

CONTECComissão de Normalização
Técnica**SC-13**

Oil and Gas Pipelines

**Signage of Pipeline Right-of-Way and
Onshore Production Facility****2nd Amendment**

This is the 2nd Amendment to PETROBRAS N-2200 REV. F, incorporated the 1st amendment and it is used to alter the text of the Standard in the part(s) indicated below:

NOTE 1 The new(s) page(s) with the performed amendment(s) is (are) placed in its corresponding position(s).

NOTE 2 The amended pages, indicated the date of the amendment, are placed at the end of this standard, in chronological order, and shall not be used.

CONTENTS OF THE 1st AMENDMENT - 11/2015

Embedded in text.

CONTENTS OF THE 2nd AMENDMENT - 05/2017

- Subsection 4.7.

Signage of Pipeline Right-of-Way and Onshore Production Facility

Procedure

This Standard replaces and cancels its previous revision.

The CONTEC - Authoring Subcommittee provides guidance on the interpretation of this Standard when questions arise regarding its contents. The Department of PETROBRAS that uses this Standard is responsible for adopting and applying the sections, subsections and enumerates thereof.

Technical Requirement: A provision established as the most adequate and which shall be used strictly in accordance with this Standard. If a decision is taken not to follow the requirement ("non-conformity" to this Standard) it shall be based on well-founded economic and management reasons, and be approved and registered by the Department of PETROBRAS that uses this Standard. It is characterized by imperative nature.

Recommended Practice: A provision that may be adopted under the conditions of this Standard, but which admits (and draws attention to) the possibility of there being a more adequate alternative (not written in this Standard) to the particular application. The alternative adopted shall be approved and registered by the Department of PETROBRAS that uses this Standard. It is characterized by verbs of a nonmandatory nature. It is indicated by the expression: **[Recommended Practice]**.

Copies of the registered "non-conformities" to this Standard that may contribute to the improvement thereof shall be submitted to the CONTEC - Authoring Subcommittee.

Proposed revisions to this Standard shall be submitted to the CONTEC - Authoring Subcommittee, indicating the alphanumeric identification and revision of the Standard, the section, subsection and enumerate to be revised, the proposed text, and technical/economic justification for revision. The proposals are evaluated during the work for alteration of this Standard.

"This Standard is exclusive property of Petróleo Brasileiro S. A. - PETROBRAS, internal application and PETROBRAS Subsidiaries and shall be used by its suppliers of goods and services under contracts or similar under the conditions established in Bidding, Contract, Agreement or similar.

The use of this Standard by other companies / organizations / government agencies and individuals is the sole responsibility of the users.."

CONTEC

Comissão de Normalização
Técnica

SC - 13

Oil and Gas Pipelines

Introduction

PETROBRAS Technical Standards are prepared by Working Groups - WG (consisting specialized of Technical Collaborators from Company and its Subsidiaries), are commented by Company Units and its Subsidiaries, are approved by the Authoring Subcommittees - SCs (consisting of technicians from the same specialty, representing the various Company Units and its Subsidiaries), and ratified by the Executive Nucleus (consisting of representatives of the Company Units and its Subsidiaries). A PETROBRAS Technical Standard is subject to revision at any time by its Authoring Subcommittee and shall be reviewed every 5 years to be revalidated, revised or cancelled. PETROBRAS Technical Standards are prepared in accordance with PETROBRAS Technical Standard N-1. For complete information about PETROBRAS Technical Standards see PETROBRAS Technical Standards Catalog.

Foreword

This Standard is the English version (issued in 11/2015) of PETROBRAS N-2200 REV. F 08/2015, including its Amendment - 11/2015. In case of doubt, the Portuguese version, which is the valid document for all intents and purposes, shall be used.

1 Scope

1.1 This Standard establishes conditions required for several types of signs and markers for pipelines, pipeline right-of-ways and restricted access areas of onshore production facilities, aiming to readily identify, to prevent undesirable events and to warn of risks associated.

1.2 This Standard also establishes the signage for pipelines without right-of-way.

1.3 This Standard is applicable to aboveground signage. ABNT [NBR 15280-2](#) shall be consulted for buried signage.

1.4 This Standard is according to Technical Regulation ANP nº 2/2011.

1.5 This Standard is applicable to designs started after its date of issuance as well as to existing pipeline facilities, whenever repair or replacement is necessary during sign or marker maintenance.

1.6 This Standard contains Technical Requirements and Recommended Practices.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document applies.

Regulamento Técnico ANP nº 2/2011- Regulamento Técnico de Dutos Terrestres para Movimentação de Petróleo, Derivados e Gás Natural - RTDT;

PETROBRAS [N-1219](#) - Colors;

PETROBRAS [N-1550](#) – Metallic Structure Painting;

PETROBRAS [N-2677](#) - Polyurethane Acrylic Paint;

PETROBRAS [N-2726](#) – Terminologia de Dutos;

PETROBRAS - [Caderno de Assinaturas](#);

[Manual de Sinalização da PETROBRAS](#) - Unidades Industriais;

ABNT [NBR 7276](#) - Sinalização de Advertência em Linhas Aéreas de Transmissão de Energia Elétrica;

ABNT [NBR 15280-2](#) - Dutos Terrestres Parte 2: Construção e Montagem.

NOTE For documents referred in this Standard and for which only the Portuguese version is available, the PETROBRAS department that uses this Standard should be consulted for any information required for the specific application.

3 Terms and Definitions

The terms and definitions of PETROBRAS [N-2726](#) are adopted for this document purposes.

3.1

lateral

pipeline that branches off of the main line

3.2

right-of-way sections

right-of-way length comprised between two relevant points such as: hubs, laterals, crossings, junctions, route variations, intermediate stations, delivery points or other relevant point

3.3

route variation

route section that starts and ends on main route

4 General Conditions

4.1 Right-of-ways and restricted access areas of onshore production facilities shall be identified and marked with markers and signs according to the standard figures of Annex A.

4.2 Colors to be used on markers and signs shall meet PETROBRAS [N-1219](#) mentioned beneath:

- a) black - 0010;
- b) yellow - 2386;
- c) white - 0095;
- d) green - 3355;
- e) red - 1547.

4.3 Markers shall be painted with acrylic paint according to PETROBRAS [N-2677](#), in colors indicated in the standard figures in Annex A.1.1, A.1.2; A.2, A.3.1; A.3.2 and A.4.

4.4 All signs, supports and other metallic parts shall have their surface prepared according to PETROBRAS [N-1550](#), in colors indicated in the Figures A.5 and A.6.

4.5 The PETROBRAS [Trademark Identity System](#) shall be consulted for the use of PETROBRAS trademark or of its subsidiaries, considering the color version.

4.6 The PETROBRAS trademark should be replaced by subsidiary trademark for the signage of subsidiaries facilities of PETROBRAS system. **[Recommended Practice]**

4.7 A specific signage design may be performed for flooded areas right-of-ways (swampy areas, Amazonia and others), in high growth cultivation areas (sugar cane plantation, banana groves and others), in urban areas or in areas that need special signage, attending, where applicable, the requirements of this Standard.

4.8 This Standard does not restrict the use of alternative materials to carbon steel for sign fabrication and concrete for markers fabrication, inasmuch as all requirements are met. Alternative materials shall be proved adequate to the considered application and their use is department user's responsibility. Signs or markers fabrication with alternative material shall have specific design.

4.9 Markers and signs shall meet, whenever applicable, the restrictions imposed by public space regulation.

4.10 The warning aerial signage at crossings of transmission lines and pipeline right-of-ways shall be according to ABNT [NBR 7276](#).

4.11 Two fabrication alternatives, solid section (Figure A.1.1 and A.3.1) and hollow section (Figure A.1.2 and A.3.2), are presented for right-of-way marker (Figure A.1) and line marker (Figure A.3).

4.12 A concrete slab size 750 mm x 750 mm x 50 mm thick shall be constructed around marker base, for better aerial visualization [**Recommended Practice**].

5 Specific Conditions

5.1 Markers

5.1.1 Right-of-Way Markers

5.1.1.1 Pairs of markers shall be placed on right-of-way boundaries, for identification purpose, according to Figure A.1, in accordance with the following criteria:

- a) at any point on the boundary of the right-of-way, the first posterior marker and the first anterior one shall be visualized, as being the sighting projection over this boundary or inside the right-of-way
- b) horizontal points of inflection of right-of-way;
- c) the maximum spacing between markers shall be 200 m for rural areas and 50 m for urban areas;
- d) markers shall be placed in pairs on both banks of crossings and water crossings;
- e) at the both ends of surrounding industrial areas.

5.1.1.2 The same criteria of 5.1.1.1 shall be used to identify the boundaries of anode bed right-of-ways. Markers shall be placed at cable ends and points of inflection of anode beds.

5.1.2 Aerial Patrol Markers

Aerial patrol markers shall be placed every right-of-way kilometer (slope distance), according to Figure A.2.

5.1.3 Line Markers

Line markers shall be placed over pipelines and communication cables route, according to Figure A.3, in accordance with the following criteria:

- a) beside the margins of the crossings (highways, railways, municipal roads, access roads and field roads);
- b) crossings of other pipelines, electric or communication cables;
- c) beside the water crossing banks (rivers, lakes, dams, canals and streams submitted to dredge);
- d) at the both ends of surrounding industrial areas.

5.2 Signs

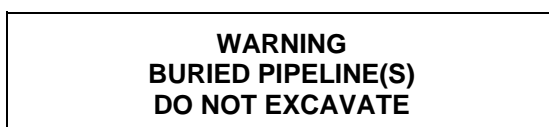
Type I, Type II or Type III Signs shall be placed according to standard Figures of Annex A.

Type I Sign shall be used with the same criteria of Type II Sign, when it is necessary to highlight the text or increase the font size.

5.2.1 Signs

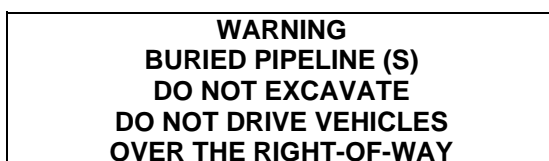
5.2.1.1 Crossing of roads, streets and railways (Type I or II).

EXAMPLE



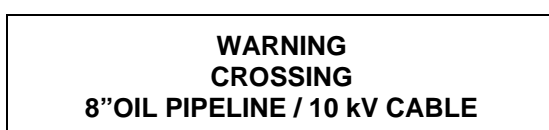
5.2.1.2 Crossing of roads and streets with possibility of motor vehicles access to right-of-way (Type I or II).

EXAMPLE



5.2.1.3 Crossing of other pipelines or cables (Type I or II), such as:

EXAMPLE



NOTE The sign can be fixed to an existing structure in urban areas, as an alternative, meeting the local public body standards. **[Recommended Practice]**

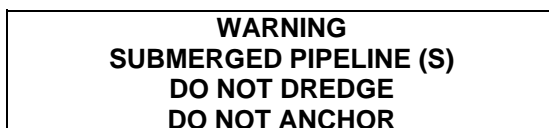
5.2.1.4 Water crossings of non-navigable rivers, canals and lakes, on both banks (Type I or II).

EXAMPLE



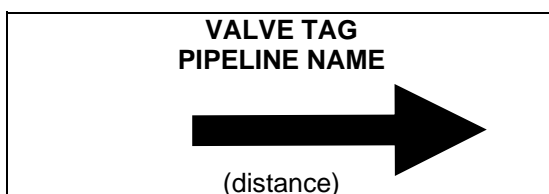
5.2.1.5 Water crossings of navigable rivers, canals and lakes (Type III): signs shall be placed according to Figures A.6.1 and A.6.2 on both banks, including the following message.

EXAMPLE



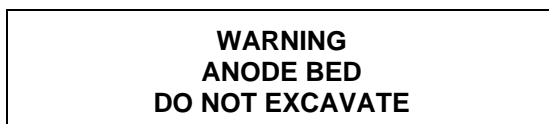
5.2.1.6 Access to valve sites, pig trap, pipeline right-of-ways, rectifiers or drainage stations, intermediate pumping or compression stations, internal corrosion monitoring stations and so on (Type I or II).

EXAMPLE



5.2.1.7 Anode beds (Type I or II).

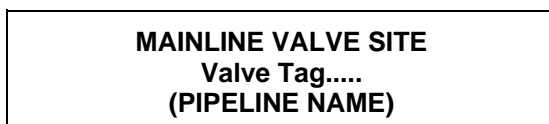
EXAMPLE



5.2.2 Identification Signs

5.2.2.1 Mainline Valve Sites, (Type I or II).

EXAMPLE



5.2.2.2 Pig trap area (Type I or II).

EXAMPLE



NOTE Optionally, the sign can be directly fixed on protection fence of the area. **[Recommended Practice]**

5.2.2.3 Pipeline right-of-way

At the beginning of right-of-way and where there are changes on right-of-way section, with the information duly modified (Type I or II).

EXAMPLE

RIGHT-OF-WAY - AAAA
km XX
RIGHT-OF-WAY PIPELINES:
- PIPELINE XXXX
- PIPELINE YYYY
- OPTICAL FIBER CABLE

5.2.2.4 Lateral/Route Variation

Junction point between main pipeline and lateral/route variation (Type I or II)

EXAMPLE

LATERAL/ROUTE VARIATION - BBBB
LENGTH - XX km
Km XX OF RIGHT-OF-WAY AAAA
PIPELINES INCLUDED ON
LATERAL/ROUTE VARIATION:
- PIPELINE ZZZZ

5.2.2.5 Production, compression and pumping stations, among others, placed beside facility main entrance gate, next to the fence (Type III).

EXAMPLE

COMPRESSION STATION
MIRANGA FIELD

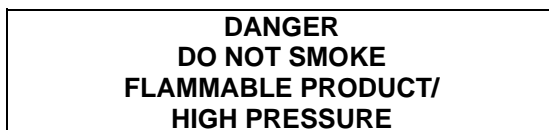
5.2.2.6 Restricted access area (Type I and II).

EXAMPLE

PETROBRAS PROPERTY AREA

5.2.3 Warning Signs

5.2.3.1 Mainline valve sites, pig traps and other facilities (Type I or II).

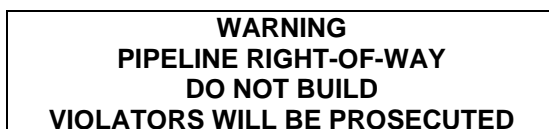
EXAMPLE


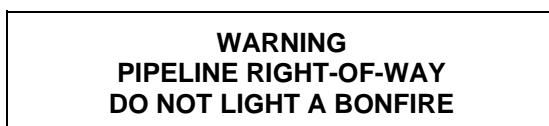
5.2.3.2 Flare restricted access area, placed next to flare access (Type I or II).

EXAMPLE

5.2.4 Special Signs

Type I or II signs should be placed as preventive and supplementary measure, where applicable, including, such as the following messages or pictograms: **[Recommended Practice]**

EXAMPLE 1

EXAMPLE 2

EXAMPLE 3

EXAMPLE 4

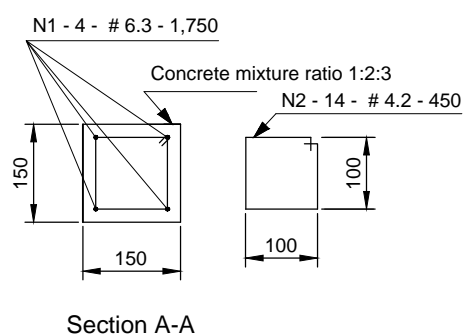
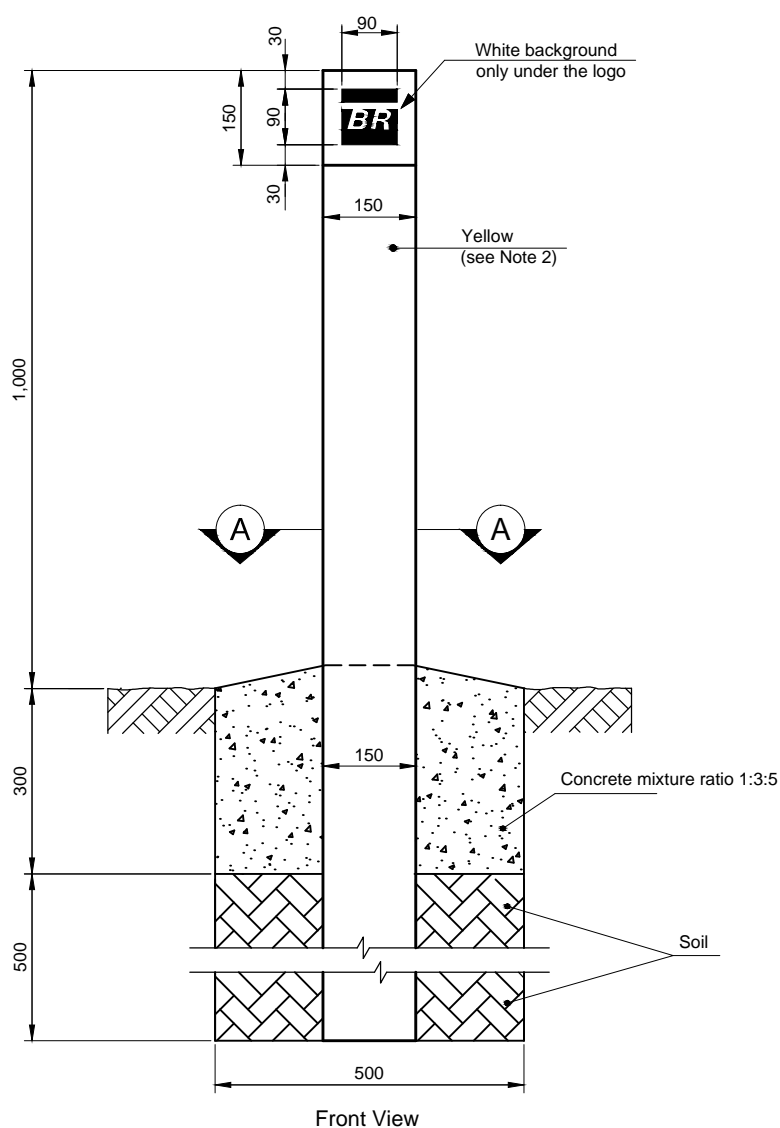

EXAMPLE 5

**5.3 Signage of Aboveground Sections of Pipelines and their Fabricated Assemblies**

5.3.1 Arrows indicating the flow direction, name and diameter of the pipeline shall be painted on aboveground sections of pipelines.

5.3.2 It is recommended to identify the fabricated assemblies, by painting the respective number, in lettering suitable for aerial surveillance. **[Recommended Practice]**

Annex A - Figures



NOTE 1 Dimensions in millimeters, unless otherwise indicated.

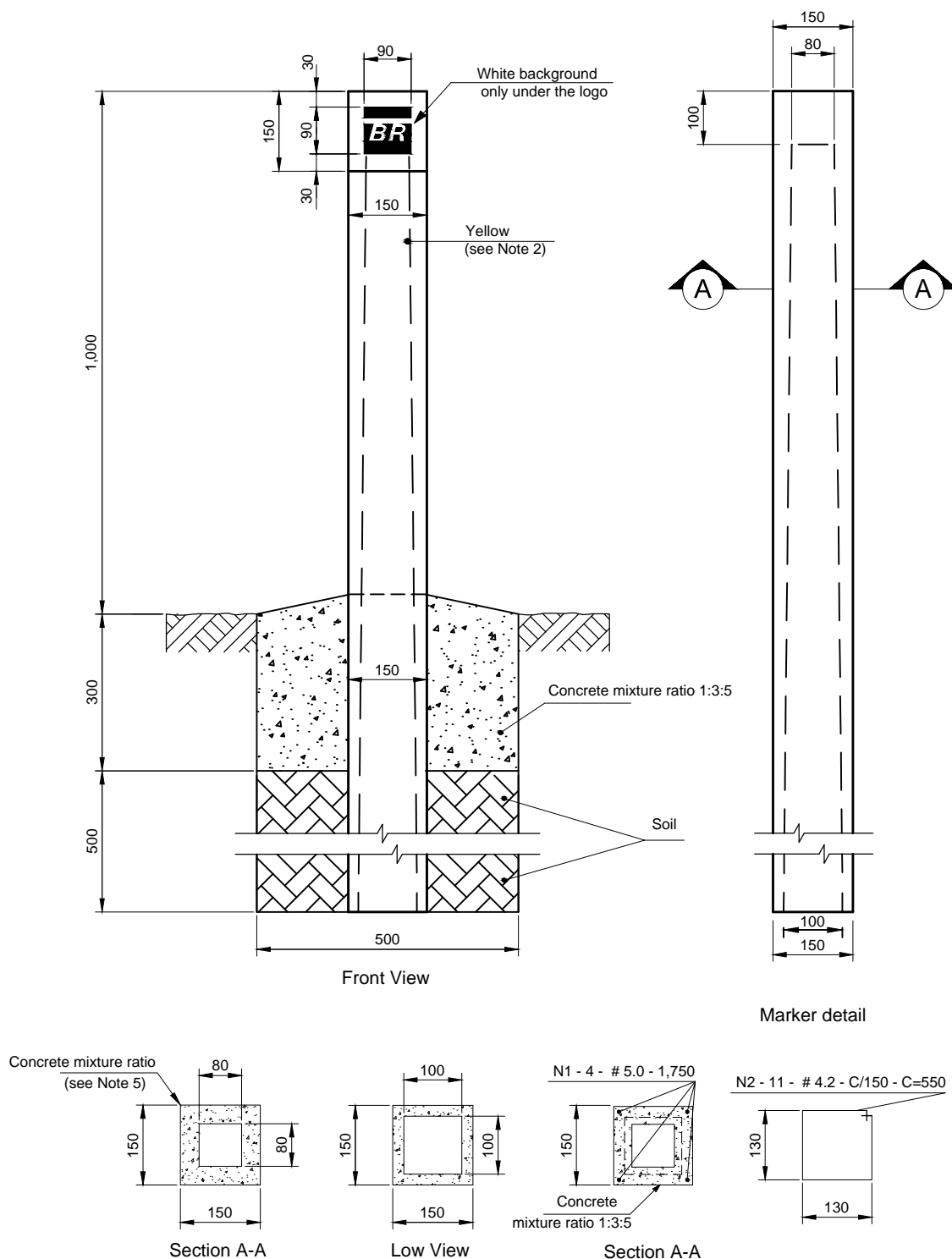
NOTE 2 The painting shall be applied on the four sides of the marker.

NOTE 3 Logo shall be applied only on one of the sides, facing to the side with the best visibility.

NOTE 4 See PETROBRAS Trademark Identity System for logo features.

Figure A.1.1 - Solid Section Right-of-Way Marker

Figure A.1 - Right-of-Way Marker



NOTE 1 Dimensions in millimeters, unless otherwise indicated.

NOTE 2 The painting shall be applied on the four sides of the marker.

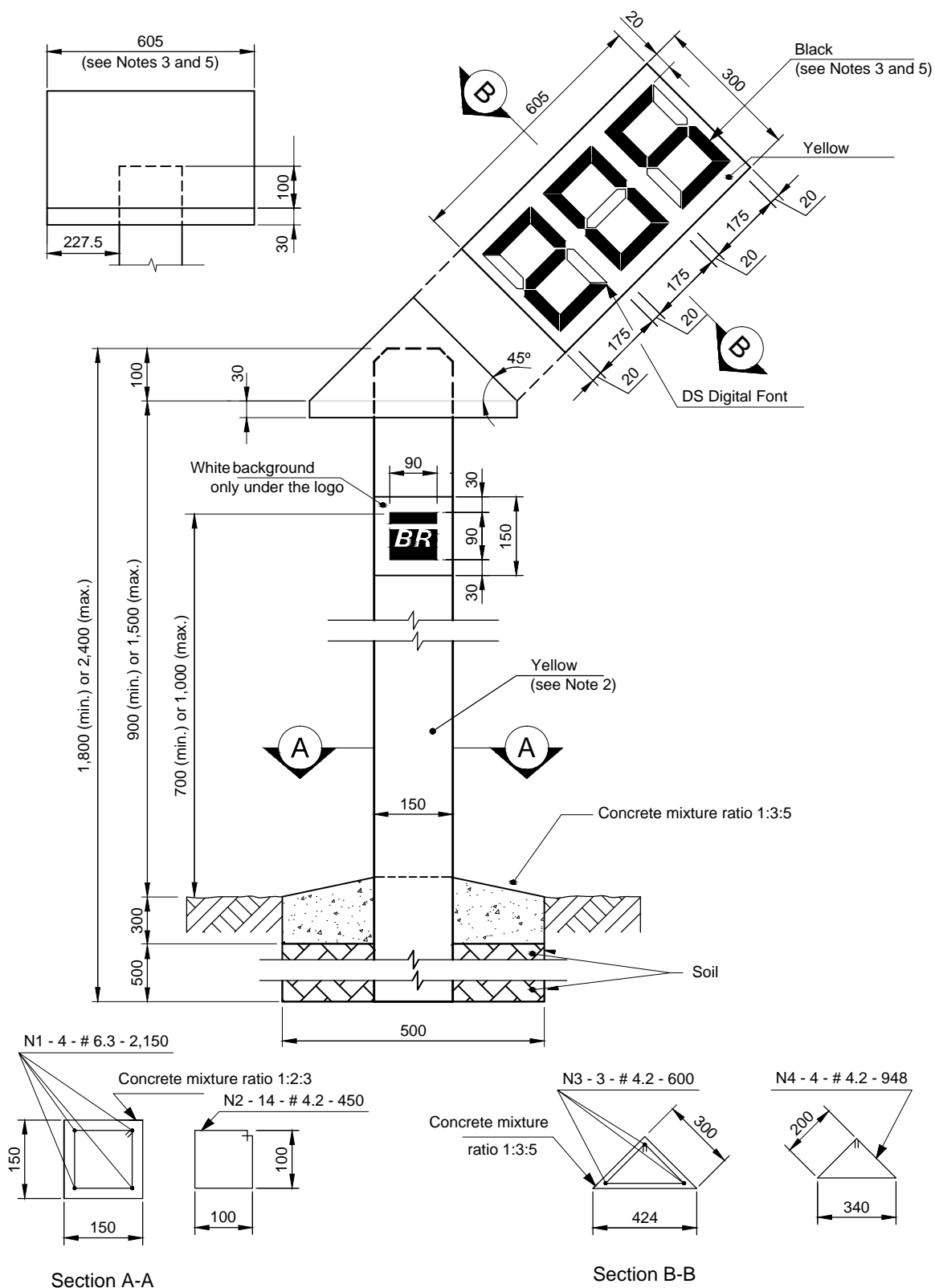
NOTE 3 Logo shall be applied only on one of the sides, facing to the side with the best visibility.

NOTE 4 See PETROBRAS Trademark Identity System for logo features.

NOTE 5 The marker shall be prepared so as the concrete compressive strength at 28 days be greater than or equal to 8 MPa. Recommended mixture ratio: 1:1.33:1.33, being 1 kg cement, 1.33 kg vermiculite and 1.33 kg crushed stone. Consider water-cement ratio = 1.

Figure A.1.2 - Hollow Section Right-of-Way Marker

Figure A.1 - Right-of-Way Marker



NOTE 1 Dimensions in millimeters, unless otherwise indicated.

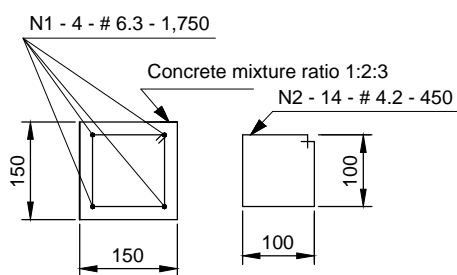
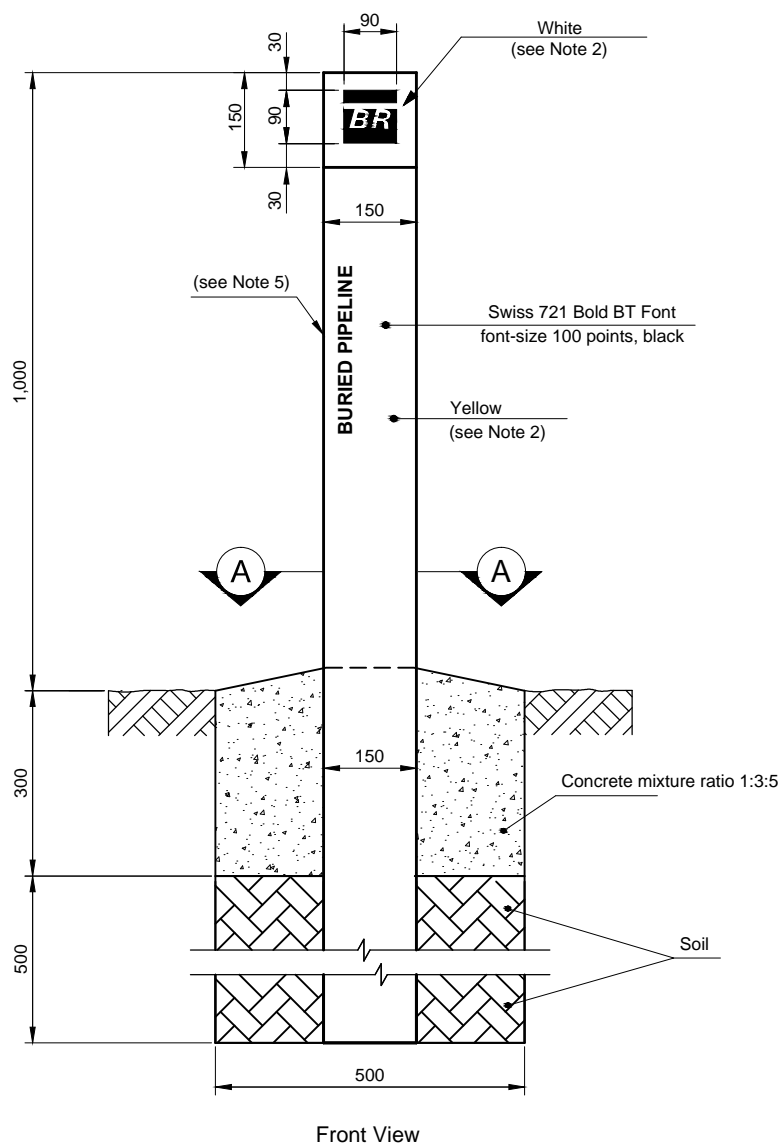
NOTE 2 The painting shall be applied on the four sides of the marker.

NOTE 3 The kilometer indication shall be applied on the two sides of the marker. Logo shall be applied only on one of the sides, facing to the side with the best visibility. See PETROBRAS Trademark Identity System for logo features.

NOTE 4 The bracket shall be attached to the marker with epoxy-based adhesive for concrete.

NOTE 5 The bracket can be of reinforced concrete with digital font letters in bas-relief effect or made of galvanized plate with 2 mm minimum thickness with digital font letters.

Figure A.2 - Aerial Patrol Marker



Section A-A

NOTE 1 Dimensions in millimeters, unless otherwise indicated.

NOTE 2 The painting shall be applied on the four sides of the marker.

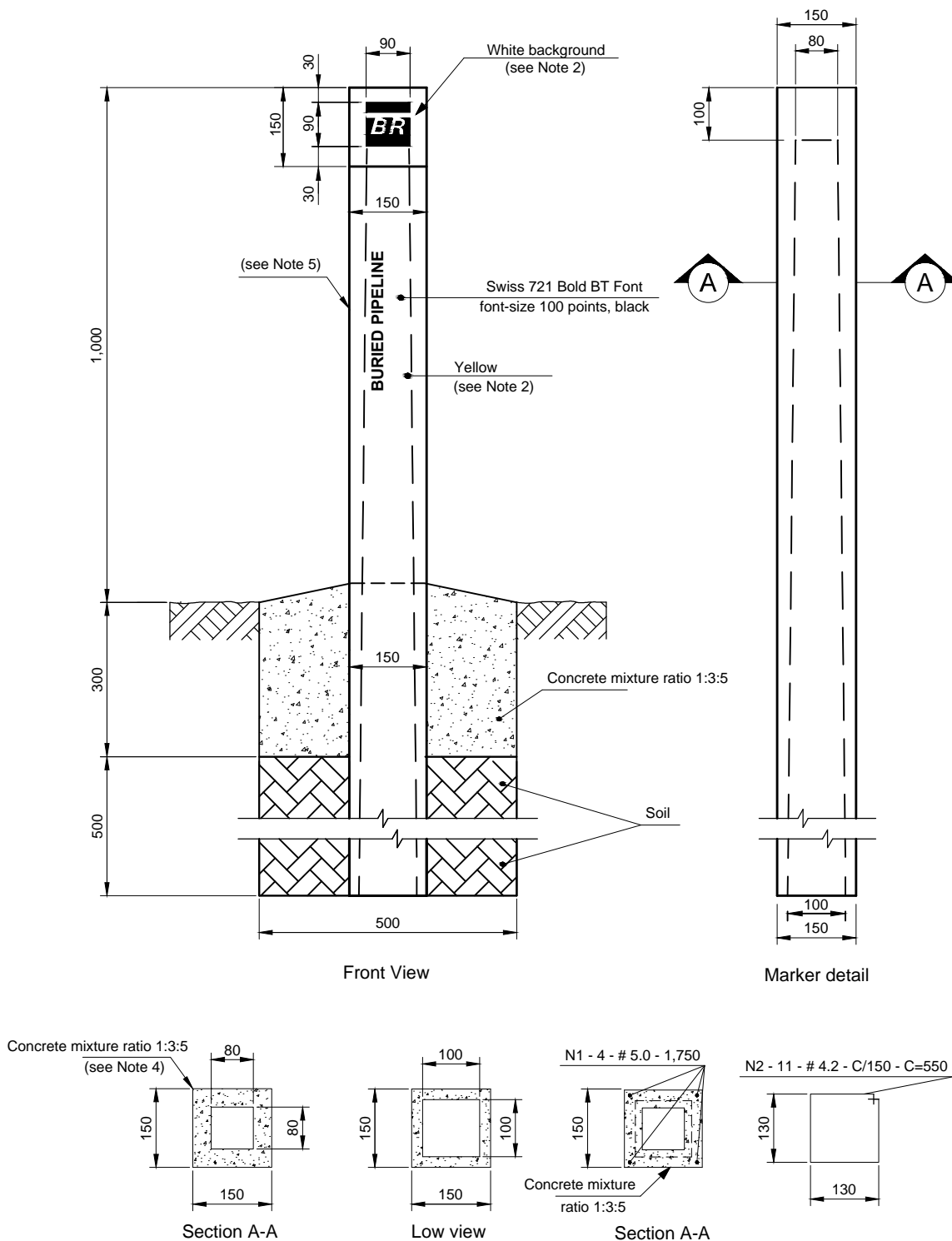
NOTE 3 Logo shall be applied only on one of the sides, facing to the side with the best visibility.

NOTE 4 See PETROBRAS Trademark Identity System for logo features.

NOTE 5 The following text shall be applied on two lateral sides to the logo: "DO NOT EXCAVATE", Swiss 721 Bold BT Font, font-size 100 points, black.

Figure A.3.1 - Solid Section Line Marker

Figure A.3 - Line Marker



NOTE 1 Dimensions in milimeters, unless otherwise indicated.

NOTE 2 The painting shall be applied on the four sides of the marker.

NOTE 3 Logo shall be applied only on one of the sides, facing to the side with the best visibility. See PETROBRAS Trademark Identity System for logo features.

NOTE 4 The marker shall be prepared so as the concrete compressive strength at 28 days be greater than or equal to 8 MPa. Recommended mixture ratio: 1:1.33:1.33, being 1 kg cement, 1.33 kg vermiculite and 1.33 kg crushed stone. Consider water-cement ratio = 1

NOTE 5 The following text shall be applied on two lateral sides to the logo: "DO NOT EXCAVATE", Swiss 721 Bold BT Font, font-size 100 points, black

Figure A.3.2 - Hollow Section Line Marker

Figure A.3 - Line Marker

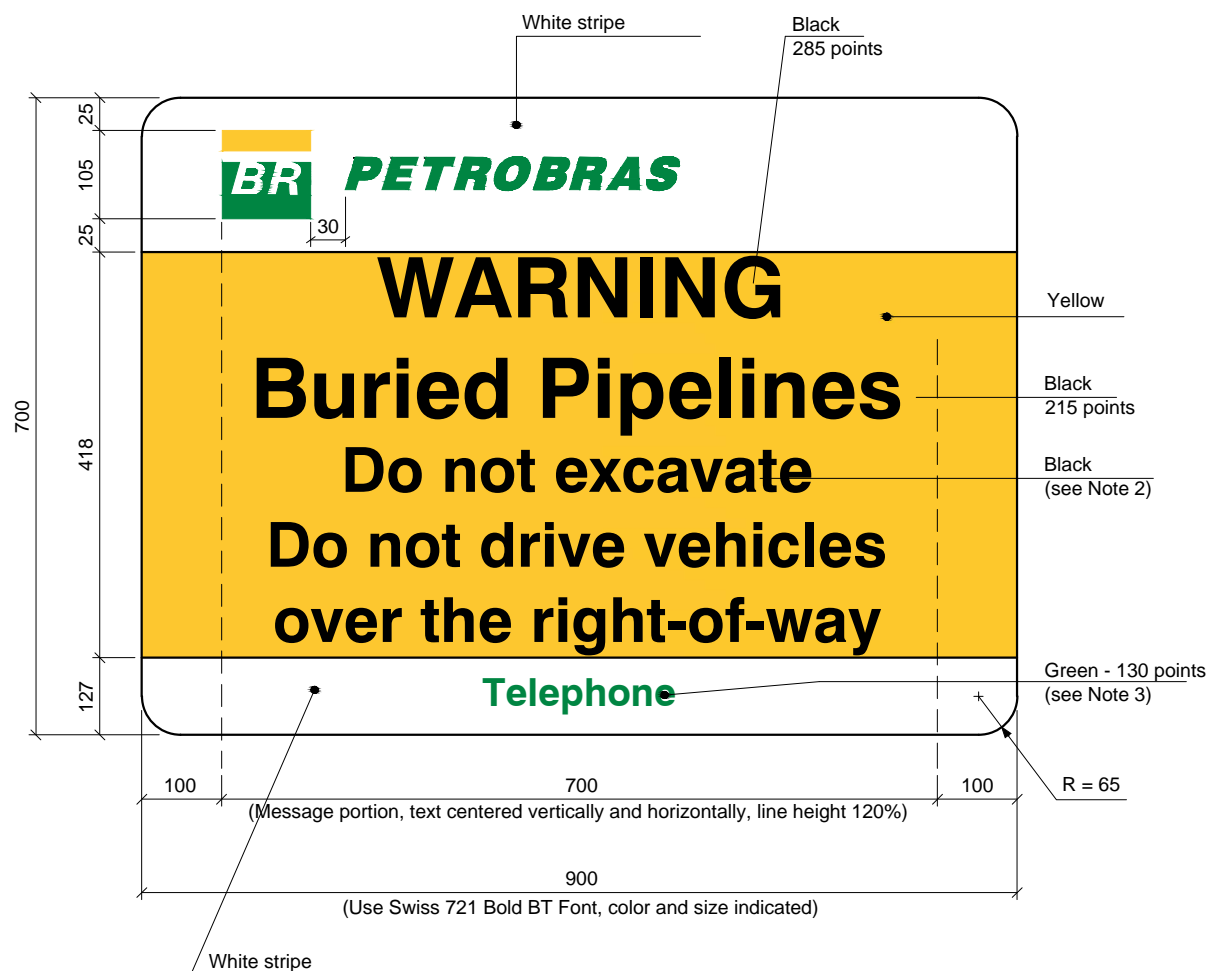
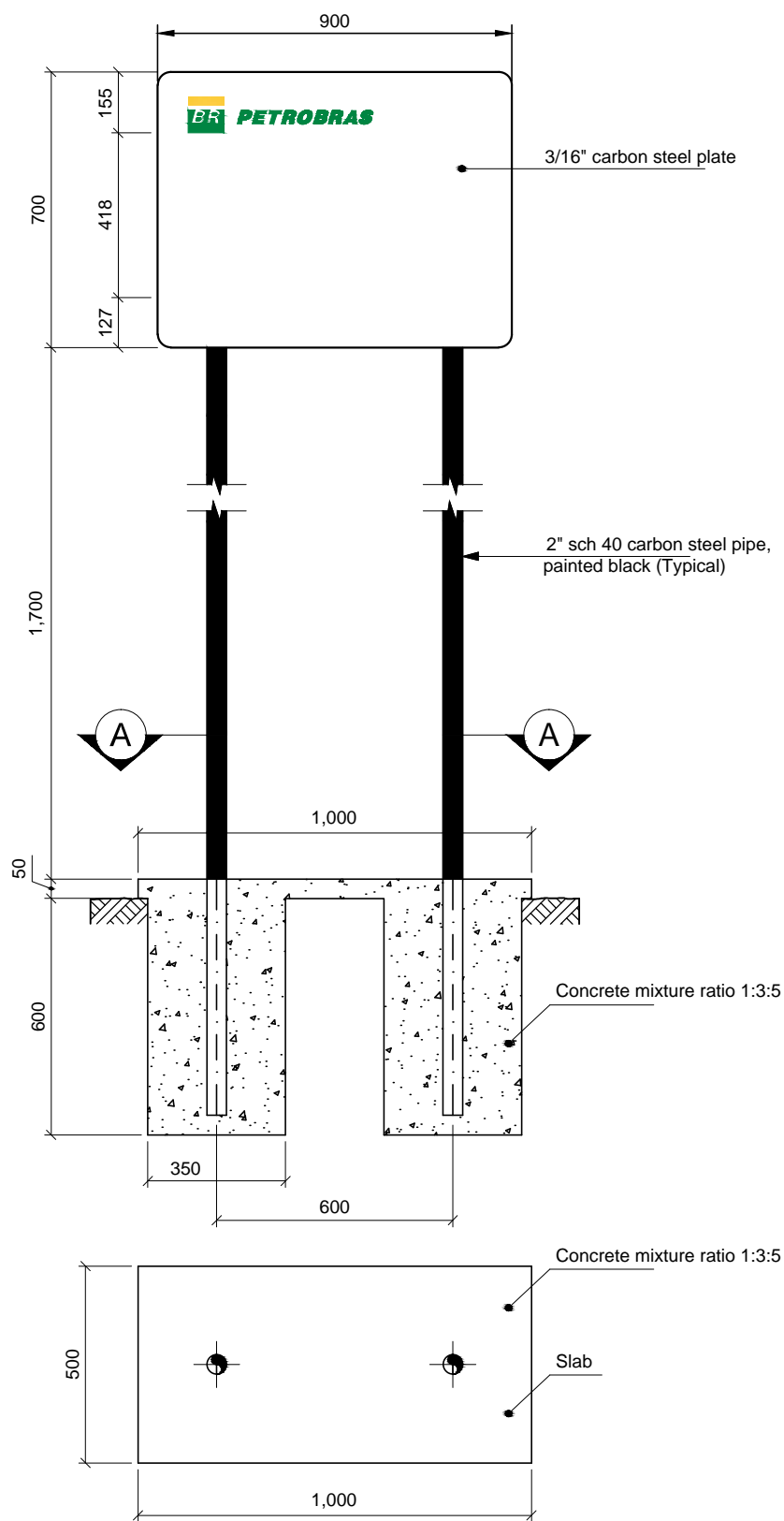


Figure A.4.1 - Graphic Features

Figure A.4 - Standard Sign - Type I



Section A-A

NOTA 1 Dimensions in millimeters, unless otherwise indicated.

NOTA 2 Logo shall be applied only on one or both sides. Whenever it is applied only on one side, the other one is totally painted black.

Figure A.4.2 - Support Details
Figure A.4 - Standard Sign - Type I

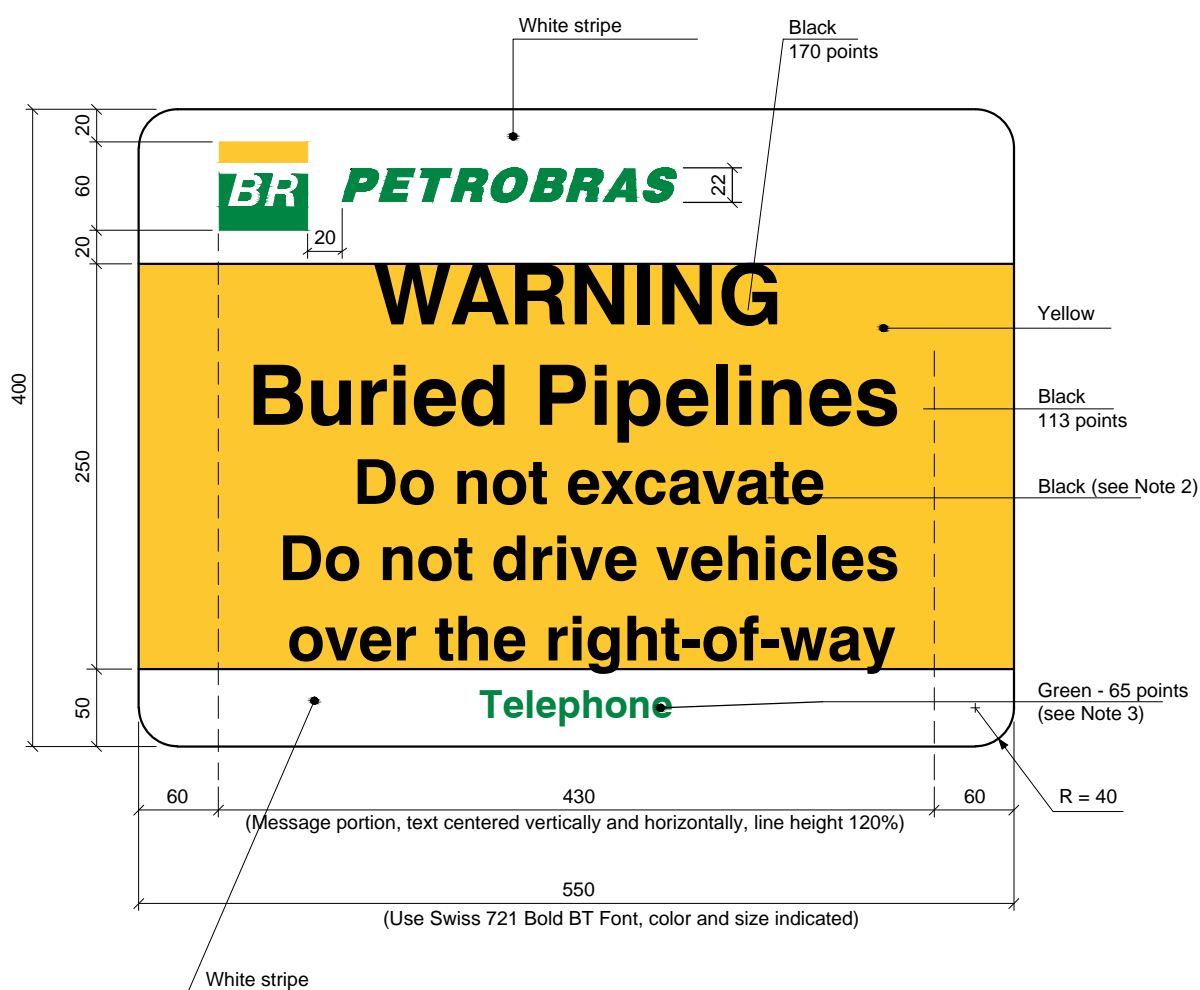
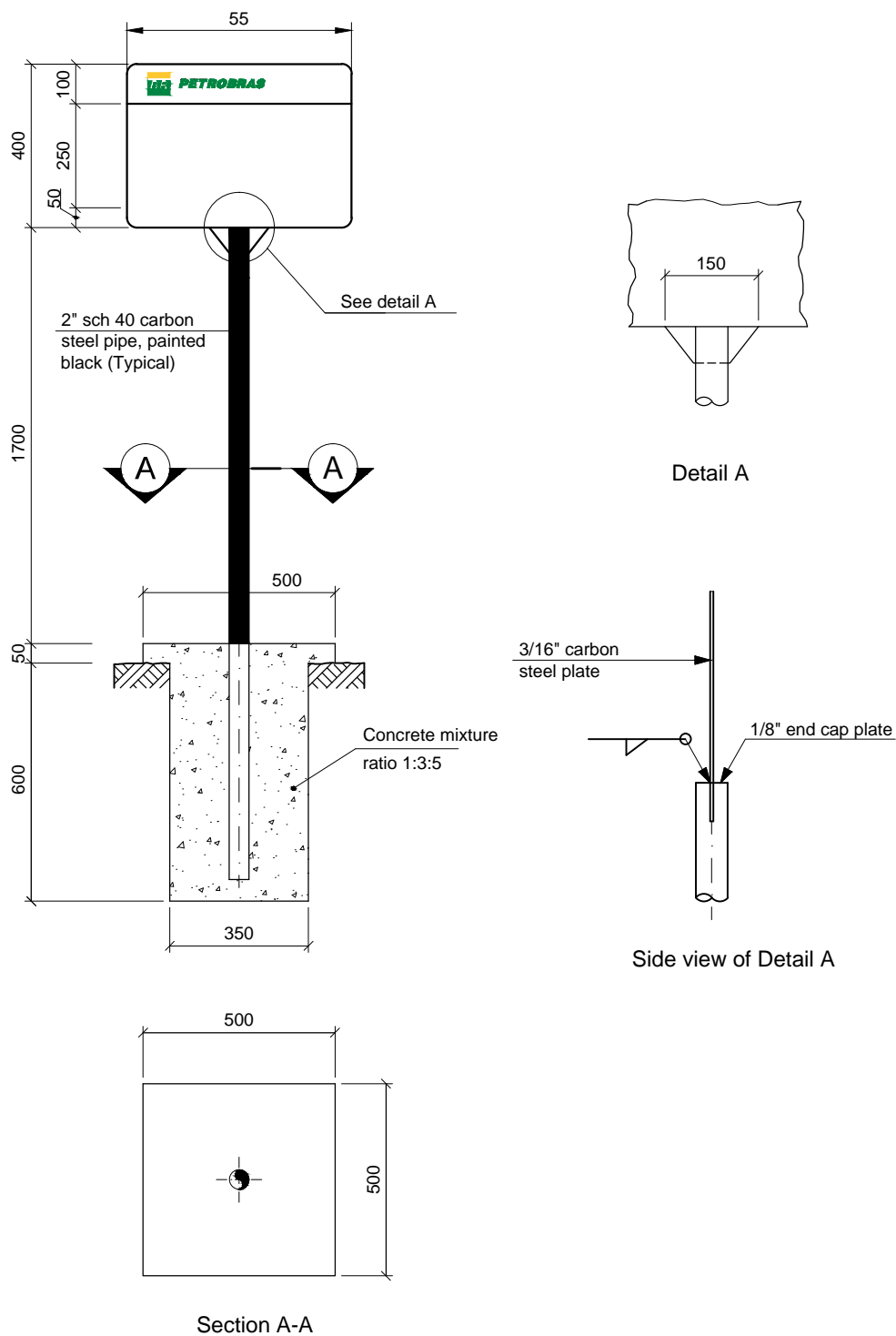


Figure A.5.1 - Graphic Features
Figure A.5 - Standard Sign -Type II

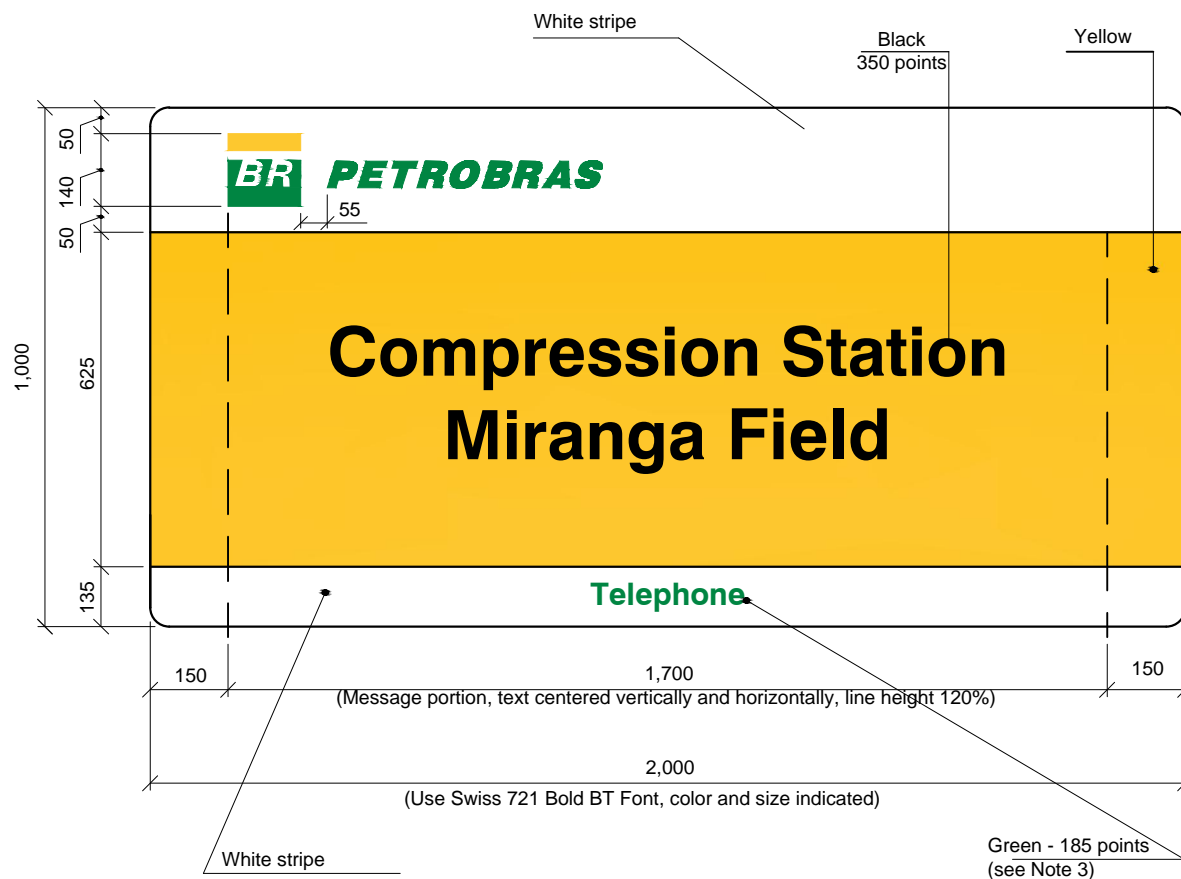


NOTE 1 Dimensions in milimeters, unless otherwise indicated.

NOTE 2 Logo shall be applied only on one or both sides. Whenever it is applied only on one side, the other one is totally painted black.

Figure A.5.2 - Support Details

Figure A.5 - Standard Sign - Type II

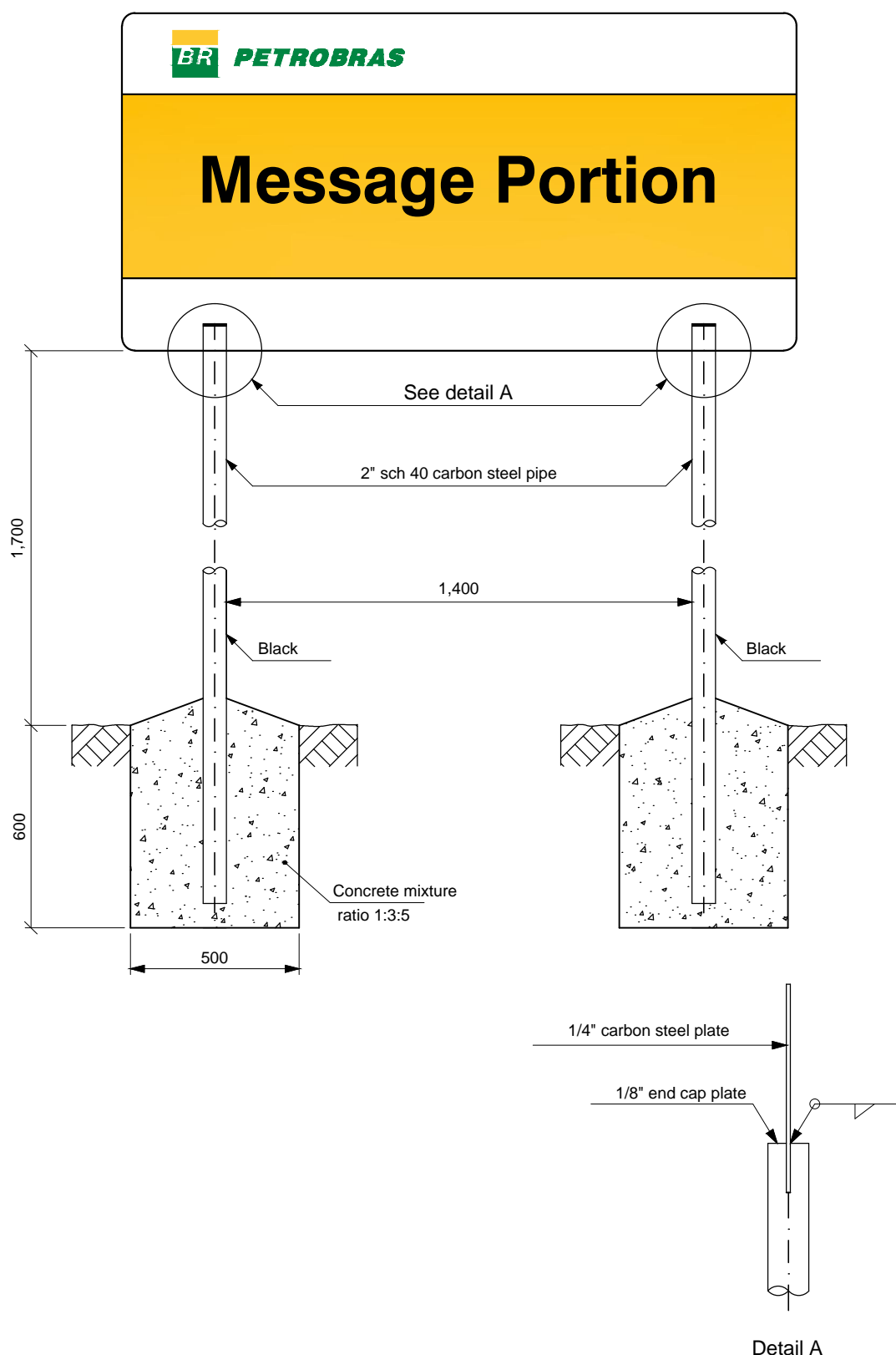


NOTE 1 Dimensions in millimeters, unless otherwise indicated.

NOTE 2 The font size is defined according to the message.

NOTE 3 Indicate the emergency telephone number of the operator.

Figure A.6.1 - Graphic Features
Figure A.6 - Standard Sign - Type III



NOTE 1 Dimensions in millimeters, unless otherwise indicated.

NOTE 2 Logo shall be applied only on one or both sides. Whenever it is applied only on one side, the other one is totally painted black.

Figure A.6.2 - Support Details

Figure A.6 - Standard Sign -Type III

ÍNDICE OF REVISIONS	
REV. A and B	
There is no index of revisions.	
REV. C	
Affected Parts	Description of the Alteration
1.2 to 1.4	Included
2	Revised
3	Revised
5.1.1.1	Revised
5.1.1.3	Included
5.1.2.1 and 5.1.2.2	Included
5.1.3 and 5.1.4	Included
5.2.1 up to 5.2.4	Revised
5.2.6	Revised
5.4.1.1 and 5.4.1.2	Revised
5.4.2	Included
5.4.3	Revised
FIGURE A-1 and A-2	Revised
FIGURE A-3 and A-4	Included
FIGURE A-5	Revised
FIGURE A-6	Included
FIGURE A-7	Renumbered
FIGURE A-8	Included
REV. D	
Affected Parts	Description of the Alteration
1.2	Revised
2 and 3	Revised
4.6, 4.7, 4.8, 4.9 and 4.10	New
5.2 and 5.3	Revised
5.3.1	Revised and Renumbered
5.3.2	Included
FIGUREs A.1 up to A.7	Revised

REV. E	
Affected Parts	Description of the Alteration
1.5 and 1.6	Included
2	Revised
4.4	Revised
5.1.1.1	Inclusion of enumeration e)
5.1.3	Revised and inclusion of enumeration d)
5.2 and 5.2.2.1	Revised
5.2.3.3	Removed
5.2.4	Revised and inclusion of Example 5
FIGURE A.1	Revised (dimension corrected from 15 to 150)
FIGURE A.3	Revised (included symbol BR), inclusion of Note 3 and renumbering of Note 4
FIGURE A.6	Revised
FIGURE A.7	Removed
REV. F	
Affected Parts	Description of the Alteration
4.11	Included
5.2.1.2	Revised
Figure A.1	Revised and altered to Figure A.1.1
Figure A.1.2	Included
Figure A.2	Revised
Figure A.3	Revised and altered to Figure A.3.1
Figure A.3.2	Included

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pipeline that branches off of the main line

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right-of-way sections

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route variation

route section that starts and ends on main route

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