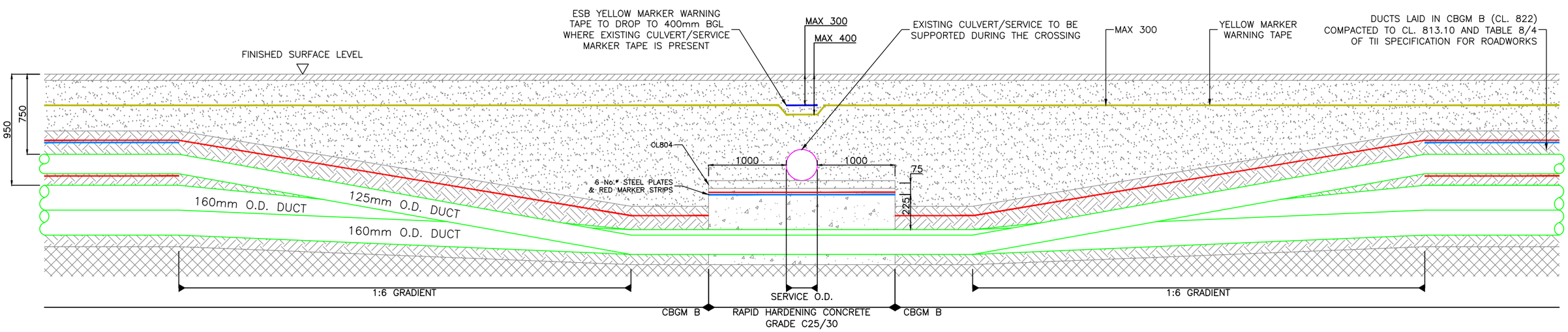
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING
160mm
INDEX SHEET

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-004	001	00



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3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 10mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, (CABLE RATING CALCULATIONS TO BE PROVIDED FOR ACCEPTANCE).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
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7. MINIMUM SPACING BETWEEN POWER DUCTS TO BE CONFIRMED WITH RATING CALCULATION.
8. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
9. WHERE AN EARTH CONTINUITY CONDUCTOR (ECC) IS REQUIRED, A MIN 63mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.
10. IF EXISTING SERVICE MARKER TAPE IS NOT PRESENT, THE ESBN YELLOW MARKER TAPE SHOULD BE INSTALLED AT MAXIMUM 300mm BELOW FINISHED SURFACE LEVEL.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICE MARKER STRIP
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- BACKFILL, COMPACTED (CL. 804)
- EXISTING GROUND

FULL FLAT FORMATION FOR CROSSING BELOW 3RD PARTY SERVICE

A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
D= 160mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR

* 5x200mm STEEL PLATE AND RED MARKER WHERE ECC IS NOT REQUIRED
** MIN 1330mm WHERE ECC NOT REQUIRED
*** SEE NOTE 9

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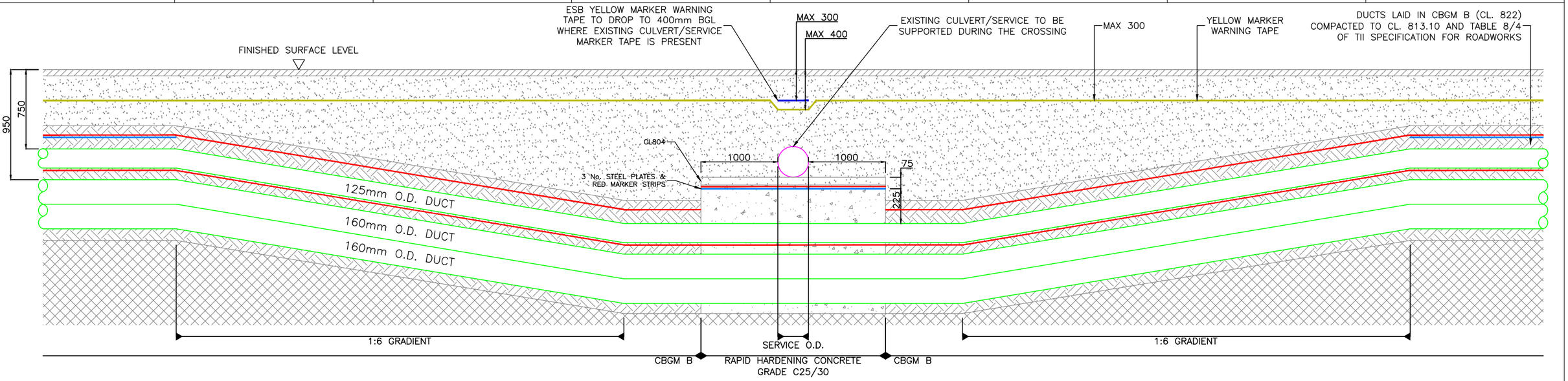
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING 160mm BELOW IN FULL FLAT FORMATION

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER: XDC-CBL-STND-H-004
SHEET: 002
REV: 00

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	DA	DG	CF	09/03/2020



NOTES:

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10. IF EXISTING SERVICE MARKER TAPE IS NOT PRESENT, THE ESBN YELLOW MARKER TAPE SHOULD BE INSTALLED AT MAXIMUM 300mm BELOW FINISHED SURFACE LEVEL.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- EXISTING SERVICE MARKER STRIP
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- BACKFILL, COMPACTED (CL. 804)
- EXISTING GROUND

TREFOIL FORMATION FOR CROSSING BELOW 3RD PARTY SERVICE

A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
D= 160mm O.D. HDPE DUCT FOR HV CABLE
C= 63mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR

* MIN 600mm WHERE ECC NOT REQUIRED
** SEE NOTE 9

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD 3rd PARTY CROSSING 160mm BELOW IN TREFOIL FORMATION

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-004	003	00

STANDARD 110kV CABLE DRAWINGS
STANDARD CROSSING BELOW
RIVERBED FOR 125mm & 160mm DUCTS

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-005	001	STANDARD RIVERBED CROSSING INDEX SHEET	00
XDC-CBL-STND-H-005	002	STANDARD RIVERBED CROSSING 125mm RIVERBED CROSSING	00
XDC-CBL-STND-H-005	003	STANDARD RIVERBED CROSSING 160mm RIVERBED CROSSING	00

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	DA	DG	CF	09/03/2020

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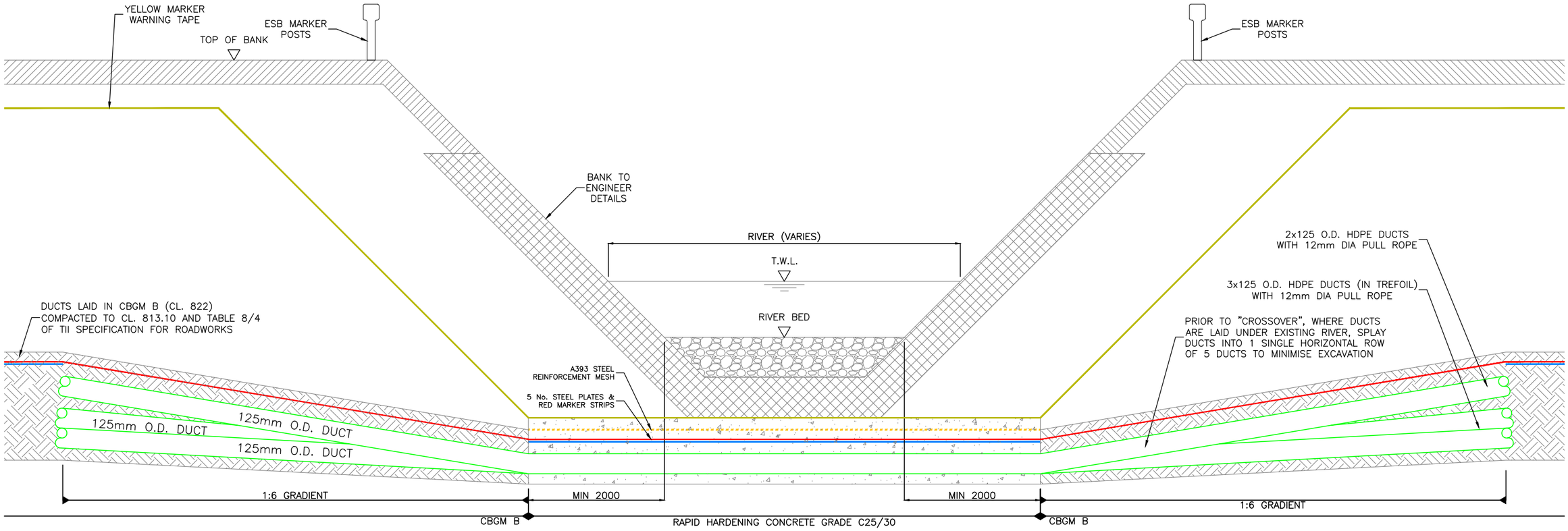
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD RIVERBED CROSSING
INDEX SHEET

No of Shts	SIZE	SCALE
3	A3	N/A

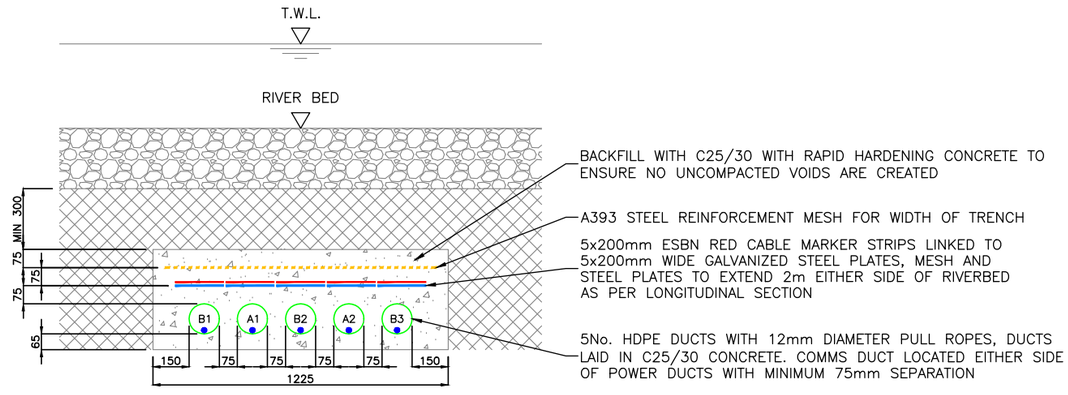
DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-005	001	00



NOTES:

1. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, ESBN STANDARDS, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
2. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 10mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (CABLE RATING CALCULATIONS TO BE PROVIDED FOR ACCEPTANCE).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. MINIMUM SPACING BETWEEN POWER DUCTS TO BE CONFIRMED WITH RATING CALCULATION.
8. MINIMUM CLEARANCE BETWEEN CABLE TRENCH CONCRETE AND RIVER BED TO BE AGREED WITH RELEVANT AUTHORITY. IN ANY CASE, NO LESS THAN 300mm.
9. STANDARD ESB MARKER POSTS TO BE INSTALLED AT EITHER SIDE OF RIVER CROSSING.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- A393 STEEL REINFORCEMENT MESH
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- EXISTING GROUND
- REINSTATED RIVERBED



A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
B= 125mm O.D. HDPE DUCT FOR HV CABLE

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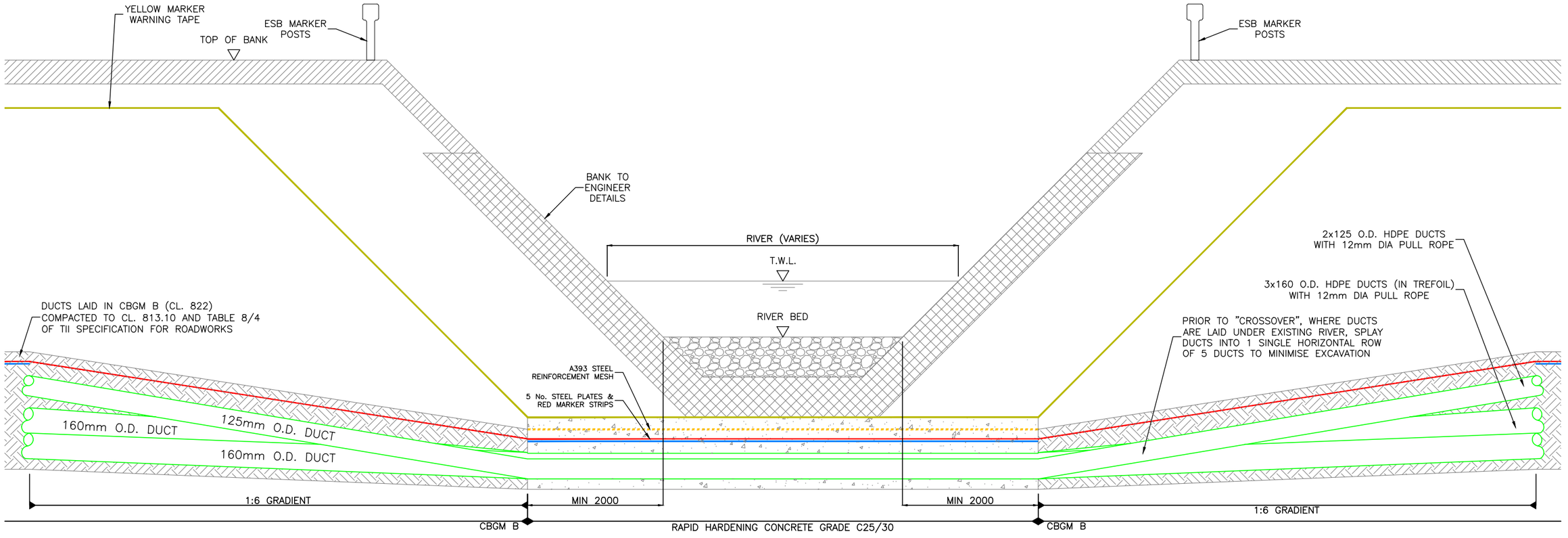
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD RIVERBED CROSSING
125mm RIVERBED CROSSING

No of Shts	SIZE	SCALE
3	A3	N/A

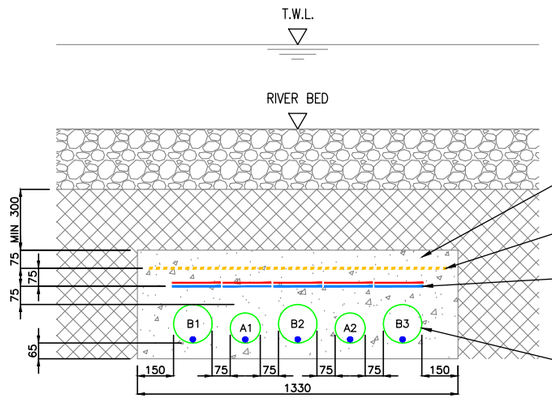
DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-005	002	00



NOTES:

1. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, ESBN STANDARDS, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
2. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
3. STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 10mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
4. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (CABLE RATING CALCULATIONS TO BE PROVIDED FOR ACCEPTANCE).
5. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
6. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
7. MINIMUM SPACING BETWEEN POWER DUCTS TO BE CONFIRMED WITH RATING CALCULATION.
8. MINIMUM CLEARANCE BETWEEN CABLE TRENCH CONCRETE AND RIVER BED TO BE AGREED WITH RELEVANT AUTHORITY.
9. STANDARD ESB MARKER POSTS TO BE INSTALLED AT EITHER SIDE OF RIVER CROSSING.

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- A393 STEEL REINFORCEMENT MESH
- 6mm GALVANISED STEEL PLATE
- RAPID HARDENING WET CONCRETE C25/30
- CBGM B (CL. 822), COMPACTED TO CL. 813.10
- EXISTING GROUND
- REINSTATED RIVERBED



BACKFILL WITH C25/30 RAPID HARDENING CONCRETE TO ENSURE NO UNCOMPACTED VOIDS ARE CREATED

A393 STEEL REINFORCEMENT MESH FOR WIDTH OF TRENCH

5x200mm ESBN RED CABLE MARKER STRIPS LINKED TO 5x200mm WIDE GALVANIZED STEEL PLATES, MESH AND STEEL PLATES TO EXTEND 2m EITHER SIDE OF RIVERBED AS PER LONGITUDINAL SECTION

5No. HDPE DUCTS WITH 12mm DIAMETER PULL ROPES, DUCTS LAID IN C25/30 CONCRETE. COMMS DUCT LOCATED EITHER SIDE OF POWER DUCTS WITH MINIMUM 75mm SEPARATION

A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS
B= 160mm O.D. HDPE DUCT FOR HV CABLE

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD RIVERBED CROSSING
160mm RIVERBED CROSSING

No of Shts	SIZE	SCALE
3	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-005	003	00

STANDARD 110kV CABLE DRAWINGS
STANDARD BRIDGE CROSSING

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-006	001	BRIDGE CROSSING INDEX SHEET	00
XDC-CBL-STND-H-006	002	BRIDGE CARRIAGEWAY STANDARD 110kV CABLE TRENCH	00

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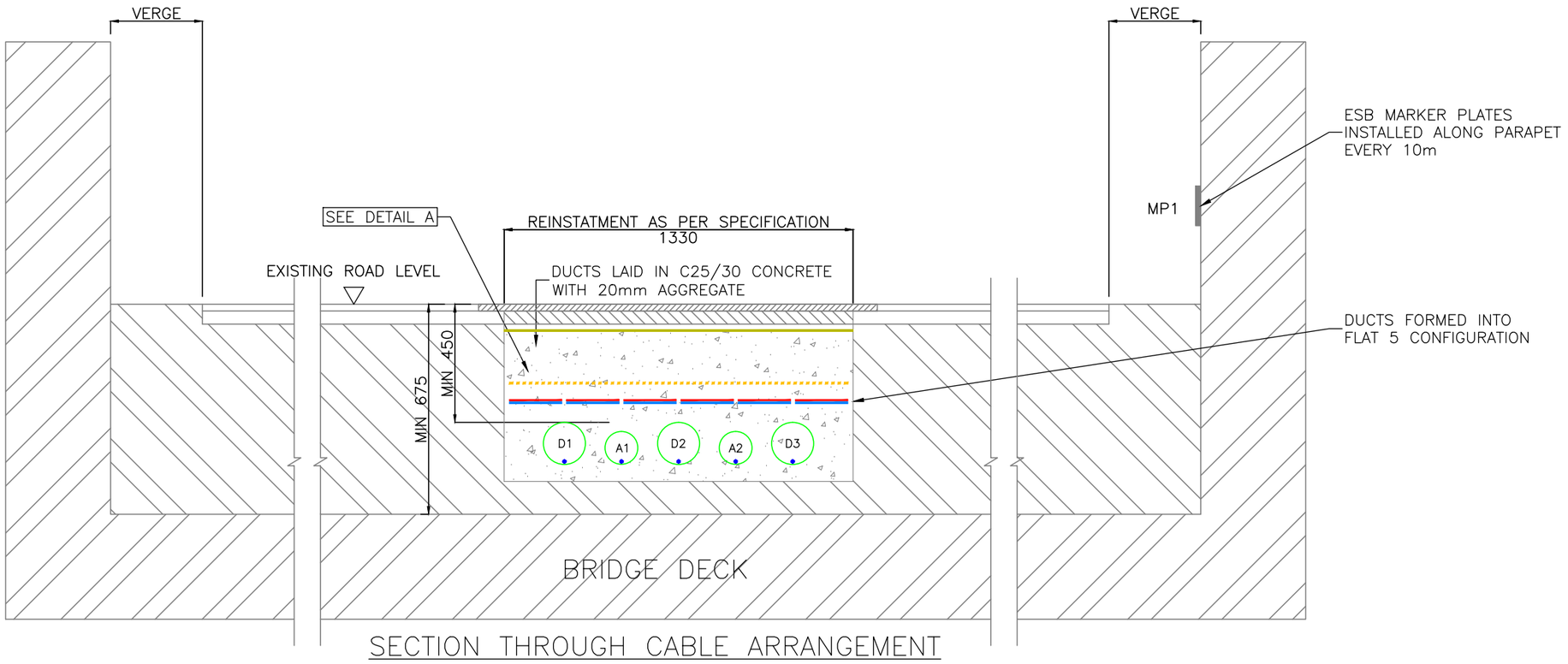
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
BRIDGE CROSSING
INDEX SHEET

No of Shts	SIZE	SCALE
2	A3	N/A

DRAWING NUMBER
XDC-CBL-STND-H-006

SHEET	REV
001	00



SECTION THROUGH CABLE ARRANGEMENT

NOTES:

1. THE REQUIREMENT FOR THE BRIDGE INSTALLATION SHALL BE AGREED IN ADVANCE BY THE CUSTOMER WITH THE LOCAL AUTHORITY, OR RELEVANT PUBLIC/PRIVATE BODY.
2. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
3. REINSTATEMENT TO BE AS PER TII SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN NATIONAL ROADS. WHERE ENTIRE ROAD TO BE RELAID IT IS TO BE DONE AS PER NRA SPECIFICATION FOR ROADWORKS.
4. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES, WATER MAINS, CULVERTS, etc.) IN THE CASE OF HIGH RISK 3rd PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT EIRGRID AND 3rd PARTY SERVICE OWNERS FOR GUIDANCE.
5. STEEL PLATES MUST COVER DUCTS. SPACING OF 10mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
6. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (CABLE RATING CALCULATIONS TO BE PROVIDED FOR ACCEPTANCE).
7. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
8. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION. PRE-MADE 75mm WIDE CONCRETE SPACERS TO BE USED FOR INSTALLATION IN WET CONCRETE.
9. MINIMUM BURIAL DEPTH IS 450mm.

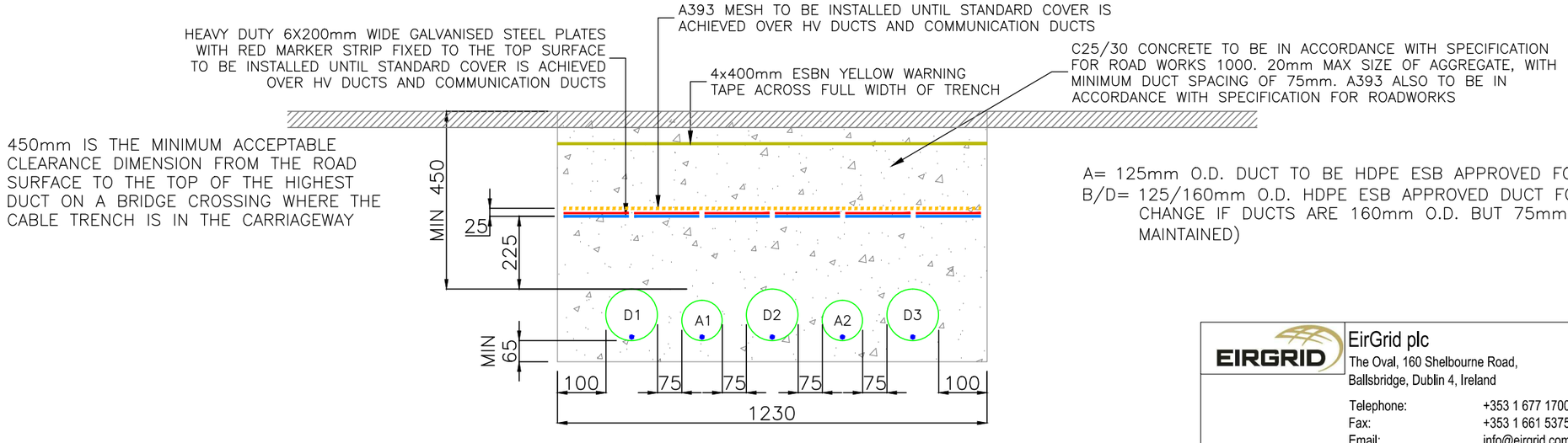
RED MARKER STRIP

YELLOW MARKER WARNING TAPE

A393 STEEL MESH

6mm STEEL PLATE

DETAIL A



450mm IS THE MINIMUM ACCEPTABLE CLEARANCE DIMENSION FROM THE ROAD SURFACE TO THE TOP OF THE HIGHEST DUCT ON A BRIDGE CROSSING WHERE THE CABLE TRENCH IS IN THE CARRIAGEWAY

A= 125mm O.D. DUCT TO BE HDPE ESB APPROVED FOR COMMUNICATIONS
B/D= 125/160mm O.D. HDPE ESB APPROVED DUCT FOR HV CABLE (OVERALL TRENCH WIDTH MAY CHANGE IF DUCTS ARE 160mm O.D. BUT 75mm DISTANCE REQUIREMENT BETWEEN DUCTS TO BE MAINTAINED)

PROPOSED FLAT 5 CONFIGURATION OVER BRIDGES WITH SHALLOW COVER – WITHIN CARRRIAGEWAY

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
BRIDGE CARRIAGEWAY
STANDARD 110kV CABLE TRENCH

No of Shts	SIZE	SCALE
2	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-006	002	00

STANDARD 110kV CABLE DRAWINGS
STANDARD CABLE TRENCH THROUGH PEAT

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-007	001	STANDARD CABLE TRENCH THROUGH PEAT INDEX SHEET	00
XDC-CBL-STND-H-007	002	SECTION THROUGH SOLID CABLE TRENCH (FLOATING ROAD) PEAT DEPTH <2.5m	00
XDC-CBL-STND-H-007	003	SECTION THROUGH FLOATING ROAD UPGRADED TO SOLID PEAT DEPTH <2.5m	00
XDC-CBL-STND-H-007	004	SECTION THROUGH FLOATING ROAD PEAT DEPTH >2.5m	00

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
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STANDARD 110kV CABLE DRAWINGS

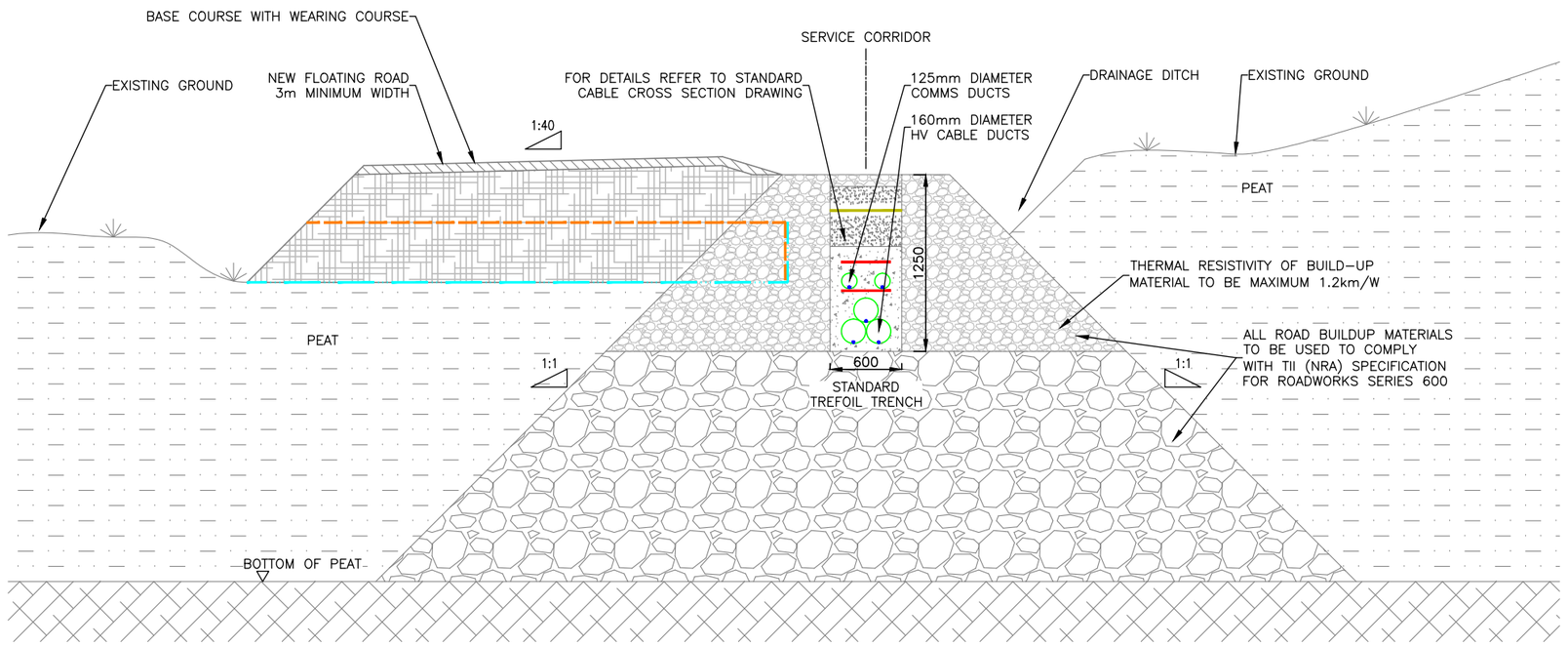
DRAWING TITLE
STANDARD CABLE TRENCH THROUGH PEAT INDEX SHEET

No of Shts	SIZE	SCALE
4	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-007	001	00

NOTES:

1. BASE COURSE AND WEARING COURSE TO BE IN ACCORDANCE WITH TII (NRA) SPECIFICATION FOR ROADWORKS SERIES 900.
2. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
3. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
4. FOR DETAILS OF CABLE TRENCH LAYOUT, REFER TO XDC-CBL-STND-H-008.
5. THIS IS A TYPICAL CROSS SECTION DETAIL FOR SHALLOW PEAT INSTALLATION. SPECIFIC CONSTRUCTION DESIGN SHALL COMPLY WITH CDS-HFS-01-001.



LEGEND:

- GEOTEXTILE
- GEOGRID
- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE

SECTION THROUGH CABLE TRENCH BUILT TO SOLID (FLOATING ROAD)
PEAT DEPTH <2.5m
SCALE 1:50

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STANDARD 110kV CABLE DRAWINGS

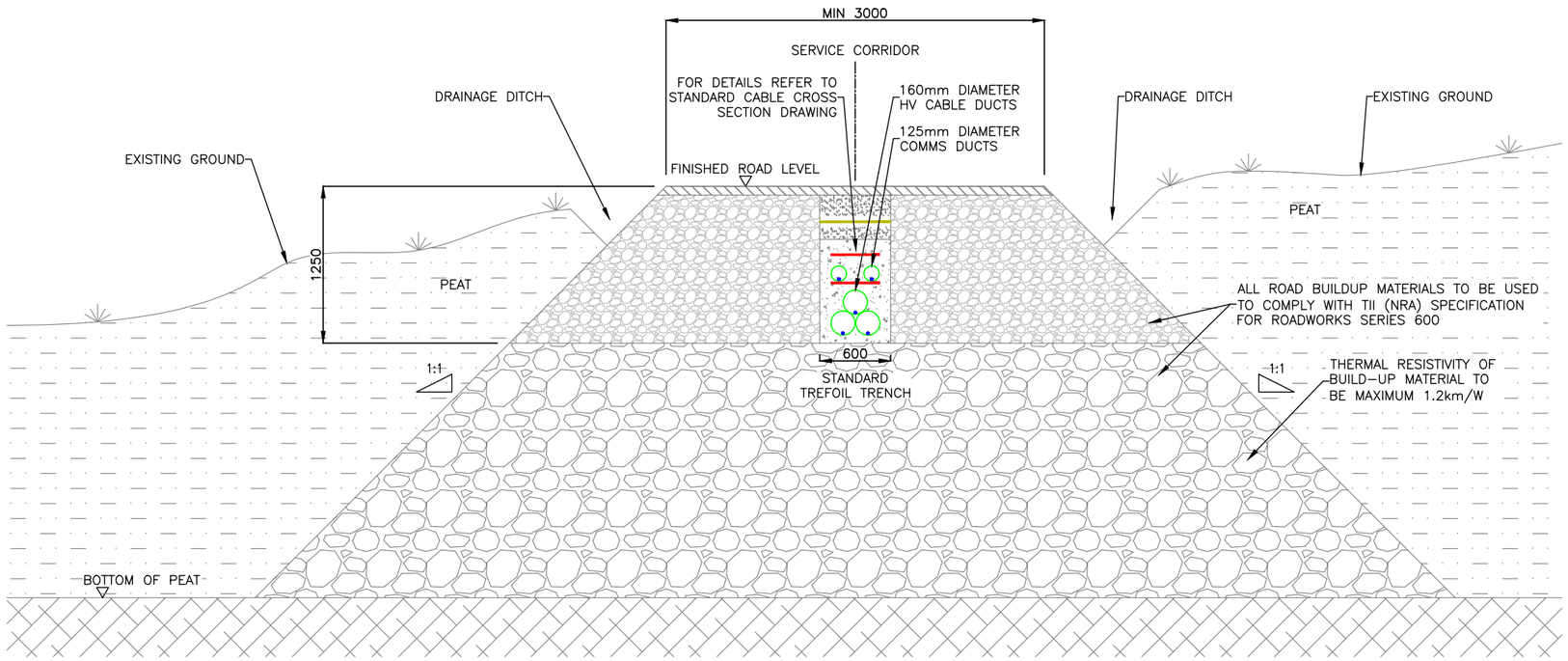
DRAWING TITLE
TYPICAL SECTION THROUGH SOLID CABLE TRENCH (FLOATING ROAD) PEAT DEPTH <2.5m

No of Shts	SIZE	SCALE
4	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-007	002	00

NOTES:

1. BASE COURSE AND WEARING COURSE TO BE IN ACCORDANCE WITH TII (NRA) SPECIFICATION FOR ROADWORKS SERIES 900.
2. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
3. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
4. FOR DETAILS OF CABLE TRENCH LAYOUT, REFER TO XDC-CBL-STND-H-008.
5. THIS IS A TYPICAL CROSS SECTION DETAIL FOR SHALLOW PEAT INSTALLATION. SPECIFIC CONSTRUCTION DESIGN SHALL COMPLY WITH CDS-HFS-01-001.



LEGEND:

- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE

SECTION THROUGH FLOATING ROAD UPGRADED TO SOLID
PEAT DEPTH <2.5m
SCALE 1:50

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STANDARD 110kV CABLE DRAWINGS

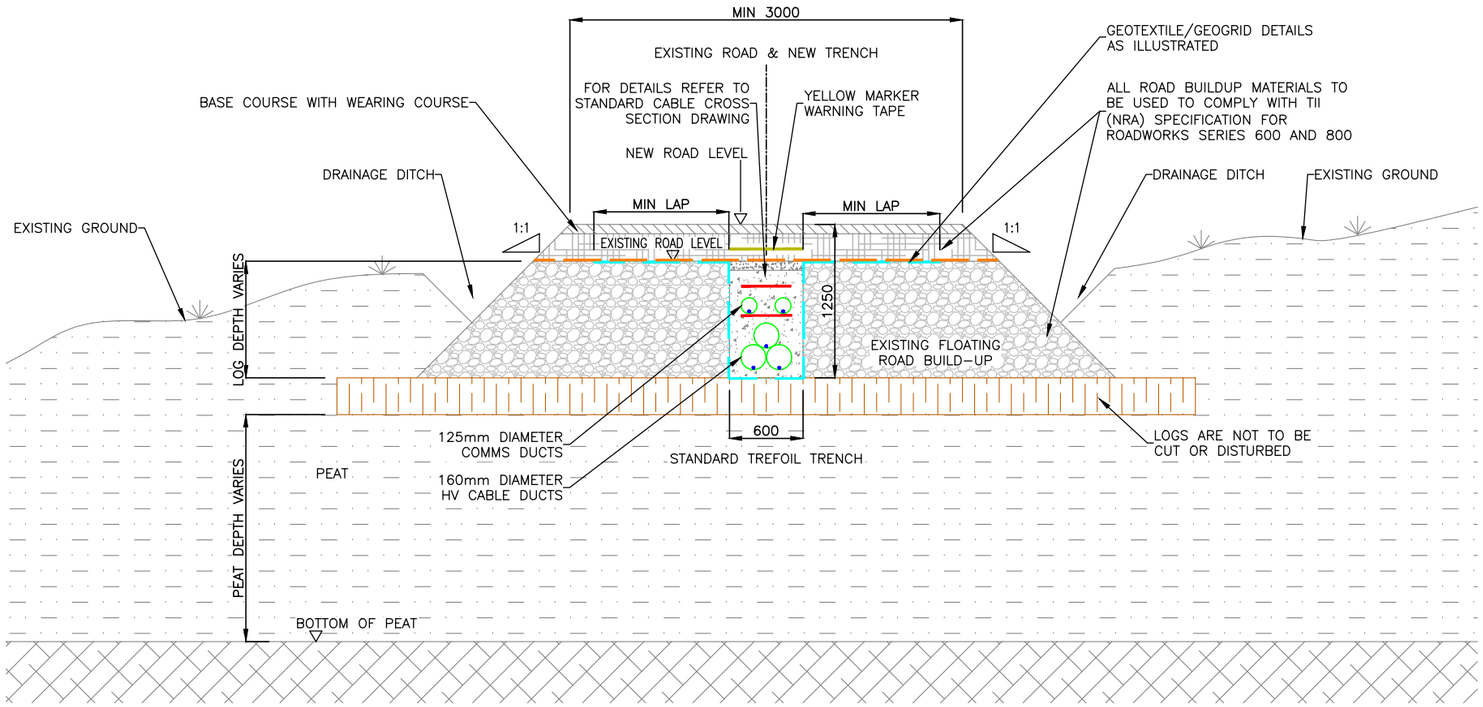
DRAWING TITLE
TYPICAL SECTION THROUGH FLOATING ROAD UPGRADED TO SOLID PEAT DEPTH <2.5m

No of Shts	SIZE	SCALE
4	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-007	003	00

NOTES:

1. BASE COURSE AND WEARING COURSE TO BE IN ACCORDANCE WITH TII (NRA) SPECIFICATION FOR ROADWORKS SERIES 900.
2. ALL PRODUCTS AND MATERIALS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
3. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF THE RELEVANT INFRASTRUCTURE.
4. FOR DETAILS OF CABLE TRENCH LAYOUT, REFER TO XDC-CBL-STND-H-008.
5. THIS IS A TYPICAL CROSS SECTION DETAIL FOR DEEP PEAT INSTALLATION. SPECIFIC CONSTRUCTION DESIGN SHALL COMPLY WITH CDS-HFS-01-001.



SECTION THROUGH UPGRADED FLOATING ROAD
PEAT DEPTH >2.5m
SCALE 1:50

LEGEND:

- GEOTEXTILE
- GEOGRID
- RED MARKER STRIP
- YELLOW MARKER WARNING TAPE
- BASE WEARING COARSE
- NEW ROAD BUILT-UP MATERIAL
- EXISTING MATERIAL
- LOGS
- PEAT

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TYPICAL SECTION THROUGH FLOATING ROAD
PEAT DEPTH >2.5m

No of Shts	SIZE	SCALE
4	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-007	004	00

STANDARD 110kV CABLE DRAWINGS
STANDARD CROSS SECTIONS
125mm AND 160mm DUCTS

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-008	001	STANDARD CROSS SECTIONS INDEX SHEET	00
XDC-CBL-STND-H-008	002	TRENCH CROSS SECTION FOR 125mm POWER DUCTS IN TREFOIL FORMATION	00
XDC-CBL-STND-H-008	003	TRENCH CROSS SECTION FOR 160mm POWER DUCTS IN TREFOIL FORMATION	00
XDC-CBL-STND-H-008	004	TRENCH CROSS SECTION FOR 125mm POWER DUCTS IN FLAT FORMATION	00
XDC-CBL-STND-H-008	005	TRENCH CROSS SECTION FOR 160mm POWER DUCTS IN FLAT FORMATION	00
XDC-CBL-STND-H-008	006	TRENCH CROSS SECTION FOR 125mm POWER DUCTS WITH EARTH CONTINUITY DUCT – TREFOIL FORMATION	00
XDC-CBL-STND-H-008	007	TRENCH CROSS SECTION FOR 160mm POWER DUCTS WITH EARTH CONTINUITY DUCT – TREFOIL FORMATION	00
XDC-CBL-STND-H-008	008	TRENCH CROSS SECTION FOR 125mm POWER DUCTS WITH EARTH CONTINUITY DUCT – FLAT FORMATION	00
XDC-CBL-STND-H-008	009	TRENCH CROSS SECTION FOR 160mm POWER DUCTS WITH EARTH CONTINUITY DUCT – FLAT FORMATION	00

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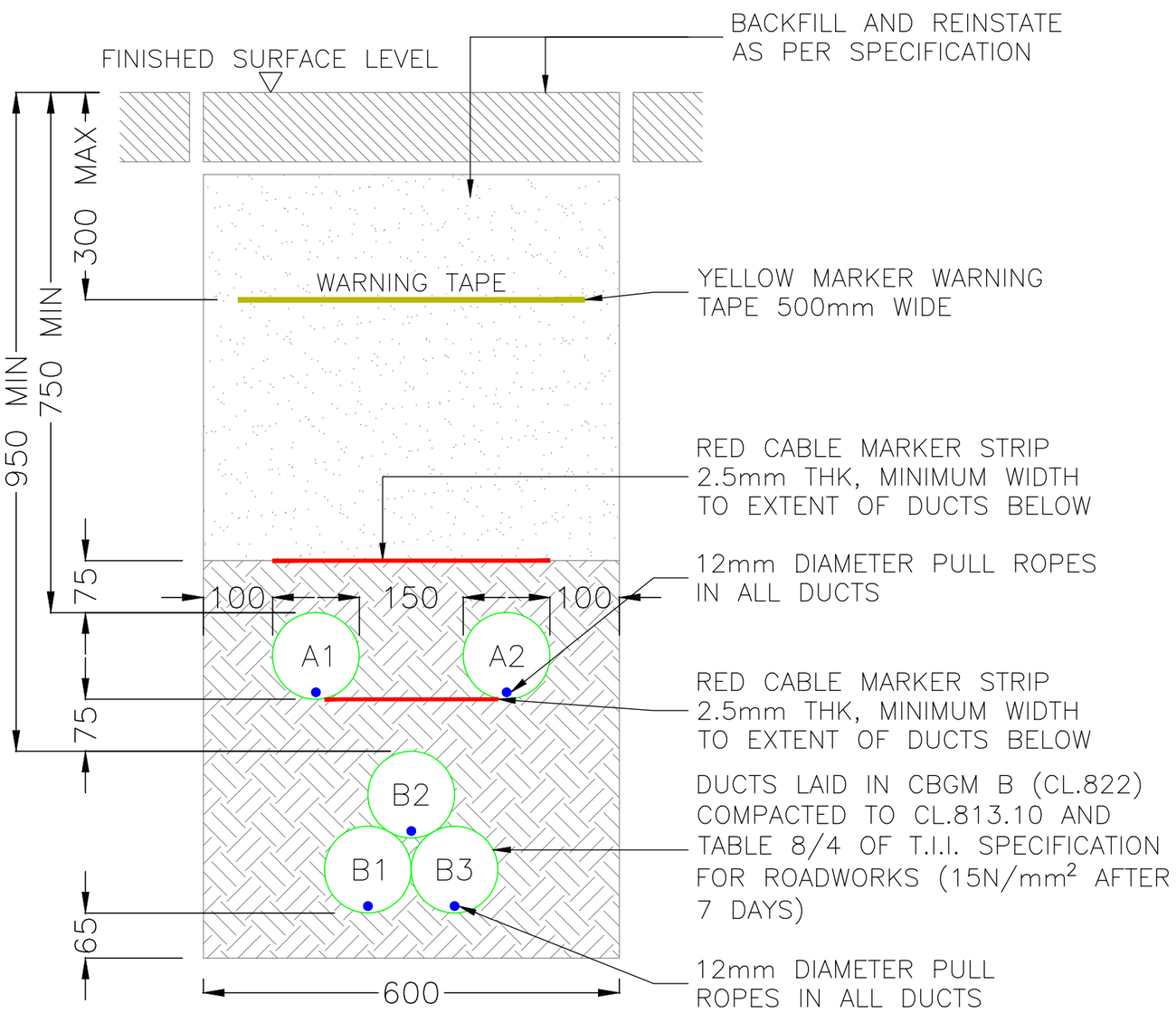
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD CROSS SECTIONS
INDEX SHEET

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-008	001	00



NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
B=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
ALL DIMENSIONS IN MILLIMETERS

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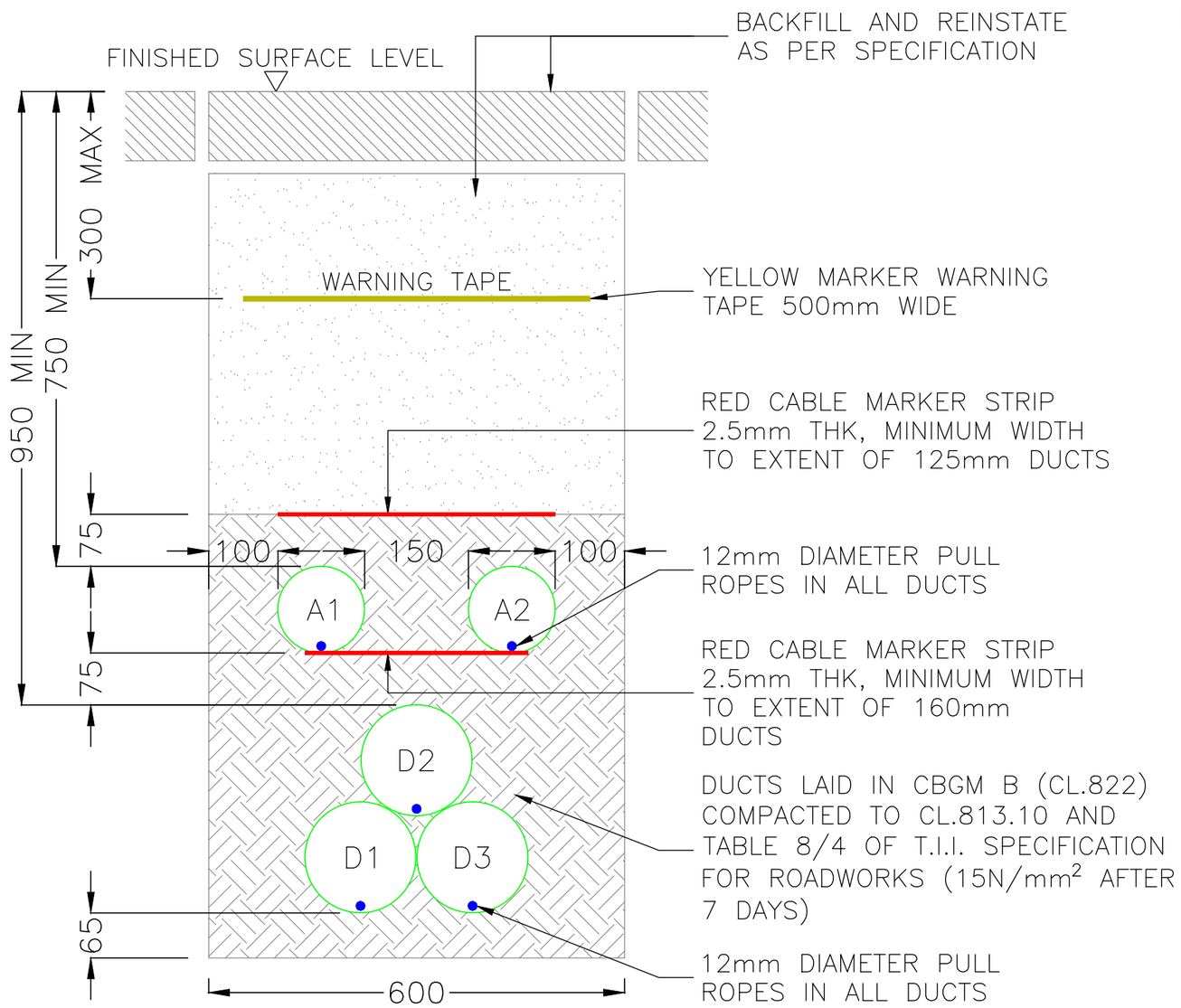
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 125mm POWER DUCTS IN TREFOIL FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–008	002	00



NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
D=160mm O.D. HDPE ESB APPROVED DUCT, SDR=21
ALL DIMENSIONS IN MILLIMETERS

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	DA	DG	CF	09/03/2020

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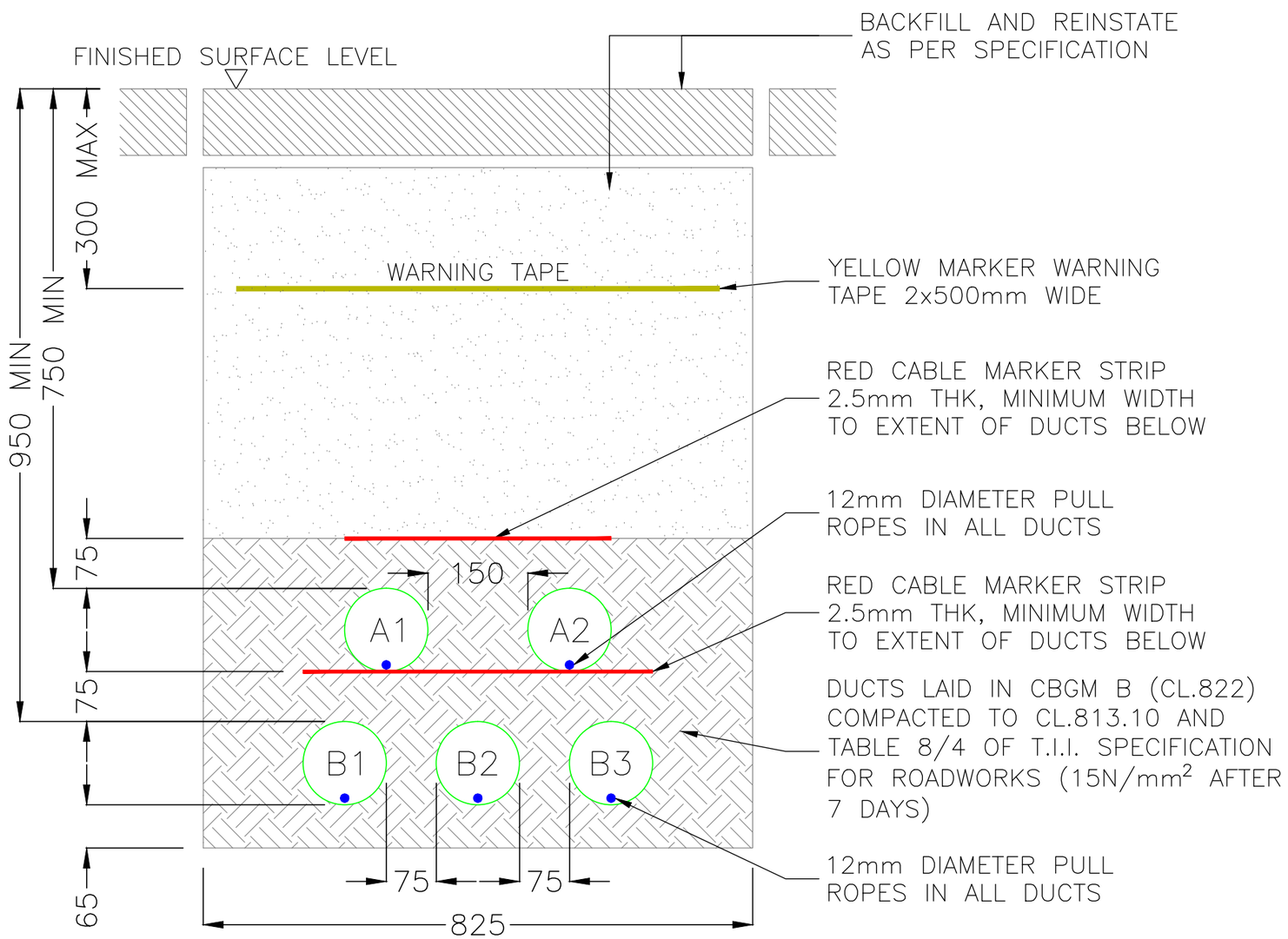
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 160mm POWER DUCTS IN TREFOIL FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–008	003	00



NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
B=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
ALL DIMENSIONS IN MILLIMETERS

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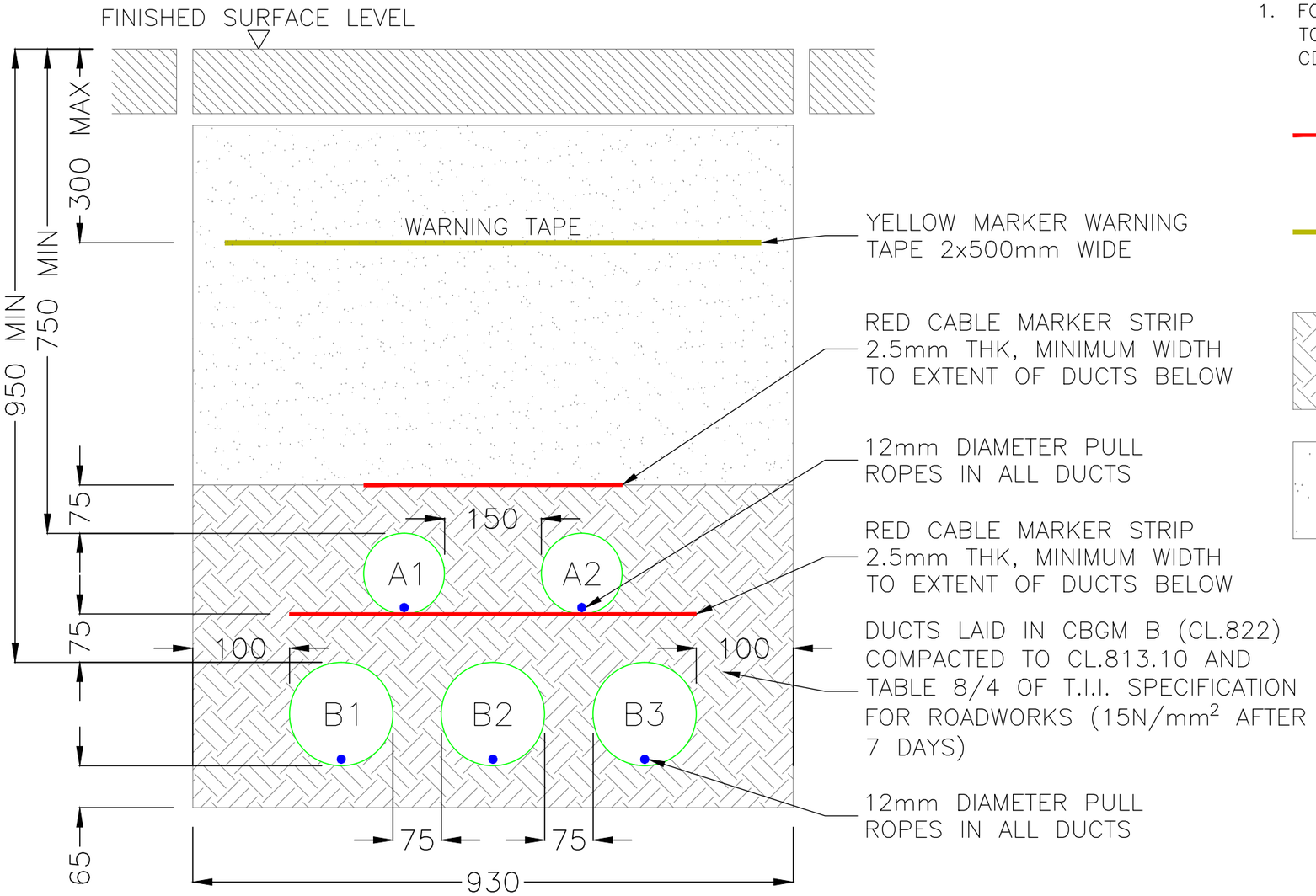
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 125mm POWER DUCTS IN FLAT FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–008	004	00



NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
D=160mm O.D. HDPE ESB APPROVED DUCT, SDR=21
ALL DIMENSIONS IN MILLIMETERS

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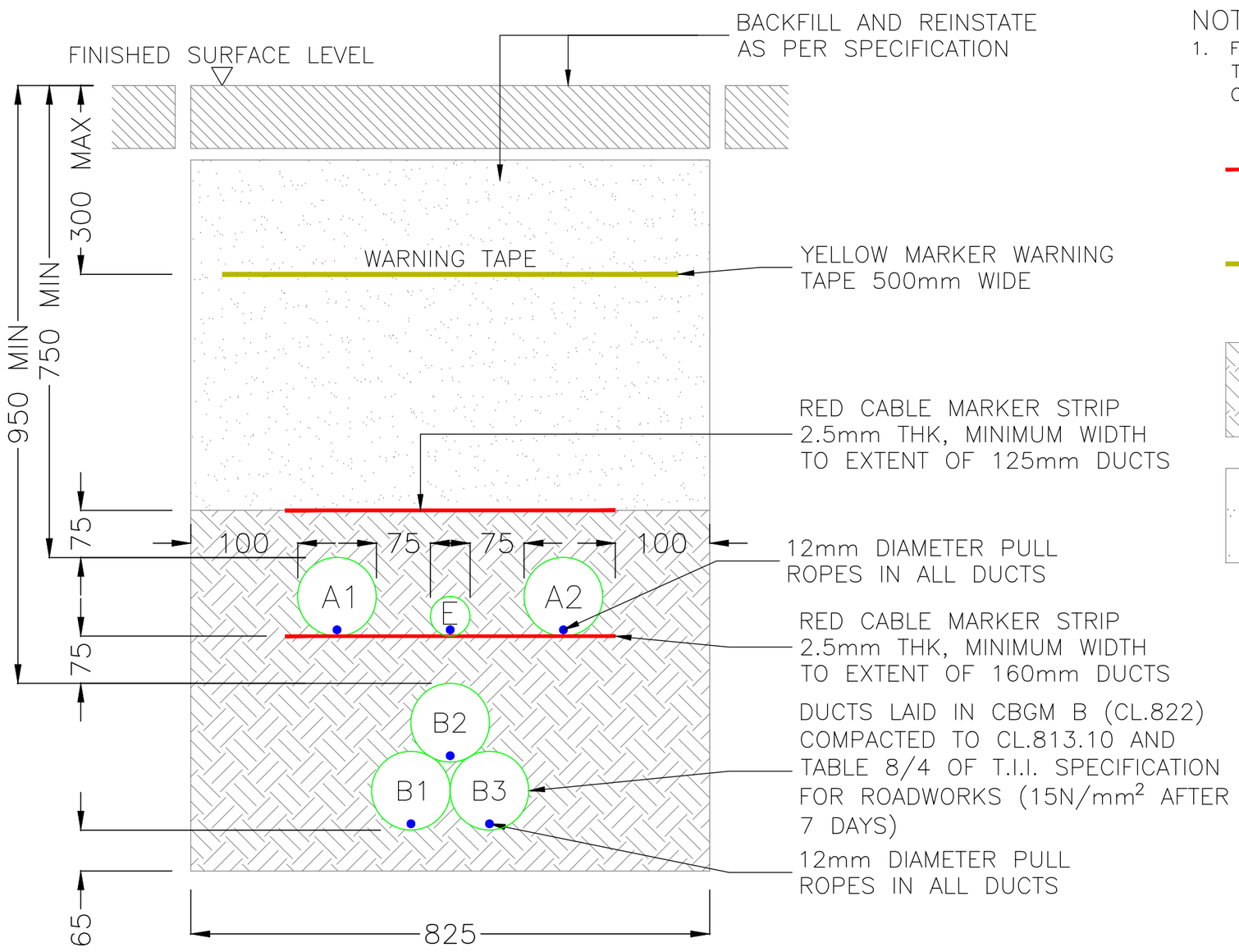
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 160mm POWER DUCTS IN FLAT FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–008	005	00



NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
B=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
E*=MIN 63mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
*DUCT TO BE USED FOR EARTH CONTINUITY CONDUCTOR
ALL DIMENSIONS IN MILLIMETERS

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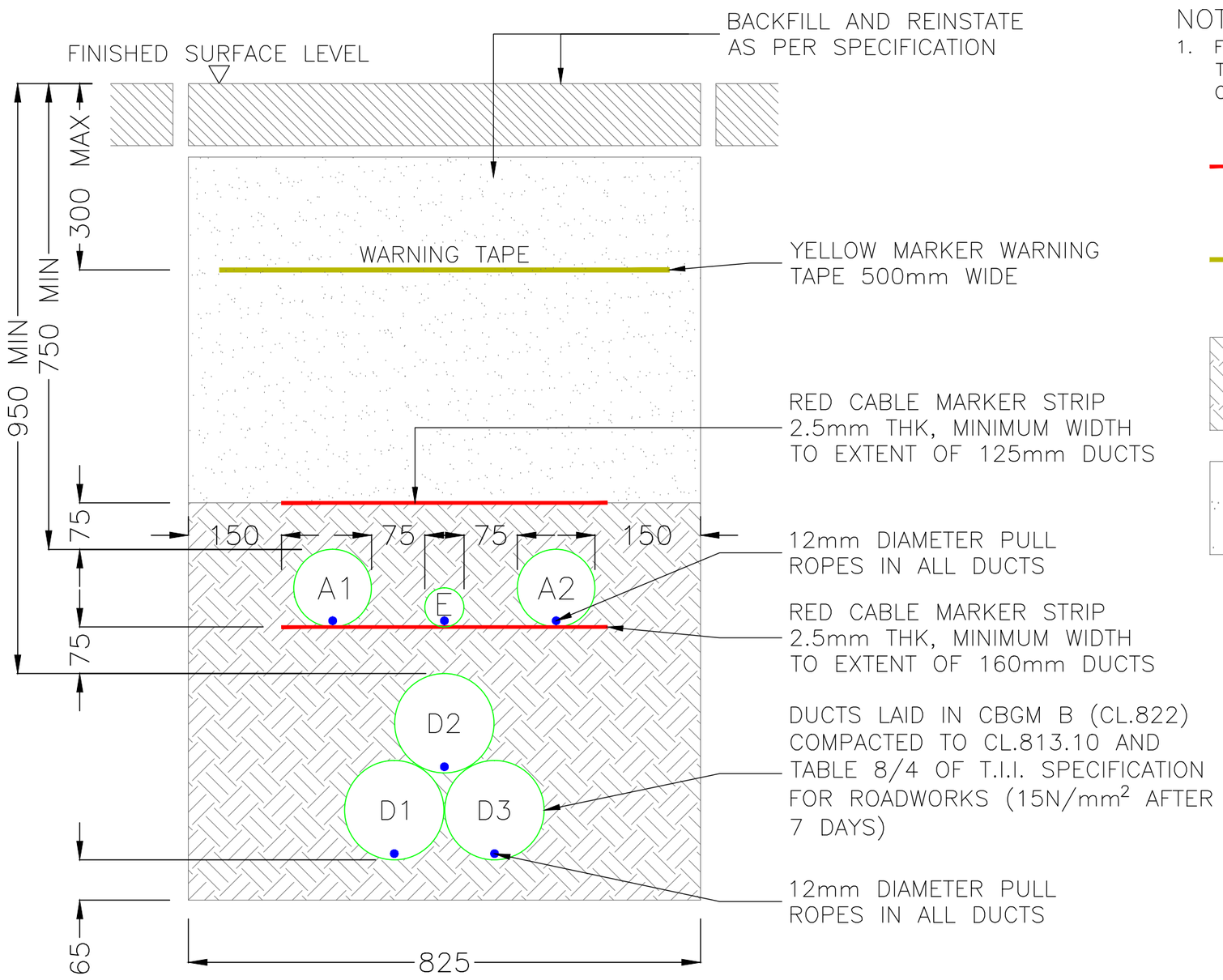
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 125mm POWER DUCTS WITH EARTH CONTINUITY DUCT – TREFOIL FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-008	006	00



NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
D=160mm O.D. HDPE ESB APPROVED DUCT, SDR=21
E*=MIN 63mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
*DUCT TO BE USED FOR EARTH CONTINUITY CONDUCTOR
ALL DIMENSIONS IN MILLIMETERS

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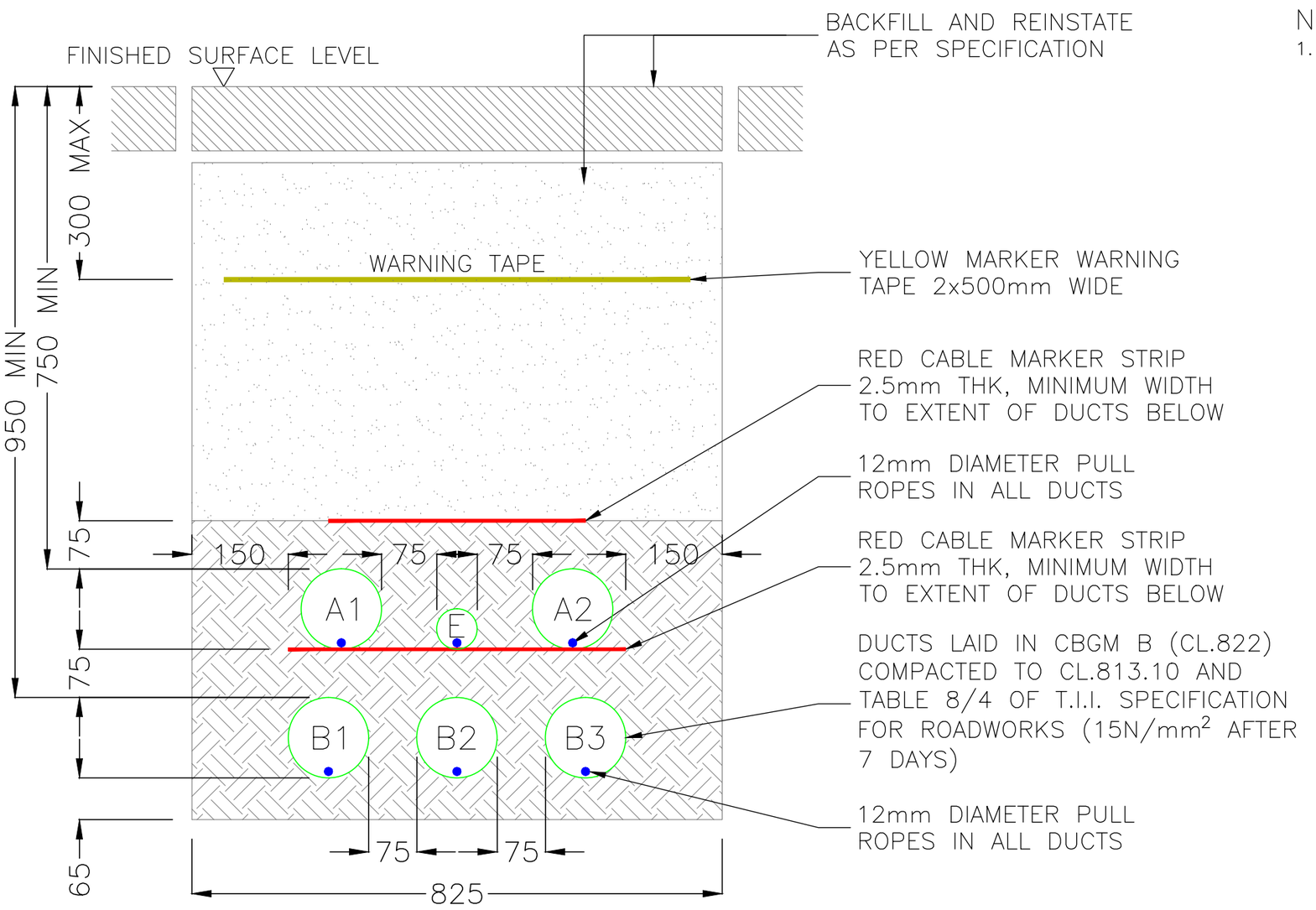
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 160mm POWER DUCTS WITH EARTH CONTINUITY DUCT – TREFOIL FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–008	007	00



NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
B=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
*E=MIN 63mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
*DUCT TO BE USED FOR EARTH CONTINUITY CONDUCTOR
ALL DIMENSIONS IN MILLIMETERS

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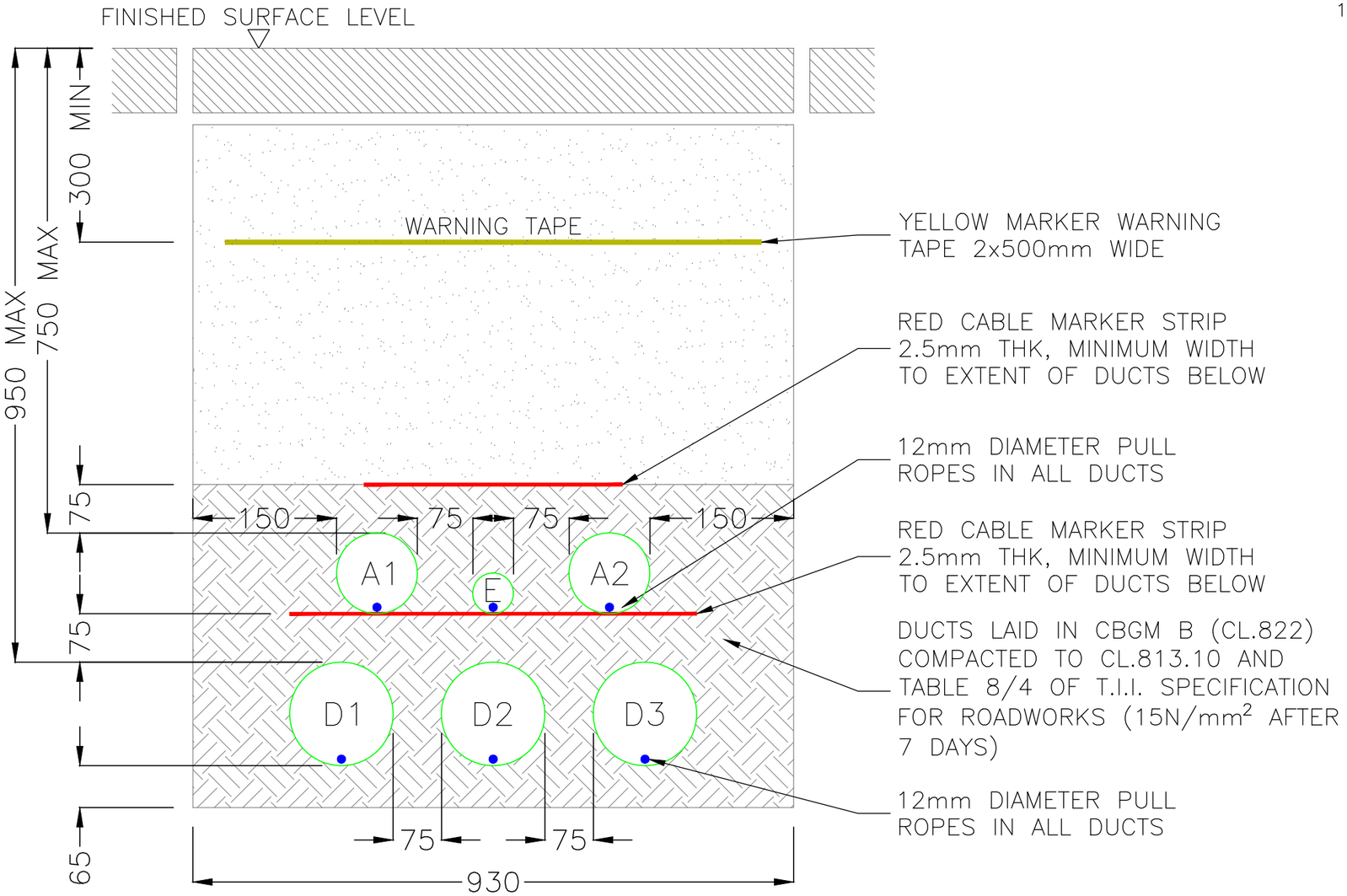
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 125mm POWER DUCTS WITH EARTH CONTINUITY DUCT – FLAT FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–008	008	00



YELLOW MARKER WARNING TAPE 2x500mm WIDE

RED CABLE MARKER STRIP 2.5mm THK, MINIMUM WIDTH TO EXTENT OF DUCTS BELOW

12mm DIAMETER PULL ROPES IN ALL DUCTS

RED CABLE MARKER STRIP 2.5mm THK, MINIMUM WIDTH TO EXTENT OF DUCTS BELOW

DUCTS LAID IN CBGM B (CL.822) COMPACTED TO CL.813.10 AND TABLE 8/4 OF T.I.I. SPECIFICATION FOR ROADWORKS (15N/mm^2 AFTER 7 DAYS)

12mm DIAMETER PULL ROPES IN ALL DUCTS

NOTES:

1. FOR CBGM & SOIL SURROUND, THERMAL RESITIVITY VALUES TO BE USED IN RATING CALCULATION, REFER TO CDS–HFS–02–001 SPECIFICATION.

RED MARKER STRIP

YELLOW MARKER WARNING TAPE

CBGM B (CL. 822), COMPACTED TO CL. 813.10

BACKFILL, COMPACTED (CL. 804)

A=125mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
D=160mm O.D. HDPE ESB APPROVED DUCT, SDR=21
*E=63mm O.D. HDPE ESB APPROVED DUCT, SDR=17.6
*DUCT TO BE USED FOR EARTH CONTINUITY CONDUCTOR
ALL DIMENSIONS IN MILLIMETERS

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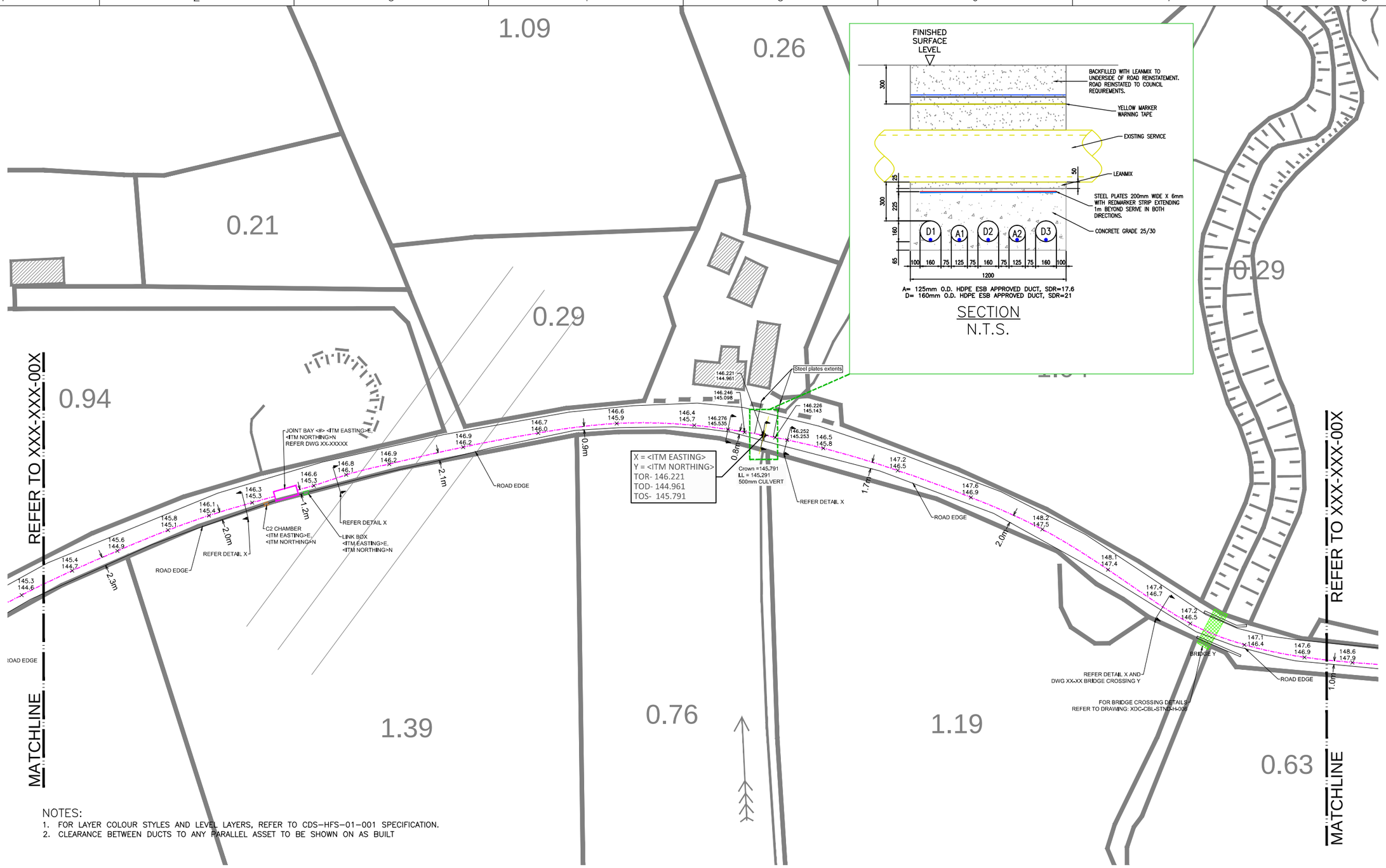
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRENCH CROSS SECTION FOR 160mm POWER DUCTS WITH EARTH CONTINUITY DUCT – FLAT FORMATION

No of Shts	SIZE	SCALE
9	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–008	009	00



SECTION
N.T.S.

NOTES:
1. FOR LAYER COLOUR STYLES AND LEVEL LAYERS, REFER TO CDS–HFS–01–001 SPECIFICATION.
2. CLEARANCE BETWEEN DUCTS TO ANY PARALLEL ASSET TO BE SHOWN ON AS BUILT

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
SAMPLE AS–BUILT CABLE ROUTE REQUIREMENTS

No of Shts	SIZE	SCALE
1	A3	1:1000

DRAWING NUMBER	SHEET	REV
XDC–CBL–STND–H–009	001	00

STANDARD 110kV CABLE DRAWINGS
STANDARD C2 COMMUNICATIONS CHAMBER

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-010	001	STANDARD C2 CHAMBER INDEX SHEET	00
XDC-CBL-STND-H-010	002	STANDARD C2 CHAMBER GENERAL ARRANGEMENT	00

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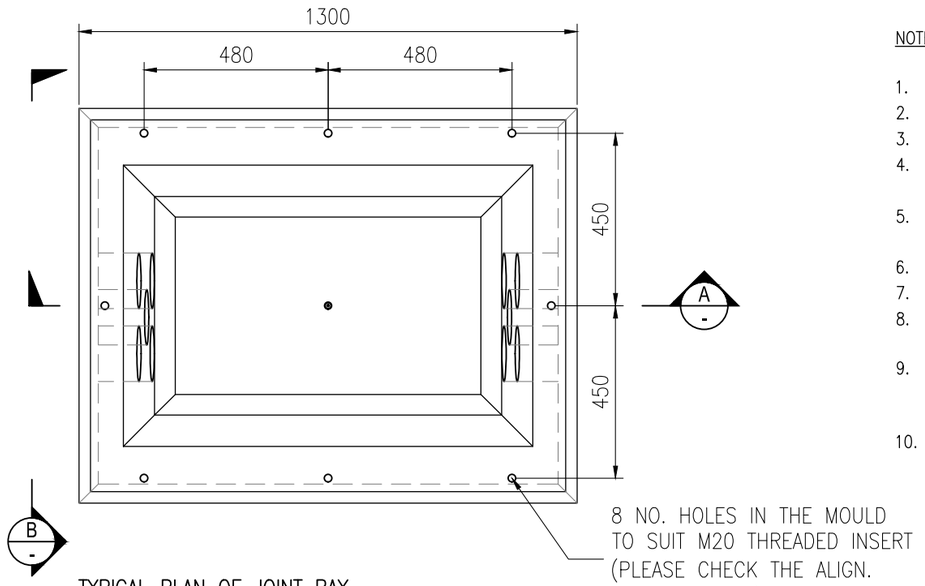
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD C2 CHAMBER
INDEX SHEET

No of Shts	SIZE	SCALE
2	A3	N/A

DRAWING NUMBER: XDC-CBL-STND-H-010

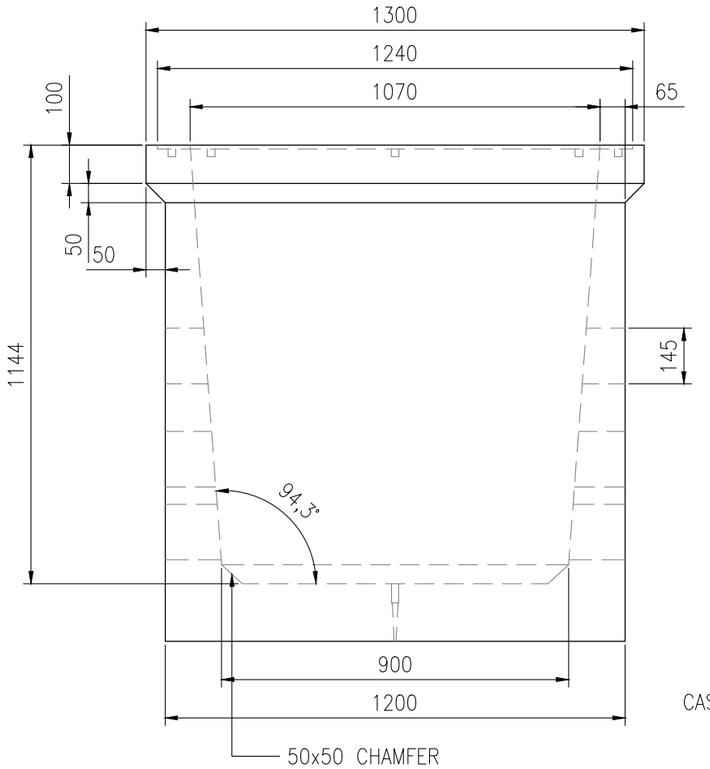
SHEET	REV
001	00



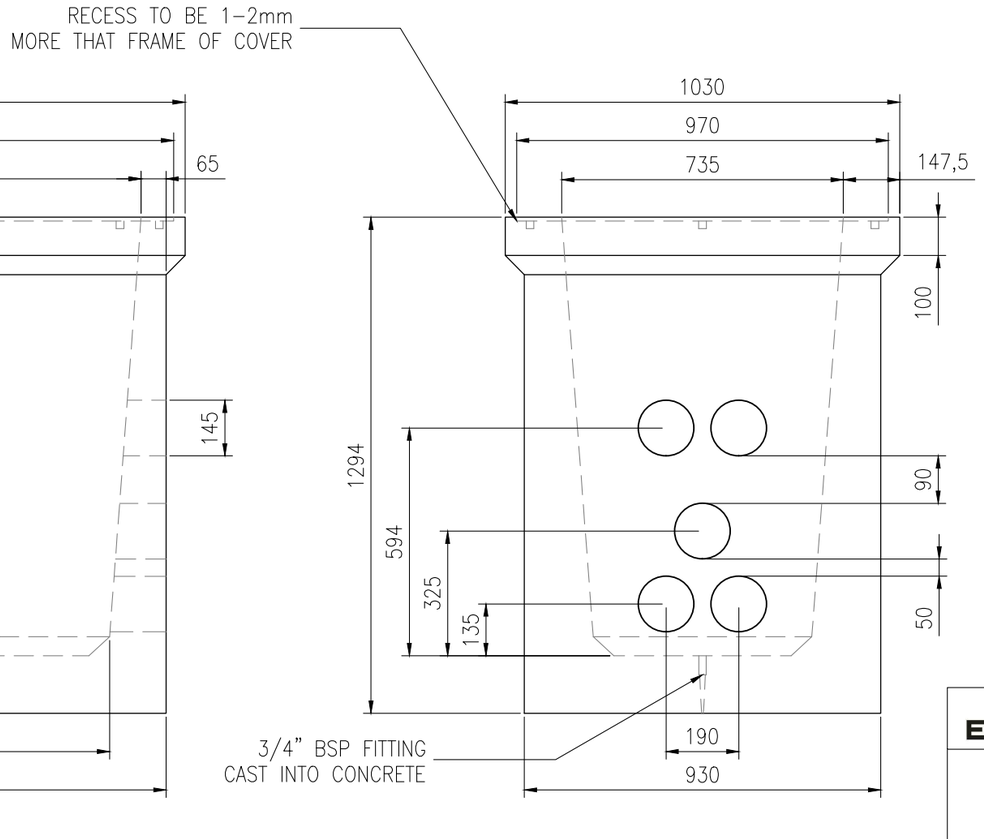
TYPICAL PLAN OF JOINT BAY
SCALE 1:16

NOTES:

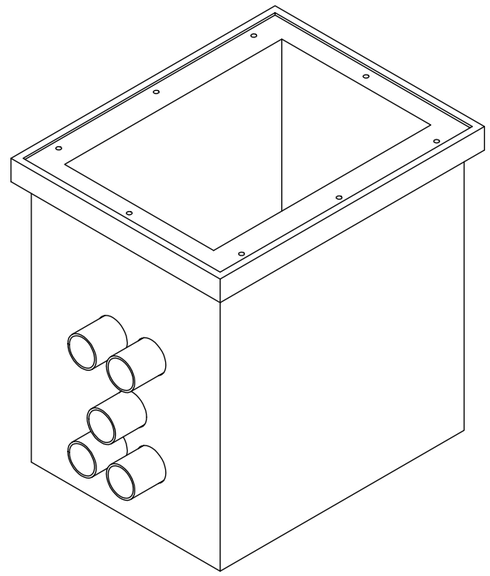
1. ALL DIMENSIONS IN MILLIMETERS.
2. REINSTATEMENT TO COMPLY WITH REQUIREMENTS OF THE RELEVANT LOCAL AUTHORITY/ASSET OWNER.
3. ENTRANCE & EXIT DUCTS TO BE IN LINE.
4. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE NRA/T.I.I. SPECIFICATION FOR ROADWORKS, MAY 2005 & SUBSEQUENT REVISIONS.
5. REINFORCED CONCRETE TO BE MINIMUM GRADE C32/40, SULPHATE RESISTING CEMENT TO BE USED WHERE AGGRESSIVE SOIL CONDITIONS APPLY, REFER TO TABLE 6.1 OF B.S. 8110.
6. CARRIAGEWAY COVERS AND FRAMES TO BE TO B.S. EN 124.
7. ALL COVERS SHALL HAVE 'ESB' LOGO INCORPORATED IN THEM TO THE APPROVAL OF EIRGRID.
8. STEP IRONS TO BE HOT DIPPED GALVANISED TO B.S. 729 AND POSITIONED AS SHOWN ON ANY CHAMBER DEEPER THAN 700mm ON THE END REMOTE FROM ANY SIDE ENTRY DUCT.
9. CONCRETE PRECAST CHAMBER AND COVER SHOULD BE TESTED THROUGH A 5 POINTS 40 TONNES VERTICAL STATIC LOADING TEST BY AN INDEPENDENT TEST COMPANY. IF REQUIRED, FURTHER DETAILS WILL BE PROVIDED BY EIRGRID.
10. FINAL POSITION OF C2 CHAMBERS SHALL BE AGREED WITH EIRGRID.



A SECTION A
- SCALE 1:16



B SECTION B
- SCALE 1:16



ISOMETRIC: C2 CHAMBER ARRANGEMENT
NOT TO SCALE

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
STANDARD C2 CHAMBER
GENERAL ARRANGEMENT

No of Shts	SIZE	SCALE
2	A3	1:16

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-010	002	00

STANDARD 110kV CABLE DRAWINGS
1300x800 LINK BOX CHAMBER

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-011	001	LINK BOX CHAMBER INDEX SHEET	00
XDC-CBL-STND-H-011	002	LINK BOX CHAMBER GENERAL ARRANGEMENT	00
XDC-CBL-STND-H-011	003	LINK BOX CHAMBER REINFORCEMENT	00
XDC-CBL-STND-H-011	004	LINK BOX CHAMBER STEEL REINFORCEMENT SCHEDULE	00

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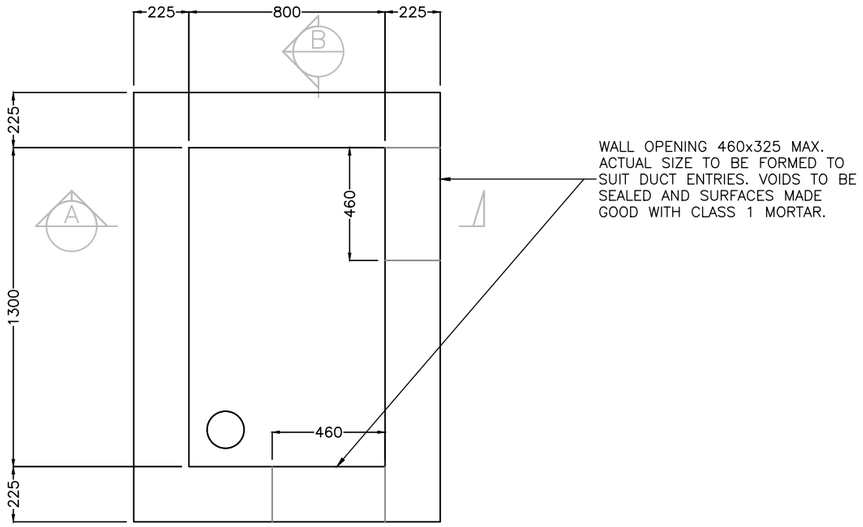
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
LINK BOX CHAMBER
INDEX SHEET

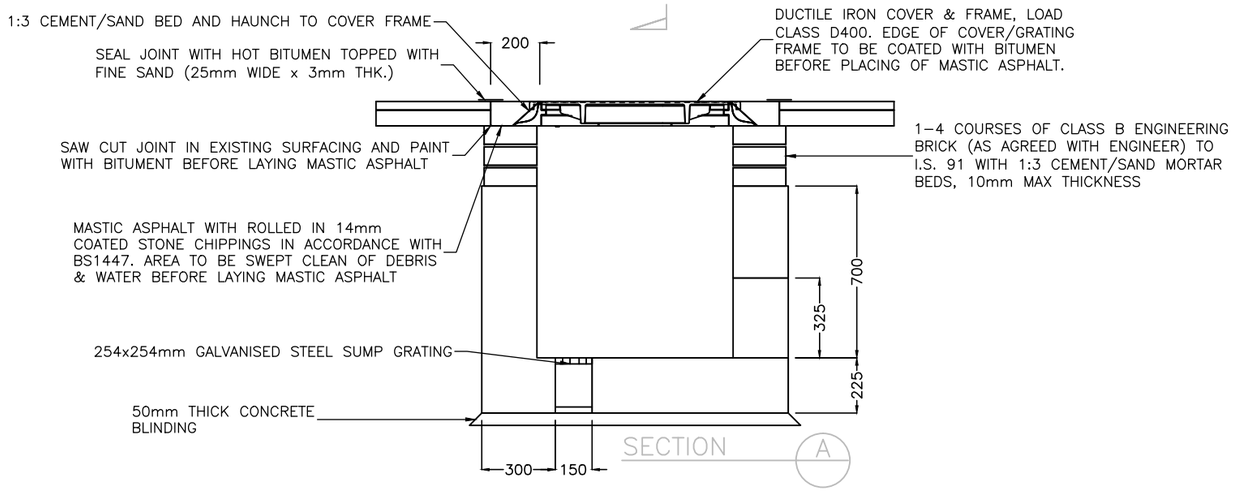
No of Shts	SIZE	SCALE
4	A3	N/A

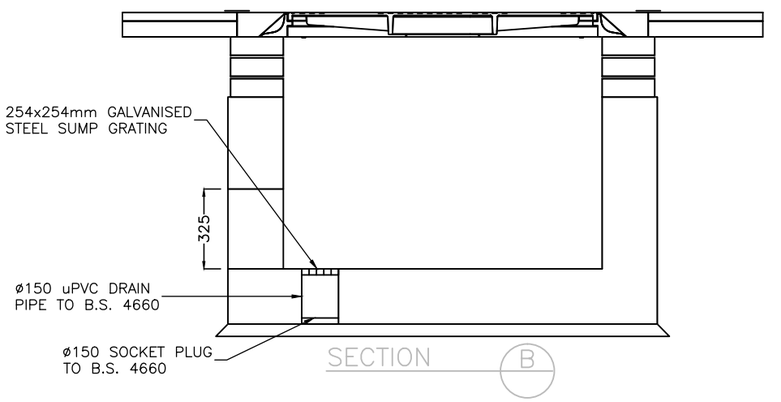
DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-011	001	00



NOTES:

1. ALL DIMENSIONS IN MILLIMETERS.
2. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE NRA/T.I.I. SPECIFICATION FOR ROADWORKS, MAY 2005 & SUBSEQUENT REVISIONS.
3. REINFORCED CONCRETE TO BE MINIMUM GRADE C32/40. SULPHATE RESISTING CEMENT TO BE USED WHERE AGGRESSIVE SOIL CONDITIONS APPLY.
4. CARRIAGEWAY COVERS AND FRAMES TO BE TO B.S. EN 124.
5. ALL COVERS SHALL HAVE APPROVED BADGE MARKING WITH "ESB" LOGO INCORPORATED IN THEM TO THE APPROVAL OF EIRGRID.
6. BRICKWORK TO BE CLASS B ENGINEERING, BEDS AND JOINTS TO BE CLASS 1 MORTAR.
7. FINAL POSITION OF LINK BOX TO BE AGREED WITH EIRGRID PRIOR TO INSTALLATION.





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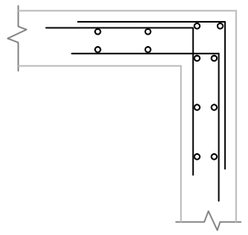
STANDARD 110kV CABLE DRAWINGS

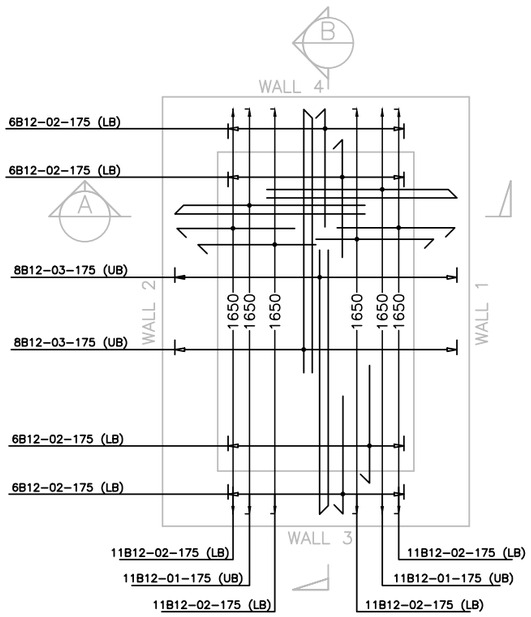
DRAWING TITLE
LINK BOX CHAMBER
GENERAL ARRANGEMENT

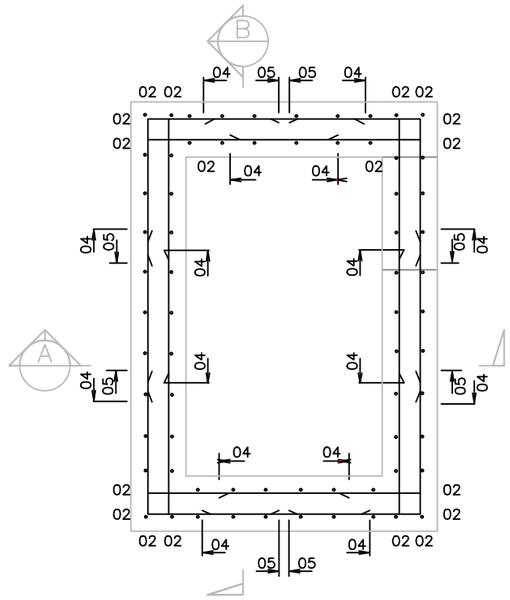
No of Shts	SIZE	SCALE
4	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-011	002	00



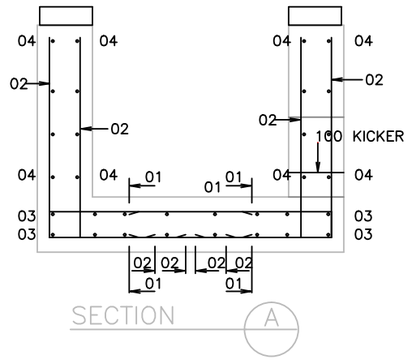
TYPICAL CORNER BAR DETAIL
SCALE 1:25



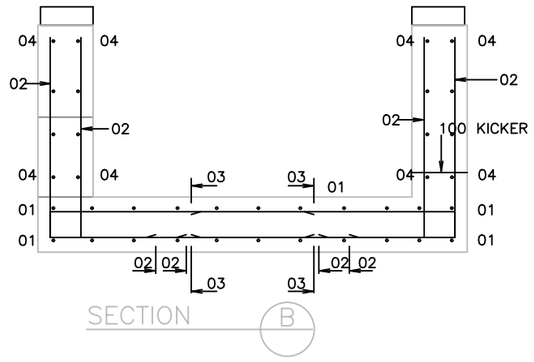


NOTES:

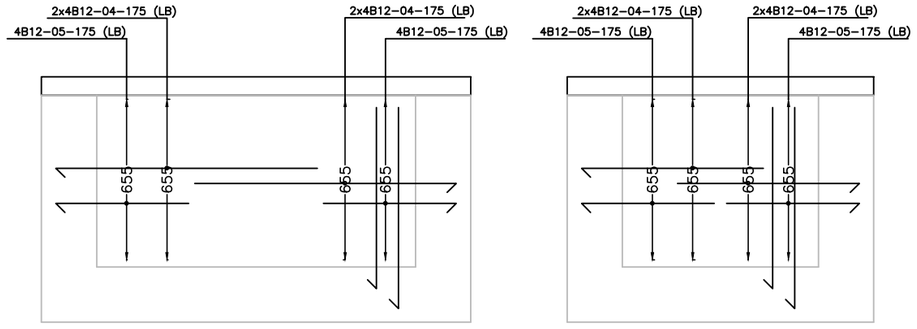
1. ALL DIMENSIONS IN MILLIMETERS.
2. COVER TO REINFORCEMENT TO BE A MINIMUM OF 50mm. LAP LENGTHS TO BE 40x Dia. ALL REINFORCEMENT TO BE CUT AND BENT IN ACCORDANCE WITH B.S. 8666:2005.
3. REINSTATEMENT TO COMPLY WITH REQUIREMENTS OF THE RELEVANT LOCAL AUTHORITY/ASSET OWNER.
4. DUCTS TO BE CAST OR BUILT IN.
5. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE NRA/T.I.I. SPECIFICATION FOR ROADWORKS, MARCH 2000 & SUBSEQUENT REVISIONS.
6. REINFORCED CONCRETE TO BE MINIMUM GRADE C32/40. SULPHATE RESISTING CEMENT TO BE USED WHERE AGGRESSIVE SOIL CONDITIONS APPLY, REFER TO TABLE 6.1 OF B.S. 8110.
7. BOXOUTS NAY BE PERMISSIBLE AT THE DISCRETION AND TO THE APPROVAL OF EIRGRID. WHERE THE DUCTS HAVE TO BE FITTED THE CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS.



SECTION A



SECTION B



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00	FIRST ISSUE	DA	DG	CF	09/03/2020

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
LINK BOX CHAMBER REINFORCEMENT

No of Shts	SIZE	SCALE
4	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-011	003	00

*SPECIFIED TO NEAREST 25mm
**SPECIFIED TO NEAREST 5mm

ALL BENDING DIMENSIONS ARE IN ACCORDANCE WITH B.S. 8666:2005

MEMBER	BAR MARK	TYPE	SIZE (mm)	No. of MEMBERS	No. in EACH	TOTAL No.	LENGTH of EACH BAR mm*	SHAPE CODE	A mm**	B mm**	C mm**	D mm**	E/r mm**
BASE	01	T	12	1	22	22	1725	21	825	125			
	02	T	12	1	68	68	1275	11	800				
	03	T	12	1	16	16	2200	13	1075	110			
WALLS	04	T	12	1	32	32	1875	11	825				
	05	T	12	1	16	16	1125	37	575				

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STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
LINK BOX CHAMBER
STEEL REINFORCEMENT SCHEDULE

No of Shts 4 | SIZE A3 | SCALE N/A

DRAWING NUMBER XDC-CBL-STND-H-011 | SHEET 004 | REV 00

STANDARD 110kV CABLE DRAWINGS
6mx2.5m JOINT BAY

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-012	001	JOINT BAY INDEX SHEET	00
XDC-CBL-STND-H-012	002	JOINT BAY GENERAL ARRANGEMENT	00
XDC-CBL-STND-H-012	003	PRECAST JOINT BAY DETAILS SECTION 1	00
XDC-CBL-STND-H-012	004	PRECAST JOINT BAY DETAILS SECTION 2	00
XDC-CBL-STND-H-012	005	PRECAST JOINT BAY DETAILS SECTION 3	00
XDC-CBL-STND-H-012	006	JOINT BAY REBAR SCHEDULE	00
XDC-CBL-STND-H-012	007	JOINT BAY REINSTATEMENT	00
XDC-CBL-STND-H-012	008	JOINT BAY EARTHING ARRANGEMENT	00

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
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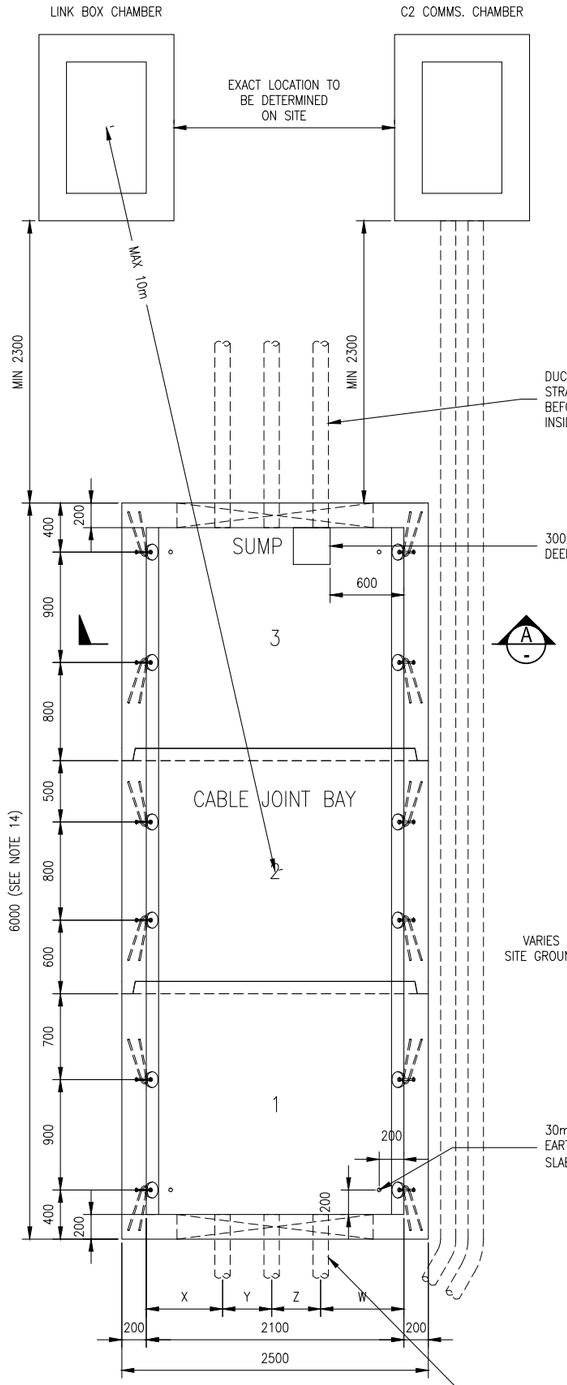
PROJECT
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
JOINT BAY
INDEX SHEET

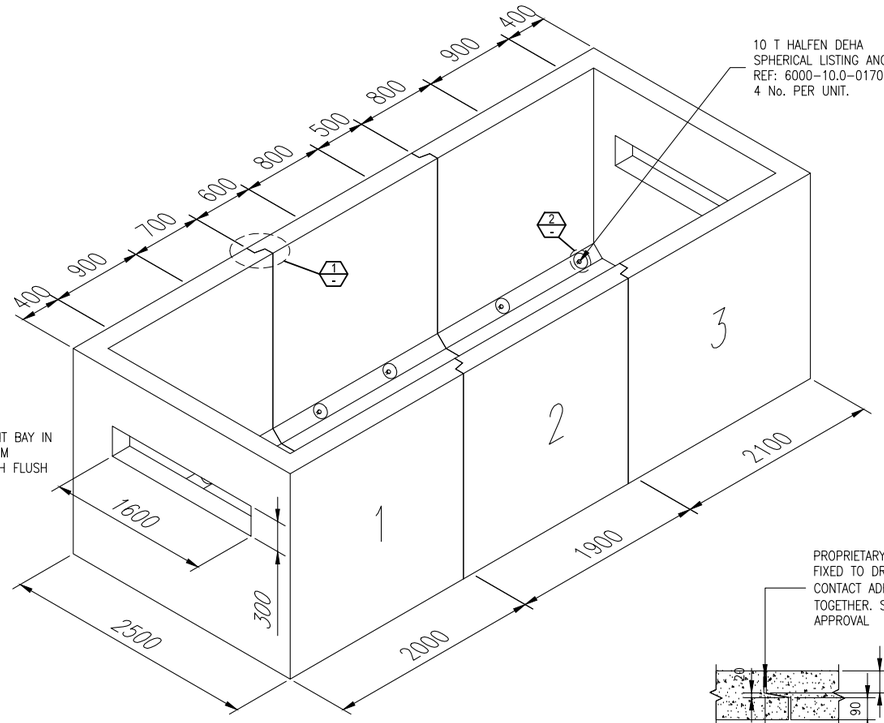
No of Shts 8 | SIZE A3 | SCALE N/A

DRAWING NUMBER
XDC-CBL-STND-H-012

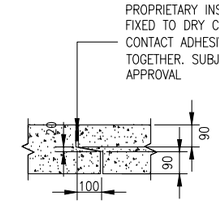
SHEET 001 | REV 00



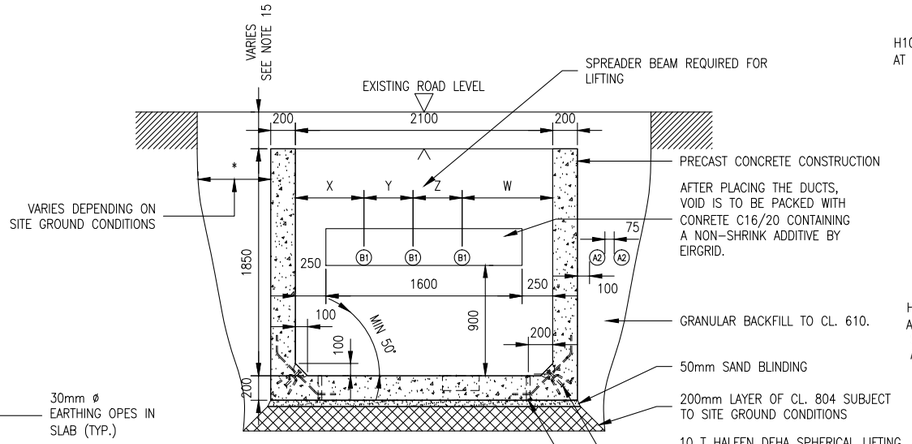
TYPICAL PLAN OF JOINT BAY
SCALE 1:50



ISOMETRIC: JOINT BAY ARRANGEMENT
NOT TO SCALE

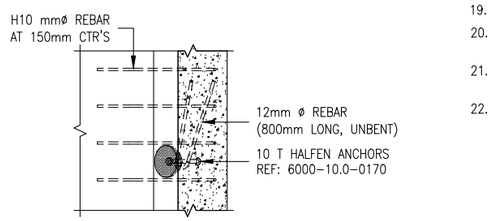


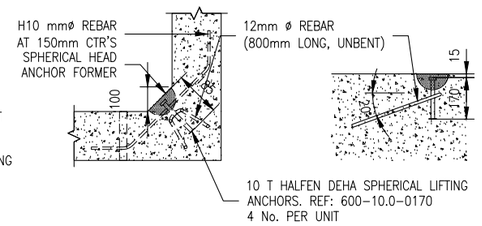
1 - DETAIL 1 – SOCKET AND SPIGOT DETAIL (WALL & FLOOR)
SCALE 1:25



A - SECTION A
SCALE 1:50

A2 125mm OD HDPE DUCT (COMMS)
B1 125/200mm/250mm OD HDPE DUCT (POWER)





2 - DETAIL 2 – LIFTING EYE DETAIL
SCALE 1:25

GENERAL NOTES

1. ALL PRECAST CONCRETE ELEMENTS TO BE MANUFACTURED TO B.S. EN 13369:2004 "COMMON RULES FOR PRECAST CONCRETE PRODUCTS"
2. LIFTING INSERTS TO BE DESIGNED & INSTALLED TO PD CEN/TR 15728:2008 "DESIGN AND USE OF INSERTS FOR LIFTING AND HANDLING OF PRECAST CONCRETE ELEMENTS."
3. SPECIFIED LIFTING INSERTS HAVE A S.W.L. OF 10 TONNE.
4. LOCATION AND SPECIFICATION OF LIFTING INSERTS ARE ASSUMED TO FACILITATE DEMOULDING AND HANDLING IN PRECAST MANUFACTURING FACTORY. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO NOTIFY EIRGRID IF THESE ARE UNSUITABLE FOR THEIR MANUFACTURING METHODOLOGY. EIRGRID IS TO BE INFORMED OF ANY ALTERNATIVE LIFTING LOCATIONS FOR FACTORY HANDLING & DEMOULDING.
5. CONCRETE TO HAVE A MINIMUM STRENGTH OF 30 N/mm^2 PRIOR TO HANDLING OF DEMOULDING.
6. CUSTOMER IS TO ENSURE THAT A METHOD STATEMENT AND RISK ASSESSMENT, INCLUDING A LIFTING PLAN, IS PRODUCED FOR INSTALLATION AND ARE AVAILABLE TO EIRGRID FOR REVIEW IF REQUESTED. LIFTING PLAN TO INCORPORATE REQUIREMENTS OF LIFTING INSERTS AND LIFTING LOOP EYES.
7. A MINIMUM LIFTING SLING ANGLE OF 50° TO THE HORIZONTAL IS REQUIRED.
8. A LIFTING SYSTEM WHICH ENSURES ALL LIFTING POINTS TAKE ON AN EQUAL LOAD IS REQUIRED.
9. HALFEN DEHA SPHERICAL LIFTING ANCHORS TO BE USED AS SPECIFIED. ANY DEVIATION FROM THIS MUST BE NOTIFIED TO EIRGRID BY THE CUSTOMER. LIFTING INSERTS TO BE INSTALLED AS PER MANUFACTURER'S GUIDELINES AND IN ACCORDANCE WITH PD CEN/TR 15728:2008.
10. FORMWORK FOR PRECASTING TO BE OF A MINIMUM STANDARD OF VARNISHED WOODEN MOULD WITH PLANED BOARDS.
11. COVER TO REINFORCEMENT TO BE 40mm.
12. CONCRETE TO BE GRADE C30/37 AS SPECIFIED IN TABLE 1.
13. ALL CONCRETE TO BE IN ACCORDANCE WITH I.S. EN 206-1:2013 WITH THE MIX DESIGNS SHOWN IN TABLE 1.
14. FOR 7.9m JOINT BAY INSERT 1 No. ADDITIONAL PRECAST SECTION 2.
    FOR 9.8m JOINT BAY INSERT 2 No. ADDITIONAL PRECAST SECTION 2.
15. THE DEPTH FROM GROUND/ROAD LEVEL TO THE TOP OF THE CONCRETE WALL SHALL BE:
    A. 500mm – IN CULTIVATED FIELDS AND GRASSED LANDS
    B. 300mm – IN PAVED ROADS AND GRASS VERGES
    C. 350mm – IN PAVED CITY ROADS AND GRASSED VERGES.
16. LINK BOX CHAMBER TO BE POSITIONED AT THE EDGE OF OR OFF ROAD.
17. ALLOWABLE BEARING PRESSURE TO BE AT LEAST 185kPa
18. FOR HIGHLY AGGRESSIVE ENVIRONMENTS, TABLE 1 IS NOT APPLICABLE. CONSULT WITH EIRGRID FOR BESPOKE DESIGN.
19. JOINT BAY TO BE UNIFORMLY BACKFILLED IN LAYERS NOT EXCEEDING 300mm THICK.
20. WHERE JOINT BAY IS TO BE INSTALLED ADJACENT TO TRAFFICKED LANE, A 1m WIDE LATERAL SAFETY ZONE IS TO BE PROVIDED TO SATISFY DESIGN LOADING ASSUMPTIONS.
21. CUSTOMER IS RESPONSIBLE FOR ALL TRAFFIC MANAGEMENT INCLUDING WHERE NECESSARY SAFETY BARRIERS, AS PER D.R.A.
22. LINK BOX CHAMBER AND C2 COMM CHAMBER FINAL POSITIONING TO BE AGREED WITH EIRGRID PRIOR TO INSTALLATION.

TABLE 1

CONCRETE SPECIFICATION TO I.S. EN 206-1		
	BLINDING & MASS CONCRETE, DRAINAGE PIPE & MANHOLE SURROUNDINGS	FOUNDATIONS & WALLS
EXPOSURE CLASS	X0	XC2, XA2
MIN. CEMENT CONTENT (kg/m^2)	240	340
MAX. WATER/CEMENT RATIO	–	0.50
CEMENT TYPE TO I.S. EN 197-1	CEM 1 N	CEM 1 N
CHLORIDE CONTENT CLASS	Cl. 1,0	Cl. 0,40
MAX. AGGREGATE	10	20
MIN. COVER (CMin) (mm)	–	40
*COMPRESSIVE STRENGTH CLASS	C16/20	C30/37

NOTES:
1. *C16/20 TO BE READ AS FOLLOWS: 16 – REFERS TO MIN. CHARACTERISTIC CYLINDER STRENGTH (N/mm2/). 20 – REFERS TO MIN. CHARACTERISTIC CUBE STRENGTH (N/mm2/).
2. DESIGN WORKING LIFE TO BE 50 YEARS MINIMUM.

TABLE 2 – DUCT SEPERATION

	X	Y	Z	W
110kV	560	400	400	740
220kV	375	675	675	375

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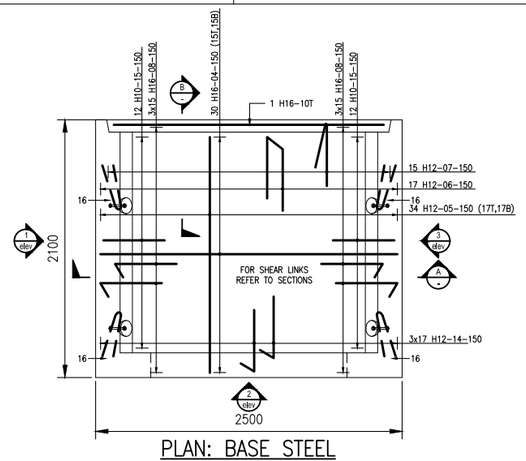
PROJECT
STANDARD 110kV CABLE DRAWINGS

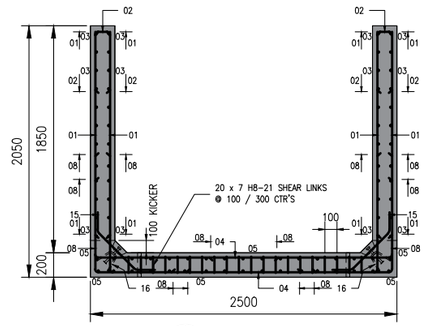
DRAWING TITLE
JOINT BAY
GENERAL ARRANGEMENT

No of Shts	SIZE	SCALE
8	A3	N/A

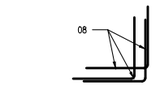
DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-012	002	00



PLAN: BASE STEEL
SCALE 1:50



A SECTION A
SCALE 1:50



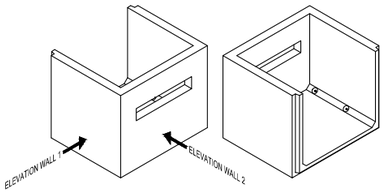
SECTION ARR. 08 BARS
SCALE 1:50

GENERAL NOTES

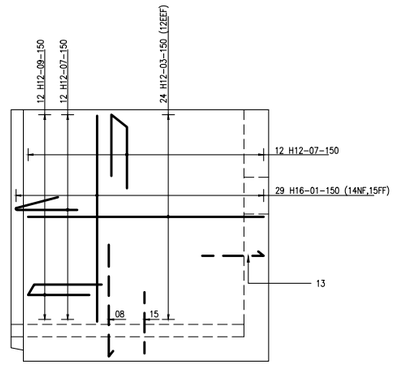
1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE RELEVANT EIRGRID FUNCTIONAL SPECIFICATIONS. ANY DISCREPANCIES ARE TO BE NOTED IN WRITING TO EIRGRID IMMEDIATELY AND PRIOR TO COMMENCING THE WORK.
2. ALL DIMENSIONS ARE IN mm. NO DIMENSIONS SHALL BE SCALED FROM THE STRUCTURAL DRAWINGS. ALL DIMENSIONS SHALL BE CHECKED ON SITE.
3. ANY TEMPORARY WORKS SHALL BE THE SOLE RESPONSIBILITY OF THE CUSTOMER.
4. ALL WORK IS TO COMPLY WITH ALL CURRENT IRISH STANDARDS, BRITISH STANDARDS, BUILDING REGULATIONS, SPECIFICATIONS.
5. ALL REINFORCEMENT SHALL BE IN ACCORDANCE WITH B.S. 4449 AND SCHEDULED IN ACCORDANCE WITH B.S. 8666:2005.
6. COVER TO REINFORCEMENT TO BE 40mm.
7. CONCRETE TO BE GRADE C30/37 AS SPECIFIED IN TABLE 1.
8. ALL CONCRETE TO BE IN ACCORDANCE WITH I.S. EN 206-1:2013 WITH THE MIX DESIGNS SHOWN IN TABLE 1.
9. CONCRETE FINISH TO BE F2 FOR BELOW GROUND STRUCTURES AS PER T.I.I. PUBLICATION CC-SPW-01700.

THE NOTATION FOR THE LAYERING OF REINFORCEMENT SHALL BE AS FOLLOWS:

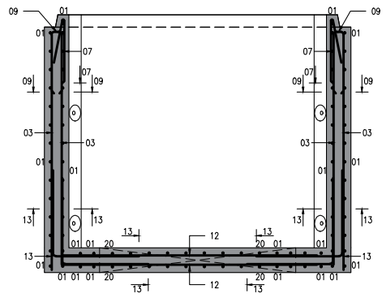
FF – FAR FACE
NF – NEAR FACE
B – BOTTOM
T – TOP
EF – EACH FACE



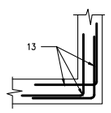
ISOMETRIC VIEW
SECTION 1



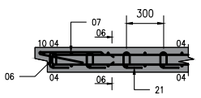
WALL ELEVATION 1
SCALE 1:50



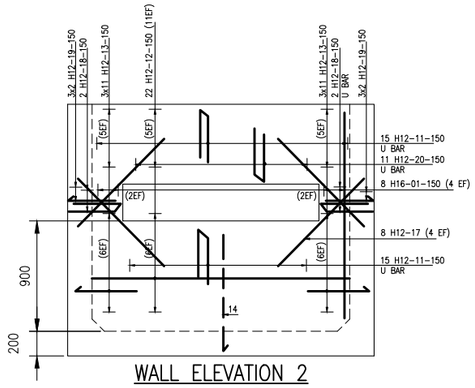
WALL ELEVATION 1
SCALE 1:50



PLAN ARR. 13 BARS
SCALE 1:50



B SECTION B
SCALE 1:50



WALL ELEVATION 2
SCALE 1:50

CONCRETE SPECIFICATION TO I.S. EN 206-1		
	BLINDING & MASS CONCRETE, DRAINAGE PIPE & MANHOLE SURROUNDINGS	FOUNDATIONS & WALLS
EXPOSURE CLASS	X0	XC2, XA2
MIN. CEMENT CONTENT (kg/m³)	240	340
MAX. WATER/CEMENT RATIO	–	0.50
CEMENT TYPE TO I.S. EN 197-1	CEM 1 N	CEM 1 N
CHLORIDE CONTENT CLASS	Cl. 1,0	Cl, 0,40
MAX. AGGREGATE	10	20
MIN. COVER (CMin) (mm)	–	40
*COMPRESSIVE STRENGTH CLASS	C16/20	C30/37

NOTES
1. *C16/20 TO BE READ AS FOLLOWS: 16 – REFERS TO MIN. CHARACTERISTIC CYLINDER STRENGTH (N/mm2/). 20 – REFERS TO MIN. CHARACTERISTIC CUBE STRENGTH (N/mm2/).
2. DESIGN WORKING LIFE TO BE 50 YEARS MINIMUM.

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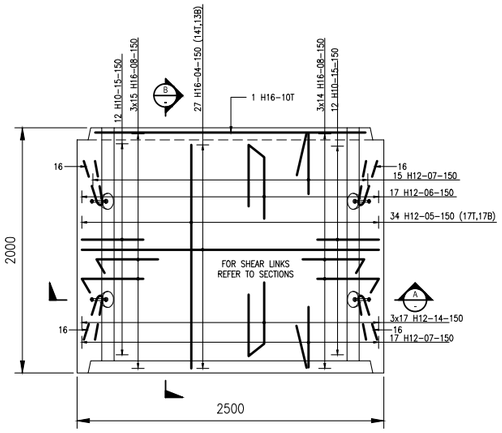
PROJECT
STANDARD 110kV CABLE DRAWINGS

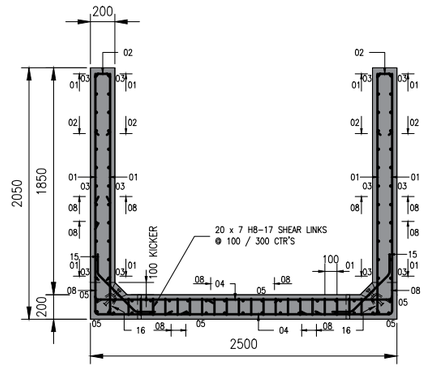
DRAWING TITLE
JOINT BAY
REINFORCEMENT DETAILS
JOINT BAY SECTION 1

No of Shts	SIZE	SCALE
8	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-012	003	00



PLAN: BASE STEEL
SCALE 1:50



A
-
SECTION A
SCALE 1:50

SECTION ARR. 08 BARS
SCALE 1:50

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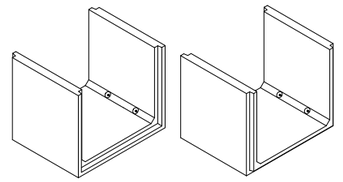
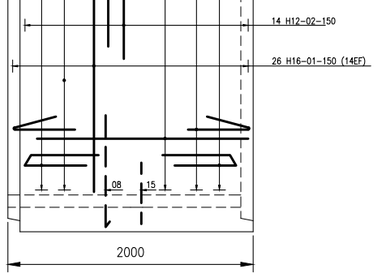
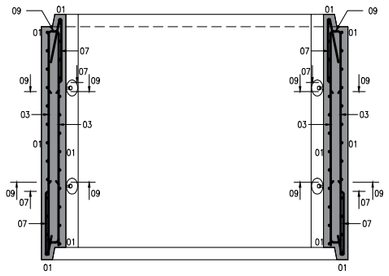
5. ALL REINFORCEMENT SHALL BE IN ACCORDANCE WITH B.S. 4449 AND SCHEDULED IN ACCORDANCE WITH B.S. 8666:2005.
6. COVER TO REINFORCEMENT TO BE 40mm.
7. CONCRETE TO BE GRADE C30/37 AS SPECIFIED IN TABLE 1.
8. ALL CONCRETE TO BE IN ACCORDANCE WITH I.S. EN 206-1:2013 WITH THE MIX DESIGNS SHOWN IN TABLE 1.
9. CONCRETE FINISH TO BE F2 FOR BELOW GROUND STRUCTURES AS PER T.I.I. PUBLICATION CC-SPW-01700.



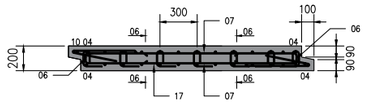
ISOMETRIC VIEW
SECTION 2



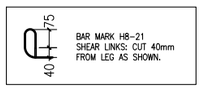
ELEVATION OF WALL TYP.
SCALE 1:50



PLAN: WALL STEEL
SCALE 1:50



B
-
SECTION B
SCALE 1:50



BAR MARK H8-21
SHEAR LINKS: CUT 40mm
FROM LEG AS SHOWN.

CONCRETE SPECIFICATION TO I.S. EN 206-1		
	BLINDING & MASS CONCRETE, DRAINAGE PIPE & MANHOLE SURROUNDINGS	FOUNDATIONS & WALLS
EXPOSURE CLASS	X0	XC2, XA2
MIN. CEMENT CONTENT (kg/m³)	240	340
MAX. WATER/CEMENT RATIO	–	0.50
CEMENT TYPE TO I.S. EN 197-1	CEM 1 N	CEM 1 N
CHLORIDE CONTENT CLASS	Cl. 1,0	Cl, 0,40
MAX. AGGREGATE	10	20
MIN. COVER (CMin) (mm)	–	40
*COMPRESSIVE STRENGTH CLASS	C16/20	C30/37

NOTES
1. *C16/20 TO BE READ AS FOLLOWS: 16 – REFERS TO MIN. CHARACTERISTIC CYLINDER STRENGTH (N/mm2/). 20 – REFERS TO MIN. CHARACTERISTIC CUBE STRENGTH (N/mm2/).
2. DESIGN WORKING LIFE TO BE 50 YEARS MINIMUM.

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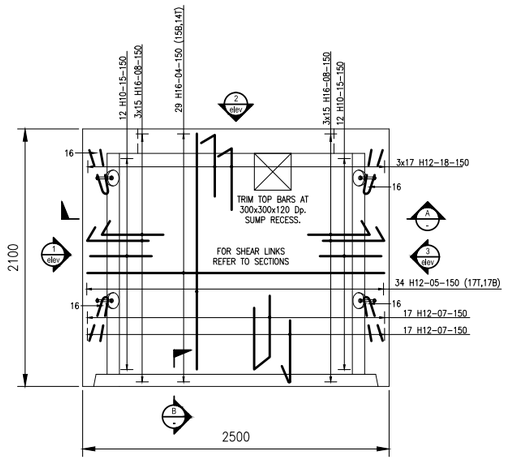
PROJECT
STANDARD 110kV CABLE DRAWINGS

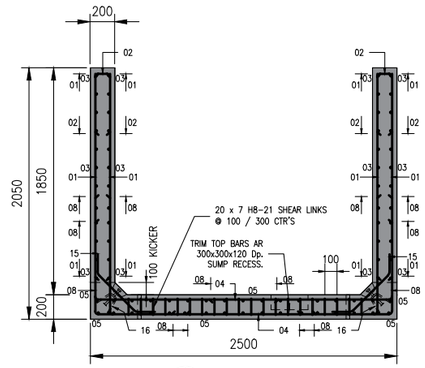
DRAWING TITLE
JOINT BAY
REINFORCEMENT DETAILS
JOINT BAY SECTION 2

No of Shts	SIZE	SCALE
8	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-012	004	00



PLAN: BASE STEEL
SCALE 1:50



A SECTION A
SCALE 1:50

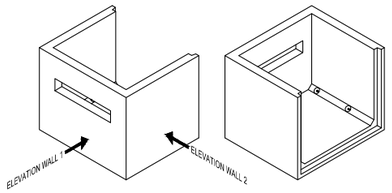
SECTION ARR. 08 BARS
SCALE 1:50

GENERAL NOTES

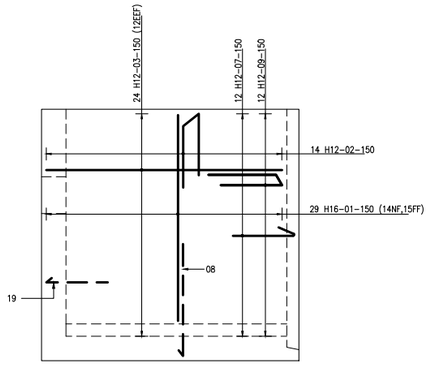
1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE RELEVANT EIRGRID FUNCTIONAL SPECIFICATIONS. ANY DISCREPANCIES ARE TO BE NOTED IN WRITING TO EIRGRID IMMEDIATELY AND PRIOR TO COMMENCING THE WORK.
2. ALL DIMENSIONS ARE IN mm. NO DIMENSIONS SHALL BE SCALED FROM THE STRUCTURAL DRAWINGS. ALL DIMENSIONS SHALL BE CHECKED ON SITE.
3. ANY TEMPORARY WORKS SHALL BE THE SOLE RESPONSIBILITY OF THE CUSTOMER.
4. ALL WORK IS TO COMPLY WITH ALL CURRENT IRISH STANDARDS, BRITISH STANDARDS, BUILDING REGULATIONS, SPECIFICATIONS.
5. ALL REINFORCEMENT SHALL BE IN ACCORDANCE WITH B.S. 4449 AND SCHEDULED IN ACCORDANCE WITH B.S. 8666:2005.
6. COVER TO REINFORCEMENT TO BE 40mm.
7. CONCRETE TO BE GRADE C30/37 AS SPECIFIED IN TABLE 1.
8. ALL CONCRETE TO BE IN ACCORDANCE WITH I.S. EN 206-1:2013 WITH THE MIX DESIGNS SHOWN IN TABLE 1.
9. CONCRETE FINISH TO BE F2 FOR BELOW GROUND STRUCTURES AS PER T.I.I. PUBLICATION CC-SPW-01700.

THE NOTATION FOR THE LAYERING OF REINFORCEMENT SHALL BE AS FOLLOWS:

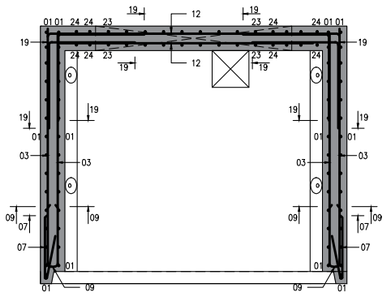
FF – FAR FACE
NF – NEAR FACE
B – BOTTOM
T – TOP
EF – EACH FACE



ISOMETRIC VIEW
SECTION 1



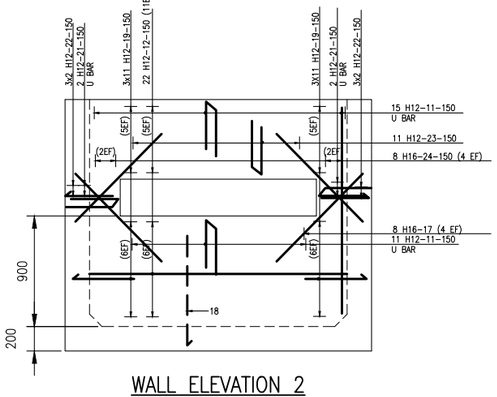
WALL ELEVATION 1
SCALE 1:50



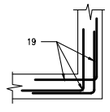
WALL ELEVATION 1
SCALE 1:50

CONCRETE SPECIFICATION TO I.S. EN 206-1		
	BLINDING & MASS CONCRETE, DRAINAGE PIPE & MANHOLE SURROUNDINGS	FOUNDATIONS & WALLS
EXPOSURE CLASS	X0	XC2, XA2
MIN. CEMENT CONTENT (kg/m³)	240	340
MAX. WATER/CEMENT RATIO	–	0.50
CEMENT TYPE TO I.S. EN 197-1	CEM 1 N	CEM 1 N
CHLORIDE CONTENT CLASS	Cl. 1,0	Cl, 0,40
MAX. AGGREGATE	10	20
MIN. COVER (CMin) (mm)	–	40
*COMPRESSIVE STRENGTH CLASS	C16/20	C30/37

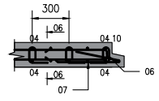
NOTES
1. *C16/20 TO BE READ AS FOLLOWS: 16 – REFERS TO MIN. CHARACTERISTIC CYLINDER STRENGTH (N/mm2/). 20 – REFERS TO MIN. CHARACTERISTIC CUBE STRENGTH (N/mm2/).
2. DESIGN WORKING LIFE TO BE 50 YEARS MINIMUM.



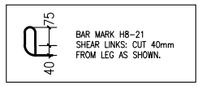
WALL ELEVATION 2
SCALE 1:50



PLAN ARR. 19 BARS
SCALE 1:50



B SECTION B
SCALE 1:50



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PROJECT
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
JOINT BAY
REINFORCEMENT DETAILS
JOINT BAY SECTION 3

No of Shts	SIZE	SCALE
8	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-012	005	00

TABLE 1: JOINT BAY R.C. DETAIL – SECTION 1

* – SPECIFIED TO NEAREST 5mm + – SPECIFIED TO NEAREST 25mm							ALL BENDING DIMENSIONS ARE IN ACCORDANCE WITH B.S. 8666:2005						
MEMBER	BAR MARK	TYPE	SIZE (mm)	No. OF MBRS	No. IN EACH	TOTAL No.	LENGTH OF EACH BAR (mm)	SHAPE CODE	A* mm	B* mm	C* mm	D* mm	E/r* mm
SIDE WALLS	01	H	16	2	29	58	1675	00					
	02	H	12	2	14	28	1075	21	500	120			
	03	H	12	2	24	48	1900	00					
	07	H	12	2	12	24	930	14	350	85	560		
	09	H	12	2	12	24	1000	13	480	80			
BASE	04	H	16	1	30	30	2400	00					
	05	H	12	1	34	34	1900	00					
	06	H	12	1	17	17	1025	13	500	80			
	07	H	12	1	15	15	930	14	350	85	560		
	08	H	16	1	90	90	1600	11	960				
	10	H	16	1	1	1	2200	00					
	14	H	12	1	51	51	1250	11	950	300			
	15	H	10	1	24	24	800	24	200	400	200	285	
	16	H	12	1	4	4	800	00	BEND ON SITE				
Shear Links	21	H	8	1	140	140	350	22	115	120	50	115	
END WALL	01	H	16	1	8	8	1675	00					
	11	H	12	1	26	26	1050	21	475	120			
	12	H	12	1	22	22	2075	00					
	13	H	12	1	66	66	1375	11	700				
	17	H	12	1	8	8	1000	00					
	18	H	12	1	4	4	775	13	375	75			
	19	H	12	1	12	12	675	11	350				
	20	H	12	1	11	11	1175	21	550	120			

TABLE 2: JOINT BAY R.C. DETAIL – SECTION 2

* – SPECIFIED TO NEAREST 5mm + – SPECIFIED TO NEAREST 25mm							ALL BENDING DIMENSIONS ARE IN ACCORDANCE WITH B.S. 8666:2005						
MEMBER	BAR MARK	TYPE	SIZE (mm)	No. OF MBRS	No. IN EACH	TOTAL No.	LENGTH OF EACH BAR (mm)	SHAPE CODE	A* mm	B* mm	C* mm	D* mm	E/r* mm
SIDE WALLS	01	H	16	2	28	56	1675	00					
	02	H	12	2	14	28	1075	21	500	110			
	03	H	12	2	24	48	1900	00					
	07	H	12	2	24	48	930	14	350	85	560		
	09	H	12	2	24	48	1000	21	480	80			
BASE	04	H	16	1	27	27	2400	00					
	05	H	12	1	34	34	1900	00					
	06	H	12	1	34	34	1025	21	500	110			
	07	H	12	1	32	32	930	14	350	85	560		
	08	H	16	1	84	84	1600	11	960				
	10	H	16	1	1	1	2200	00					
	15	H	10	1	24	24	800	24	200	400	200	285	
	16	H	12	1	4	4	800	00	BEND ON SITE				
Shear Links	17	H	8	1	140	140	350	22	115	120	50	115	

TABLE 3: JOINT BAY R.C. DETAIL – SECTION 3

* – SPECIFIED TO NEAREST 5mm + – SPECIFIED TO NEAREST 25mm							ALL BENDING DIMENSIONS ARE IN ACCORDANCE WITH B.S. 8666:2005						
MEMBER	BAR MARK	TYPE	SIZE (mm)	No. OF MBRS	No. IN EACH	TOTAL No.	LENGTH OF EACH BAR (mm)	SHAPE CODE	A* mm	B* mm	C* mm	D* mm	E/r* mm
SIDE WALLS	01	H	16	2	29	58	1675	00					
	02	H	12	2	14	28	1075	21	500	120			
	03	H	12	2	24	48	1900	00					
	07	H	12	2	12	24	930	14	350	85	560		
	09	H	12	2	12	24	1000	13	480	80			
BASE	25	H	8	1	140	140	350	22	115	120	50	115	
	04	H	16	1	29	29	2400	00					
	05	H	12	1	34	34	1900	00					
	06	H	12	1	17	17	1025	13	500	80			
	07	H	12	1	17	17	930	14	350	85	560		
	08	H	16	1	90	90	1600	11	960				
	15	H	10	1	24	24	800	42	200	400	200	285	
	16	H	12	1	4	4	800	00	BEND ON SITE				
	18	H	12	1	51	51	1375	11	900				
END WALL	11	H	12	1	26	26	1050	21	475	120			
	12	H	12	1	22	22	2075	00	475	120			
	19	H	12	1	66	66	1375	11	700				
	17	H	12	1	8	8	1000	00	700				
	21	H	12	1	4	4	775	13	375	75			
	22	H	12	1	12	12	675	11	350	75			
	23	H	12	1	11	11	1175	21	550	120			
	24	H	16	1	8	8	1675	00					

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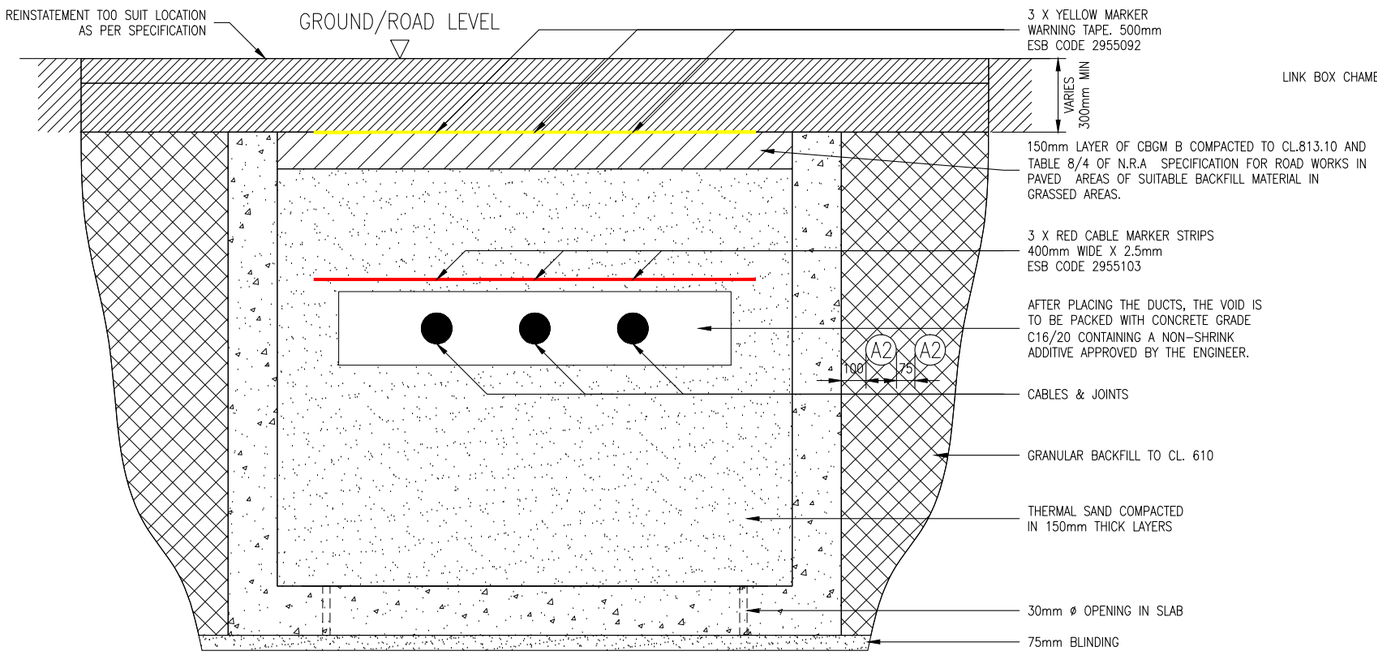
PROJECT: STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE: JOINT BAY REBAR SCHEDULE

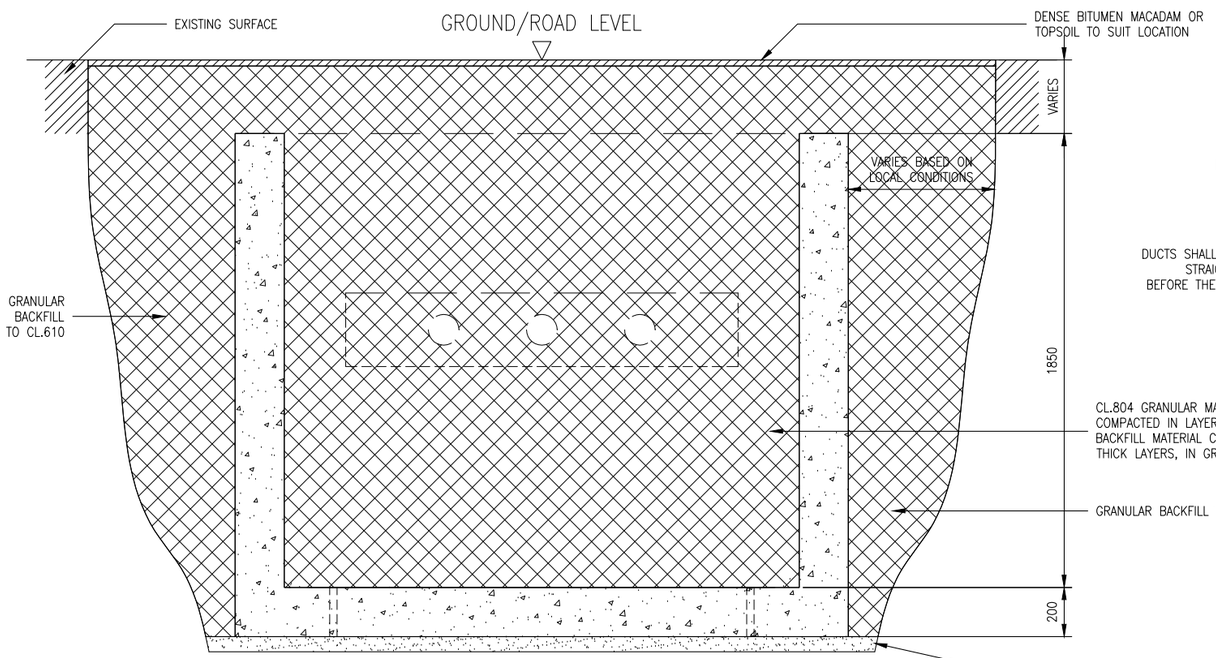
No of Shts: 8 | SIZE: A3 | SCALE: N/A

DRAWING NUMBER: XDC-CBL-STND-H-012 | SHEET: 006 | REV: 00

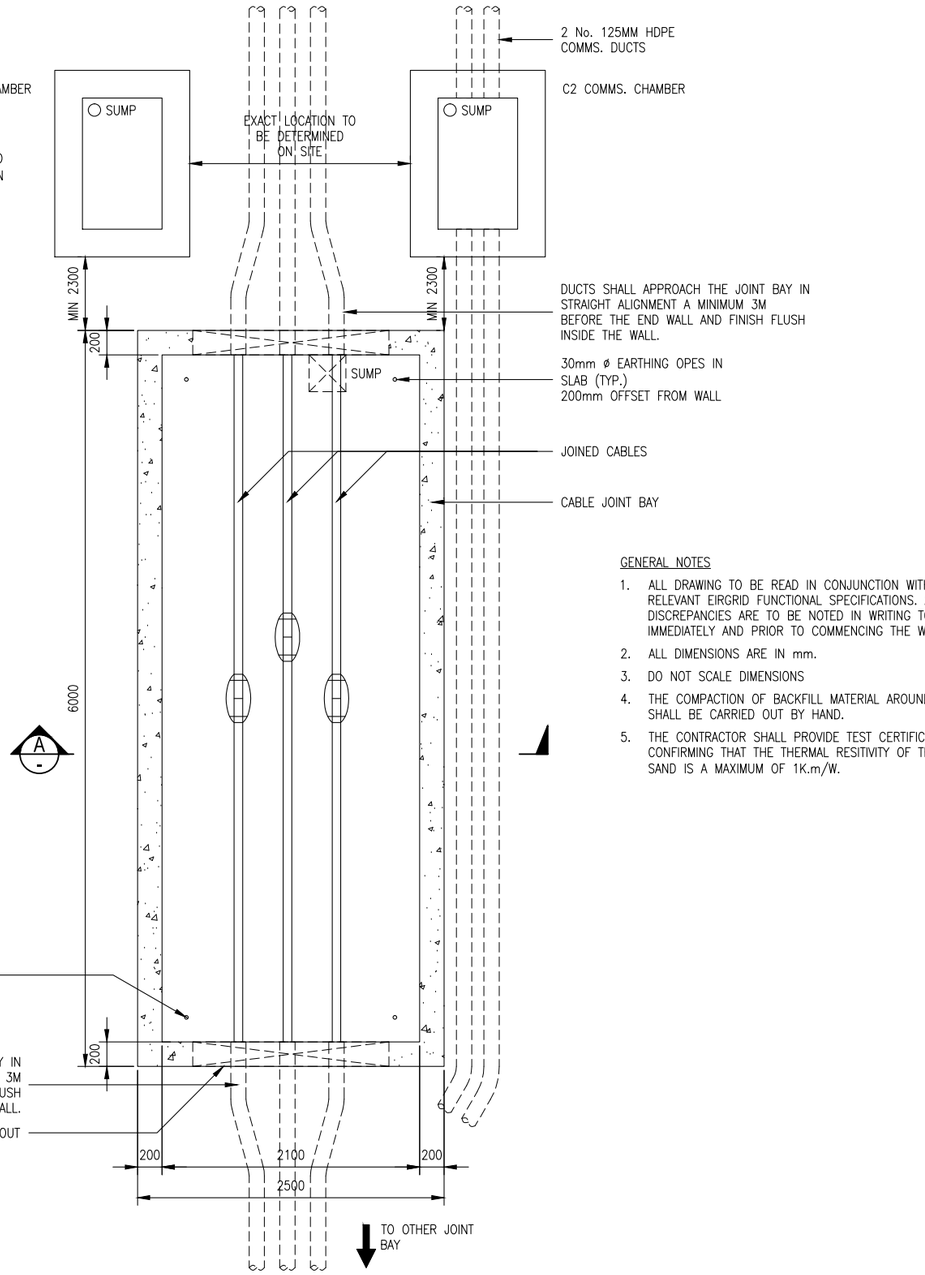


A - SECTION A – PERMANENT REINSTATEMENT
SCALE 1:50

A2 = 125mm ø HDPE DUCT (COMMS)



A - SECTION A – TEMPORARY REINSTATEMENT
SCALE 1:50



TYPICAL PLAN OF JOINT BAY IN ROAD
SCALE 1:50

GENERAL NOTES

1. ALL DRAWING TO BE READ IN CONJUNCTION WITH THE RELEVANT EIRGRID FUNCTIONAL SPECIFICATIONS. ANY DISCREPANCIES ARE TO BE NOTED IN WRITING TO EIRGRID IMMEDIATELY AND PRIOR TO COMMENCING THE WORK.
2. ALL DIMENSIONS ARE IN mm.
3. DO NOT SCALE DIMENSIONS
4. THE COMPACTION OF BACKFILL MATERIAL AROUND CABLES SHALL BE CARRIED OUT BY HAND.
5. THE CONTRACTOR SHALL PROVIDE TEST CERTIFICATES CONFIRMING THAT THE THERMAL RESITIVITY OF THE THERMAL SAND IS A MAXIMUM OF 1K.m/W.

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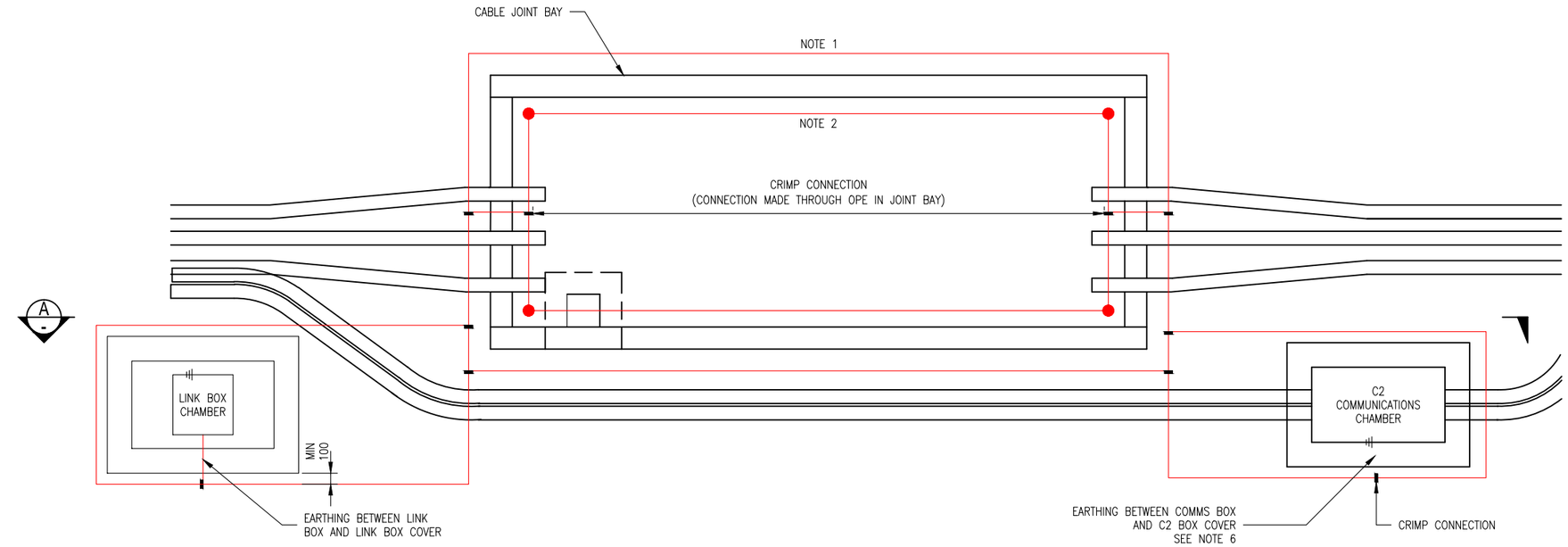
PROJECT
STANDARD 110kV CABLE DRAWINGS

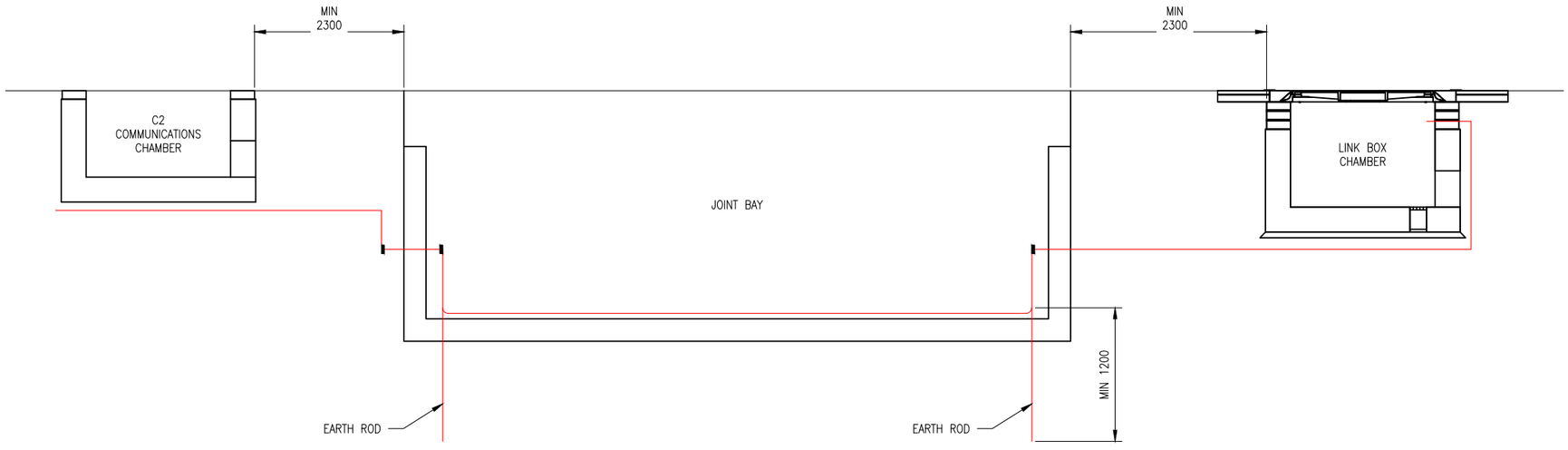
DRAWING TITLE
JOINT BAY REINSTATEMENT

No of Shts	SIZE	SCALE
8	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-012	007	00



TYPICAL PLAN OF JOINT BAY IN ROAD
SCALE 1:50



SECTION A
SCALE 1:50 (A -)

GENERAL NOTES:

1. FOR EARTH GRID SURROUNDING JOINT BAY AND CHAMBERS AREA, INSTALL A SINGLE LOOP OF 95mm² BARE Cu CONDUCTOR, EARTH GRID APPROX 500mm BELOW GROUND SURFACE LEVEL.
2. FOR EARTH GRID WITHIN THE JOINT BAY, INSTALL A SINGLE LOOP OF 95mm² BARE Cu CONDUCTOR RUNNING ALONG THE FLOOR OF THE JB CHAMBER. EARTH GRID APPROX 2000mm BELOW GROUND LEVEL.
3. EARTH RODS SHALL BE 1mm THICK COPPER-CLAD STEEL 1200mm LONG, 20mmø IN ACCORDANCE WITH ENA TS 43-94. THE EARTH CONNECTION TO THE EARTH ROD SHALL BE MOISTURE PROTECTED USING DENSO TAPE OVER THE COMPLETED CONNECTION.
4. EARTH RODS SHALL BE SUPPLIED COMPLETE WITH LUGS, BOLTS, HARDENED TIP, SCREW-ON STEEL DRIVING CAP, AND WITH THE APPROVED MEANS OF CONNECTING THE REQUIRED EARTHING LEADS.
5. EARTH RODS NOT LESS THAN 1.2m LONG TO BE INSTALLED VERTICALLY, ONE IN EACH CORNER OF THE JOINT BAY.
6. THE JOINT BAY EARTH RESISTANCE, WITH THIS ARRANGEMENT, SHOULD HAVE A MAXIMUM VALUE OF 10Ω. IF THIS VALUE CANNOT BE ACHIEVED, ADDITIONAL MEASURES WILL BE REQUIRED.
7. STEP VOLTAGE AND TRANSFERRED VOLTAGE TO OTHER METALLIC OBJECTS INSTALLED IN THE VICINITY OF THE JOINT BAY SHALL BE CALCULATED AND CHECKED AS PER LATEST IEEE 80 AND EIRGRID SPECIFICATION XDS-GFS-12-001.

FOR REQUIRED SHORT CIRCUIT RATING REFER TO EIRGRID FUNCTIONAL SPECIFICATION XDS-GFS-00-001

LEGEND

- 95mm² Cu BARE CONDUCTOR
- EARTH ROD
- C CRIMP

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PROJECT
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
JOINT BAY
TYPICAL EARTHING ARRANGEMENT

No of Shts	SIZE	SCALE
8	A3	N/A

DRAWING NUMBER
XDC-CBL-STND-H-012

SHEET	REV
008	00

STANDARD 110kV CABLE DRAWINGS
TRANSITION CHAMBER

DRAWING No.	SHEET No.	DESCRIPTION	REVISION No.
XDC-CBL-STND-H-013	001	TRANSITION CHAMBER INDEX SHEET	00
XDC-CBL-STND-H-013	002	TRANSITION CHAMBER GENERAL ARRANGEMENT	00
XDC-CBL-STND-H-013	003	TRANSITION CHAMBER SECTION DETAILS	00
XDC-CBL-STND-H-013	004	TRANSITION CHAMBER REINSTATEMENT	00
XDC-CBL-STND-H-013	005	TRANSITION CHAMBER NOTES	00

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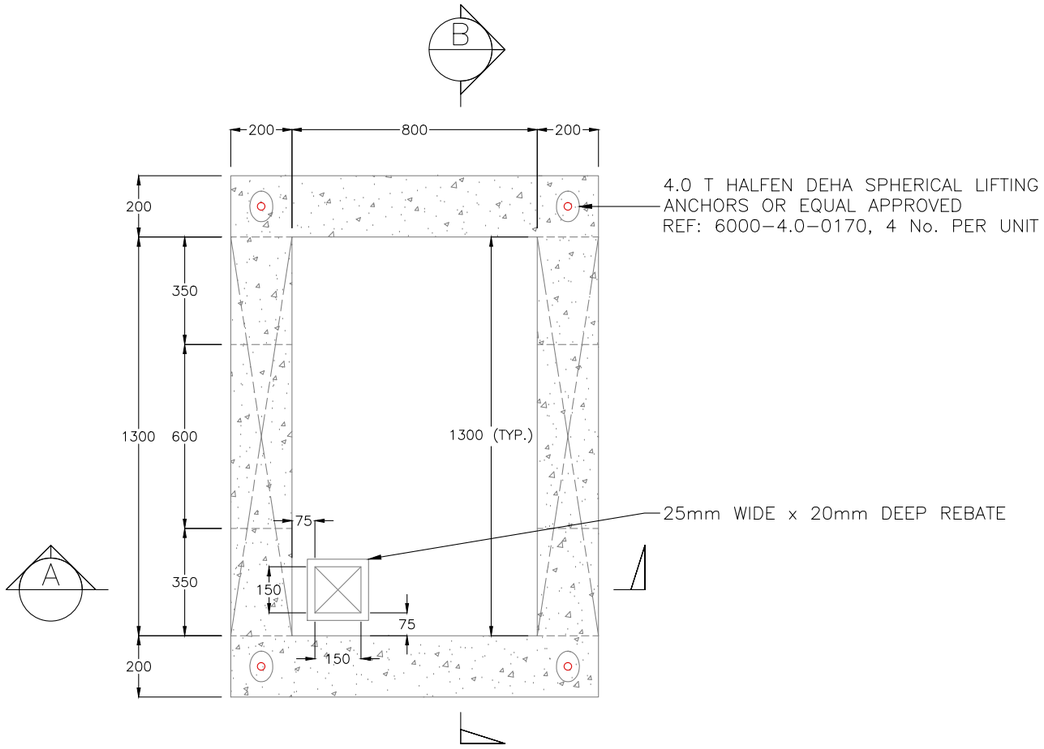
PROJECT: STANDARD 110kV CABLE DRAWINGS

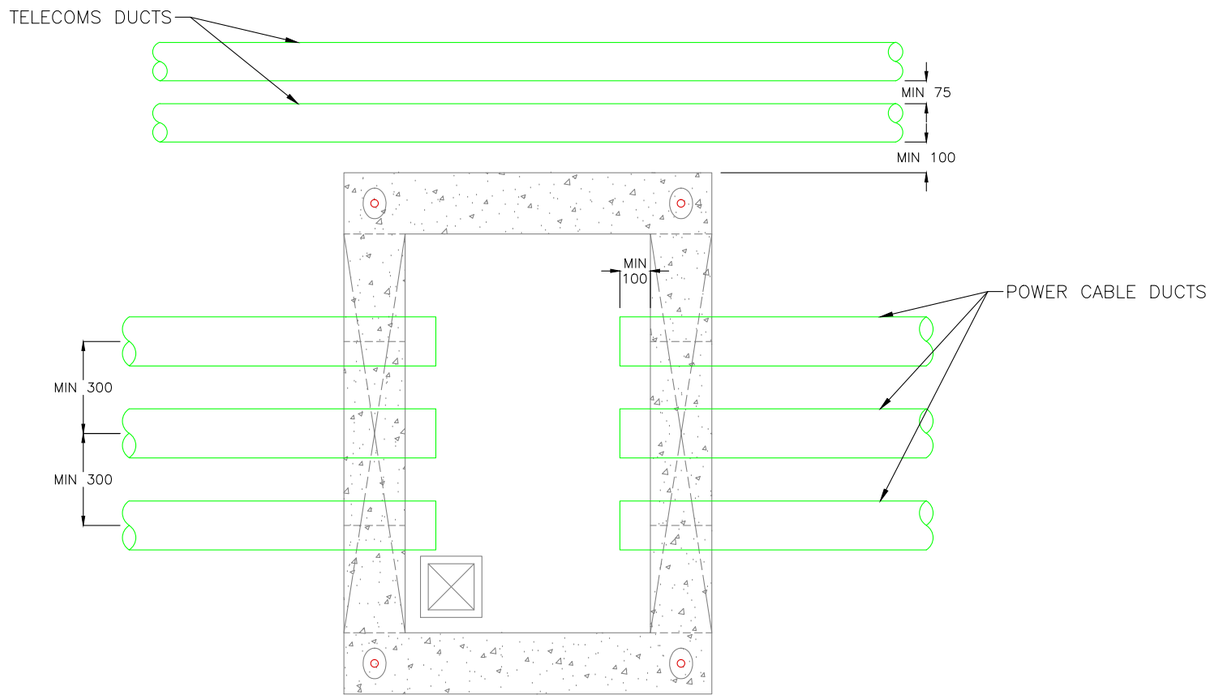
DRAWING TITLE: TRANSITION CHAMBER INDEX SHEET

No of Shts	SIZE	SCALE
5	A3	N/A

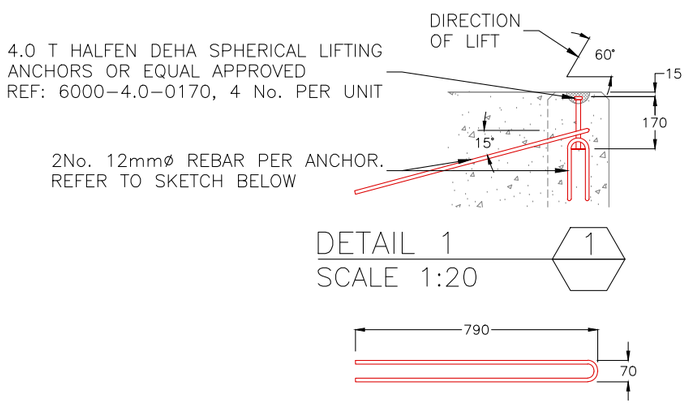
DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-013	001	00



PLAN – TRANSITION CHAMBER
SCALE 1:20 (COVER, FRAME & DUCTS OMITTED FOR CLARITY)



PLAN – TRANSITION CHAMBER
SCALE 1:20 (DUCT SETTING OUT)



REFER TO SHEET 005 FOR GENERAL AND PRECAST CONCRETE NOTES

GENERAL NOTES FOR TELECOMS DUCTS:

1. TELECOMMUNICATION DUCTS NOT TO BE ROUTED THROUGH TRANSITION CHAMBER.
2. IF TRANSITION CHAMBER IS USED TO INTERFACE WITH AN HDD SECTION, THEN THE TELECOMS DUCT SDR 17.6 SHOULD BE CHAMFERED WHEN COUPLED WITH SDR 11 DUCTS.

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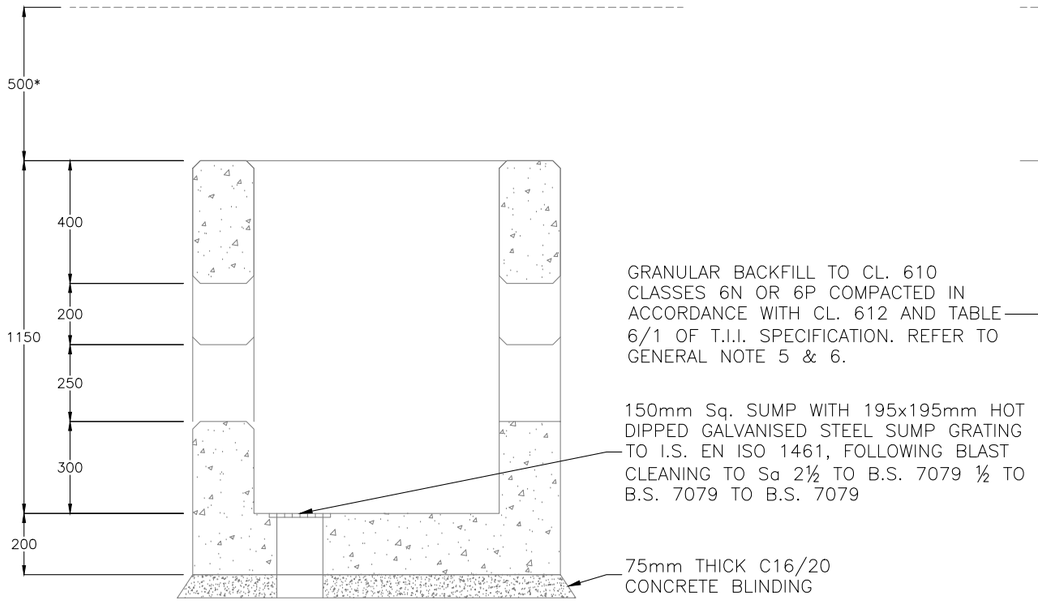
PROJECT: STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE: TRANSITION CHAMBER GENERAL ARRANGEMENT

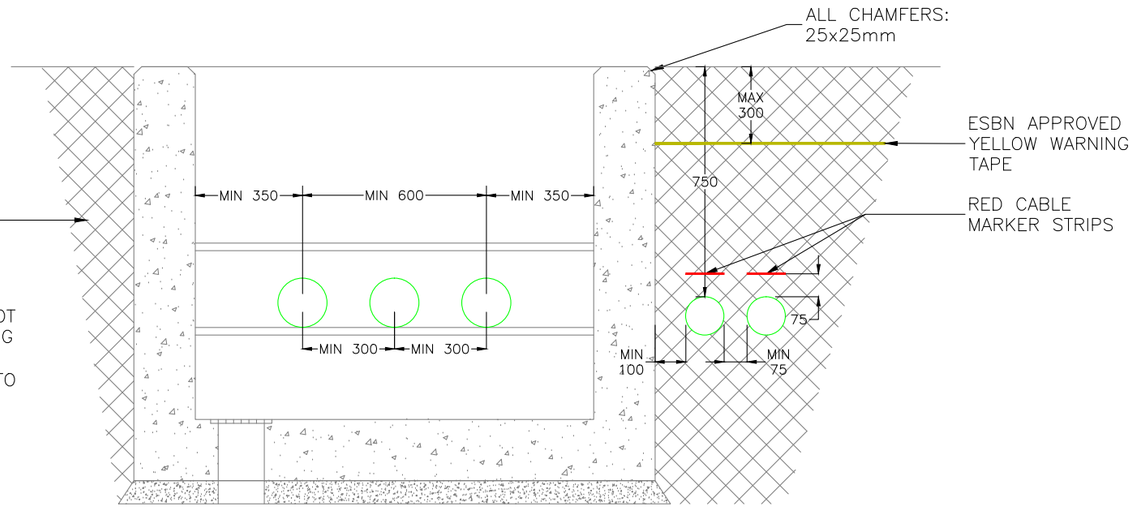
No of Shts	SIZE	SCALE
5	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-013	002	00

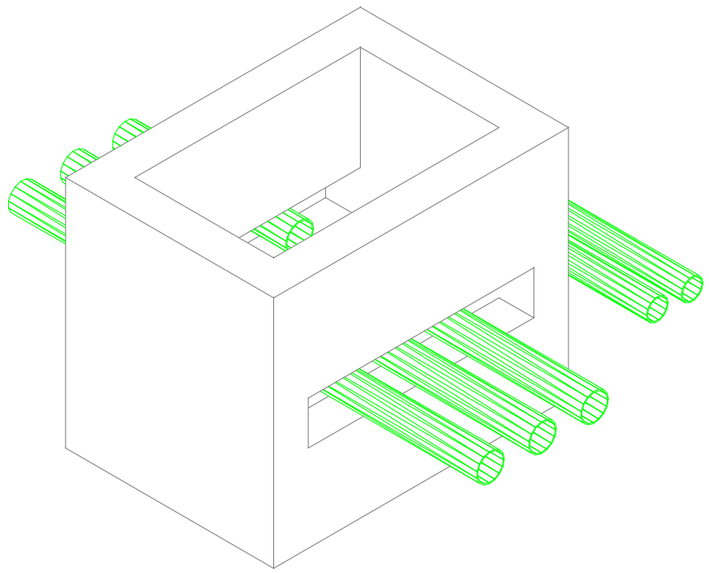
*COVER: REFER TO GENERAL NOTE 14
(SHEET 005)



SECTION A
SCALE 1:20 (A)



SECTION B
SCALE 1:20 (B)



REFER TO SHEET 005 FOR GENERAL AND PRECAST CONCRETE NOTES

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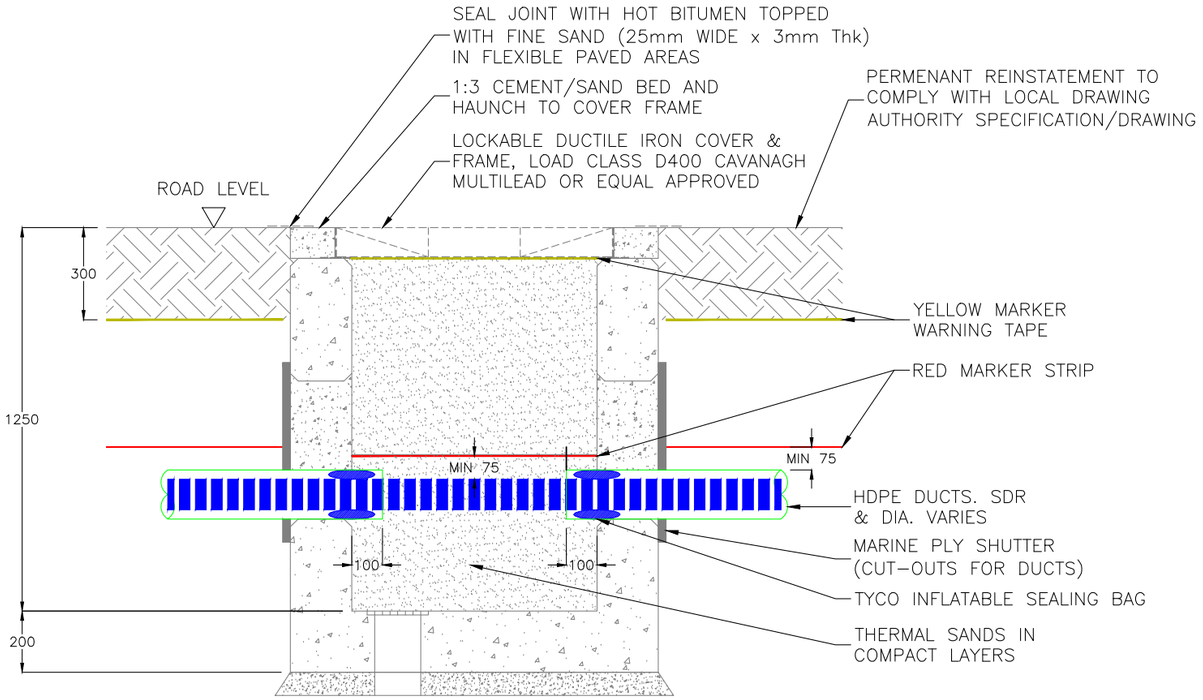
PROJECT
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRANSITION CHAMBER SECTION DETAILS

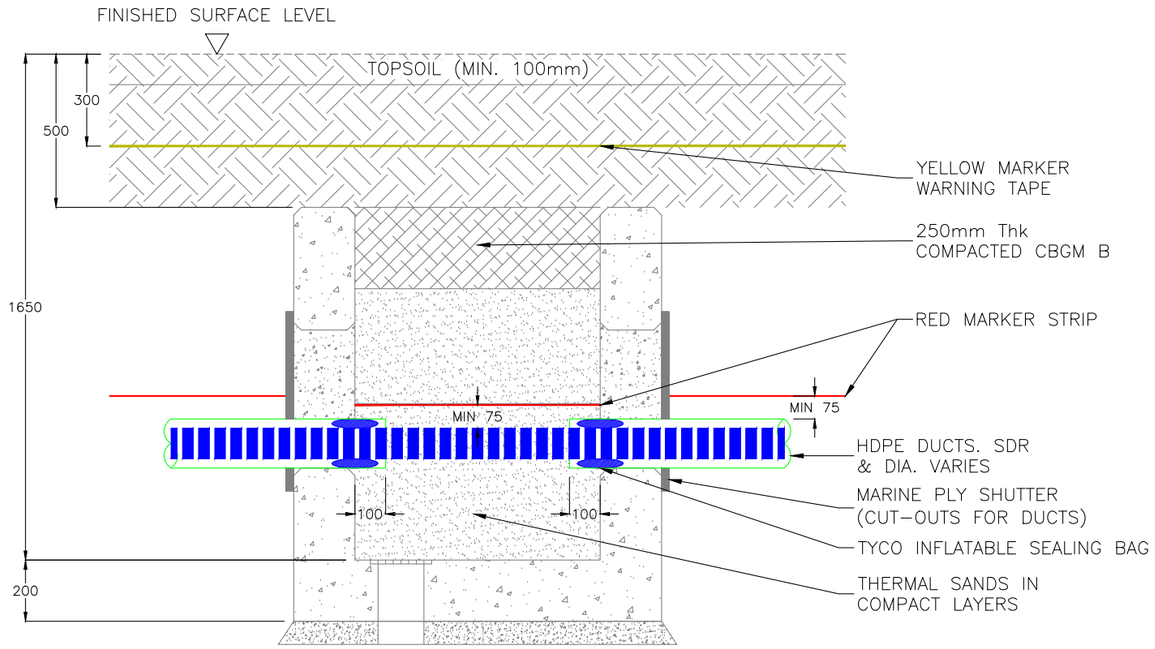
No of Shts	SIZE	SCALE
5	A3	N/A

DRAWING NUMBER
XDC-CBL-STND-H-013

SHEET	REV
003	00



SECTION A
SCALE 1:20 (CHAMBER BACKFILL IN ROAD) A



SECTION A
SCALE 1:20 (CHAMBER BACKFILL IN FIELD) A

REFER TO SHEET 005 FOR GENERAL AND PRECAST CONCRETE NOTES

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
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PROJECT
STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE
TRANSITION BAY REINSTATEMENT

No of Shts	SIZE	SCALE
5	A3	N/A

DRAWING NUMBER	SHEET	REV
XDC-CBL-STND-H-013	004	00

GENERAL NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S, ARCHITECT'S AND ESB NETWORKS DRAWINGS & SPECIFICATIONS.
2. ALL DIMENSIONS ARE IN mm.
3. DO NOT SCALE DIMENSIONS.
4. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS PRIOR TO CONSTRUCTION, ANY DISCREPANCIES TO BE NOTIFIED TO THIS OFFICE IN WRITING IMMEDIATELY.
5. TEMPORARY SUPPORTS TO THE SIDES OF THE EXCAVATION MAY BE REQUIRED DEPENDENT ON SUBSOIL, METHOD OF WORK AND SITE CONSTRAINTS, AND ARE TO BE AGREED WITH THE ESBI ENGINEER PRIOR TO COMMENCEMENT OF EXCAVATION. SIDE SLOPES OF AN UNSUPPORTED EXCAVATION DEPENDENT UPON SUBSOIL AND SHALL BE AGREED WITH ESBI ENGINEER.
6. MAIN CONTRACTOR TO PROVIDE A METHOD STATEMENT AND RISK ASSESSMENT FOR THE EXCAVATION WORKS FOR THE ESBI ENGINEER TO REVIEW.
7. THE CONSTRUCTION, AS SHOWN, IS APPLICABLE ONLY WHERE THE SUBSOIL AT FORMATION LEVEL EXCEEDS 100 kN/m^2 BEARING CAPACITY.
8. SUITABILITY OF THE COVER AND CHAMBER TO BE ASSESSED BY THE PROJECT ENGINEER IN CIRCUMSTANCES OF HIGH TRAFFIC LOADING IN ACCORDANCE WITH THE RECOMMENDATIONS OF T.I.I. DESIGN MANUAL FOR ROADS AND BRIDGES ADDENDUM TO HA 104/09.
9. COVER AND FRAME TO B.S. EN 124.
10. COVER SHALL HAVE APPROVED BADGED MARKING INCORPORATED TO THE APPROVAL OF THE ESBI ENGINEER.
11. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE T.I.I. SPECIFICATION FOR ROADWORKS.
12. THE CENTER LINE OF THE DUCTS ENTERING THE CHAMBER SHALL BE ALIGNED WITH THE DUCTS ON THE OPPOSITE SIDE, SO THAT THE CABLE IS PULLED IN A STRAIGHT LINE.
13. DUCTS SHALL APPROACH THE CHAMBER IN STRAIGHT ALIGNMENT (HORIZONTAL & VERTICAL) FOR A MINIMUM OF 3 METERS BEFORE THE WALL OPENING.
14. * THE DEPTH FROM GROUND LEVEL TO TOP OF CONCRETE WALL SHALL BE 500 mm IN CULTIVATED FIELDS & GRASSED LANDS.

PRECAST CONCRETE NOTES:

1. ALL PRECAST CONCRETE ELEMENTS TO BE MANUFACTURED TO B.S. EN 13369:2013 "COMMON RULES FOR PRECAST CONCRETE PRODUCTS".
2. LIFTING INSERTS TO BE DESIGNED & INSTALLED TO PD CEN/TR 15728:2008 "DESIGN AND USE OF INSERTS FOR LIFTING AND HANDLING OF PRECAST CONCRETE ELEMENTS".
3. WEIGHT OF PRECAST CONCRETE UNIT (1.382 m^3) = 3.31 T. SPECIFIED LIFTING INSERTS HAVE A S.W.L. OF 4 T. ACCOUNTING FOR DYNAMIC LOADING.
4. LOCATION & SPECIFICATION OF LIFTING INSERTS ARE ASSUMED TO FACILITATE DEMOULDING AND HANDLING IN PRECAST MANUFACTURING FACTORY. IT IS THE RESPONSIBILITY OF THE PRECAST MANUFACTURER TO NOTIFY THE ESBI ENGINEER IF THESE ARE UNSUITABLE FOR HIS MANUFACTURING METHODOLOGY. ESBI ENGINEER TO BE INFORMED OF ANY ALTERNATIVE LIFTING LOCATIONS FOR FACTORY HANDLING & DEMOULDING.
5. CONCRETE TO HAVE A MINIMUM STRENGTH OF 30 N/mm^2 PRIOR TO HANDLING OR DEMOULDING.
6. MAIN CONTRACTOR TO ENSURE THAT A METHOD STATEMENT AND RISK ASSESSMENT INCLUDING A LIFTING PLAN, ARE PRODUCED FOR INSTALLATION AND ARE AVAILABLE TO ESBI ENGINEER FOR REVIEW IF REQUESTED. LIFTING PLAN TO INCORPORATE REQUIREMENTS OF LIFTING INSERTS AND LIFTING LOOP EYES.
7. A MINIMUM LIFTING SLING ANGLE OF 60° TO THE HORIZONTAL IS REQUIRED.
8. A LIFTING SYSTEM WHICH ENSURES ALL LIFTING POINTS TAKE ON AN EQUAL LOAD IS REQUIRED.
9. TRANSPORT THE CHAMBER BY TRAILER WHEN TRAVELING OVER ROUGH TERRAIN TO AVOID DAMAGE TO LIFTING ANCHORS.
10. HALFEN DEHA SPHERICAL LIFTING ANCHORS TO BE USED AS SPECIFIED. ANY DEVIATION FROM THIS MUST BE NOTIFIED TO ESBI ENGINEER BY PRECAST MANUFACTURER.
11. FORMWORK FOR PRECASTING TO BE OF A MINIMUM STANDARD OF VARNISHED WOODEN MOULD WITH PLANED BOARDS.
12. CONCRETE TO BE GRADE C32/40, AS SPECIFIED IN TABLE 1.

TABLE 1 – CONCRETE SPECIFICATION TO I.S. EN 206-1

ELEMENT	BLINDING & MASS CONCRETE, DRAINAGE PIPE & MANHOLE SURROUNDS	GROUND BEAMS, FOUNDATIONS & PITS/CHAMBERS
EXPOSURE CLASS	X0	XC4
MIN. BINDER (CEMENT+GGBS) CONTENT (kg/m^3)	220	320
GGBS TO EN 15167-1 (kg/m^3)	0	95
CEM II/A-L TO I.S. EN 197-1 (kg/m^3)	220	225
MAX. WATER/CEMENT RATIO	--	0.50
CHLORIDE CONTENT CLASS	Cl. 1.0	Cl. 0.40
MAX. AGGREGATE (mm)	10	20
MIN. COVER (CMin) (mm)	--	40
*COMPRESSIVE STRENGTH CLASS @ 28 DAYS	C16/20	C32/40

NOTES:
1. *C16/20 TO BE READ AS FOLLOWS:
   16 = MIN. CYLINDER STRENGTH (N/mm^2)
   20 = MIN. CUBE STRENGTH (N/mm^2)
2. DESIGN WORKING LIFE TO BE 50 YEARS MINIMUM

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	DA	DG	CF	09/03/2020

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PROJECT: STANDARD 110kV CABLE DRAWINGS

DRAWING TITLE: TRANSITION CHAMBER NOTES

No of Shts: 5 | SIZE: A3 | SCALE: N/A

DRAWING NUMBER: XDC-CBL-STND-H-013 | SHEET: 005 | REV: 00