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NCWG Letter 10/2024

To: NCWG Members

17 December 2024

New Symbols for S-101 Anchorage Areas (Action NCWG10/14)

Dear Colleagues,

US and others worked further on NCWG10 agenda item 6.9 New Symbols for S-101 Anchorage Areas. Attached you will find the revision and the annexes. As this is not a new subject, the response time is 6 weeks.

Reply using the response form at Annex D, **no later than 31 January 2025**. I ask you to use the 'Reply to all' option for responses, to ensure the full Working Group membership is aware of developing discussions.

Yours sincerely,



Mikko Hovi

Chair NCWG

Attachments:

- Annex A: New Symbols for S-101 Anchorage Areas Revision 2
- Annex B: Proposed New Symbols
- Annex C: Engineering Diagrams
- Annex D: NCWG Letter 10/2024 Response Form

- Comments in [blue](#)
- Changes from the original paper in [green](#)

New Symbols for S-101 Anchorage Areas [Revision 2](#)

Submitted by:	United States (NOAA)
Executive Summary:	Symbols for the portrayal of several S-101 Anchorage Area categories are proposed for consideration by NCWG to subsequently recommend for adoption by the S-101 Project Team.
Related Documents:	<ul style="list-style-type: none"> • NCWG9-05-14.A, “S-101 Portrayal Proposals,” submitted by the Australian Hydrographic Office, S-101 Portrayal Sub-Working Group Lead • NCWG10-06-6.A, “Action 8 to 11 – NCWG9,” submitted by Service Hydrographique et Océanographique de la Marine • NCWG9 (Nov 2023 – Taunton) Meeting Minutes and Actions • S-4, Sections B-431.1, B-431.3, and B-431.7 • S-65, Annex B, S-57 ENC to S-101 Conversion Guidance, Edition 1.2.0 – April 2024 • S-101 ENC Product Specification, Annex A, Data Classification and Encoding Guide (DCEG), Edition 1.2.0 – November 2023 • IHO Geospatial Information Registry, IHO Hydro Portrayal Register
Related Projects:	Development of S-101 ENC portrayal in ECDIS S-4 Document maintenance

Introduction / Background

This paper fulfils **NCWG ACTION 9/15**, “US volunteered to review the S-4 content regarding anchorage symbols and consider the requirements for new symbols [for S-101] for the categories that would require a specific symbol.”

Refining the portrayal of the various types of anchorage areas was suggested by the S-101 Portrayal Sub-Working Group, which brought the issue to NCWG in the paper, [NCWG9-05-14.A](#), “S-101 Portrayal Proposals.” The general consensus at NCWG9 was that if there was a suitable symbol that could be used to augment the existing generic S-101 anchorage symbol, this would help to more readily identify the type of anchorage for the mariner and reduce the need for a pick-report. IHO INT1 Sections F “Ports” and N “Areas, Limits,” as well as relevant sections of S-4 and the S-101 Data Classification and Encoding Guide (DCEG) were reviewed to identify all the anchorage area types and to evaluate potential symbols to be used to enhance the portrayal of S-101 anchorage areas.

[At NCWG10](#), it was decided that modifications to the proposal were necessary. This included the revision of two S-101 anchorage symbols for improved clarity, the deprecation of the INT1 N12.6 symbol from S-4 and INT1, a recommendation to be brought forth to the S-101 Project Team to remove the category of anchorage attribute value #9: *anchorage for periods up to 24 Hours*, and a suggestion to add an attribute the anchorage area geo object to allow the maximum length of anchorage time to be encoded directly.

Analysis/Discussion

All eleven *category of anchorage* attribute values identified in the S-101 DCEG for Anchorage Area were evaluated for possible augmented symbology.

Table 1. S-101 category of anchorage attribute values

1: unrestricted anchorage
2: deep water anchorage
3: tanker anchorage
5: quarantine anchorage
6: seaplane anchorage

7: small craft anchorage
9: anchorage for periods up to 24 Hours
10: anchorage for a limited period of time
14: waiting anchorage
15: reported anchorage [point only]

S-4, Section B-431.3 shows unique symbols corresponding to S-101 category of anchorage 1, 2, 3, 5, and 9 – marked in bold text in Table 1. These categories correspond to the S-4, INT1 symbols for anchorage areas, N12.1, N12.4, N12.5, N12.8, and N12.6, respectively, as shown in Figure 1.

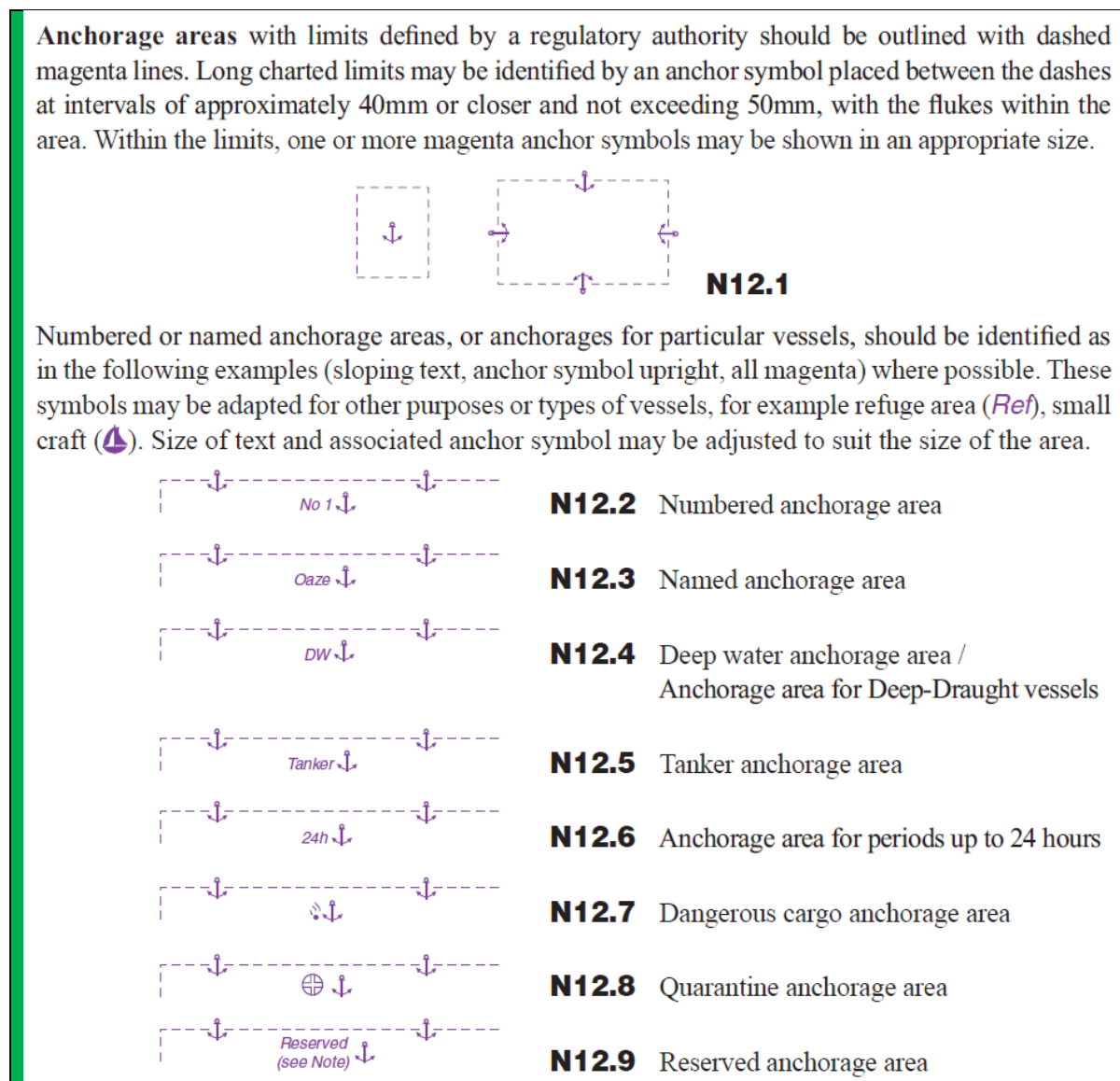


Figure 1. S-4, Section B-431.3 showing symbols for various types of anchorages

The DCEG lists 15 category of cargo attribute values. Only #7: *dangerous or hazardous*, which S-101 uses instead of the S-57 CATACH value #4: *explosives anchorage*, was considered for augmented symbology. This corresponds to S-4, INT1 symbol N12.7 shown in Figure 1.

Table 2. S-101 category of cargo attribute values

1: bulk
2: container
3: general
4: liquid

5: passenger
6: livestock
7: dangerous or hazardous
8: heavy lift
9: ballast
10: dry bulk cargo
11: liquid bulk cargo
12: reefer container cargo
13: Ro-Ro cargo
14: project cargo
15: break bulk cargo

The DCEG lists 9 *status* attribute values. Only #6: *reserved*, was considered for augmented symbology. This corresponds to S-4, INT1 symbol N12.9 shown in Figure 1.

Table 3. S-101 status attribute values

1: permanent
2: occasional
3: recommended
5: periodic/intermittent
6: reserved
7: temporary
8: private
9: mandatory
14: public





The augmented symbols shown in the “Proposed S-101 Centred Symbol” column of Table 4 were derived from the symbols shown in the “Symbol Source” column. Additional information is provided in the S-101 Encoding, INT1, and S-4 Section columns. Notes shown below the table provide more information about the lineage of each augmented symbol.

Proposed symbol component sizes generally conform with those specified in engineering drawings in the S-52 Presentation Library Addendum and the IHO Hydro Portrayal Register for S-101 symbols. For example, the centred anchorage area symbol (ACHARE51) is 13.04 mm high and the diameter of the circle enclosing the dangerous cargo symbol (ANCBNG2) is 5.0 mm. The engineering drawings for each are shown in Annex C. These sizes were used as a model for all other augmented symbols. That is, all of the secondary symbols are 5.0 mm high (even if S-52 or the S-101 Portrayal Register specifies a slightly different height) and the main ACHARE51 symbol is 13 mm high. The text *legends* shown in the proposed symbols is also 5.0 mm high (about 14-point text). This is acceptable for short labels, such as *DW* and *WA*, but a smaller text size might be considered for the *TANKER* or *RESERVED* legends lest the text extend too far and contribute to clutter.



An example of the relative symbol component sizes is shown at true scale in Figure 2. Unlike paired point symbols, such as those used for anchorage berth for dangerous cargo, which places two similar size symbols side-by-side, we recommend that for areas, the smaller, secondary symbol be placed to the upper left of the larger main symbol. Besides the larger size of the main symbol, this placement can also help to differentiate these paired symbols as portraying an area and not a point.



Figure 2. Dangerous/hazardous anchorage area centred symbol

Table 4 only shows proposed symbols for anchorage areas to augment the generic centred anchorage  symbol. The same logic could be applied to augment the anchor berth  (ACHBRT07) symbol, as has already been done for the anchorage berth for dangerous cargo   (ANCBNG2) symbol.

There is a hierarchy or logic that must be developed for some symbols that do not depend on the category of cargo attribute value.

- If an anchorage category of cargo = 7: dangerous or hazardous, then would make sense that the symbol would always be used regardless of any other attribution? 
- A determination needs to be made as to when the reserved  symbol should be used, if the anchorage status = 6: reserved. Given the other types of anchorage areas, when, if ever, should the reserved legend be used instead of the other secondary symbols?

Conclusions

INT1 symbols specified in S-4 and symbols in the IHO Hydro Portrayal Register provide acceptable symbol components to join with the existing anchorage area centred symbol, ACHARE51 to create augmented symbols suitable to more definitively portray various types of anchorage areas. A new “clock” graphic and new WA legend proposed in NCWG10-06.6A provide a distinction between an anchorage “for a limited period of time” and a “waiting anchorage.” Discussions about temporary anchorages during NCWG10 led to a question of whether a differentiation between an anchorage “for periods up to 24 hours” and an anchorage “for a limited period of time” is necessary.

Recommendations

NCWG

The NCWG should consider the proposed augmented symbols for portraying S-101 anchorage areas, shown in Table 4., and make recommendations to implement these or modified versions of these symbols by the S-101 Portrayal Sub-Working Group. NCWG should also consider the utility of adopting a clock graphic to identify areas for anchorage “for a limited period of time,” and the WA legend for “waiting anchorages.”

The balance between legibility and potentially long text strings contributing to clutter in the chart display should be considered and an appropriate text size for TANKER and RESERVED legends should be considered.

INT1

Figure 3 depicts the proposed changes to symbol records featured INT1. There is a need for new symbol records for an anchorage “for a limited period of time” and for a “waiting anchorage” in Section N: Areas, Limits. Additionally, the record N12.6, anchorage area for periods up to 24 hours ^{24h} ⚓ should be marked as obsolescent.

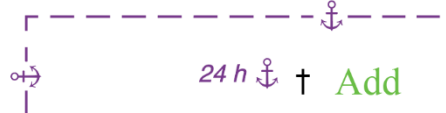


	12.6		Anchorage area for periods up to 24 hours
Add }	12.10		Anchorage area for a limited period of time
	12.11		Waiting anchorage

Figure 3. INT1, Section N showing recommended changes

S-4

This proposal impacts the language and the figures found within S-4, Section B-431.3 captured in Figure 4.

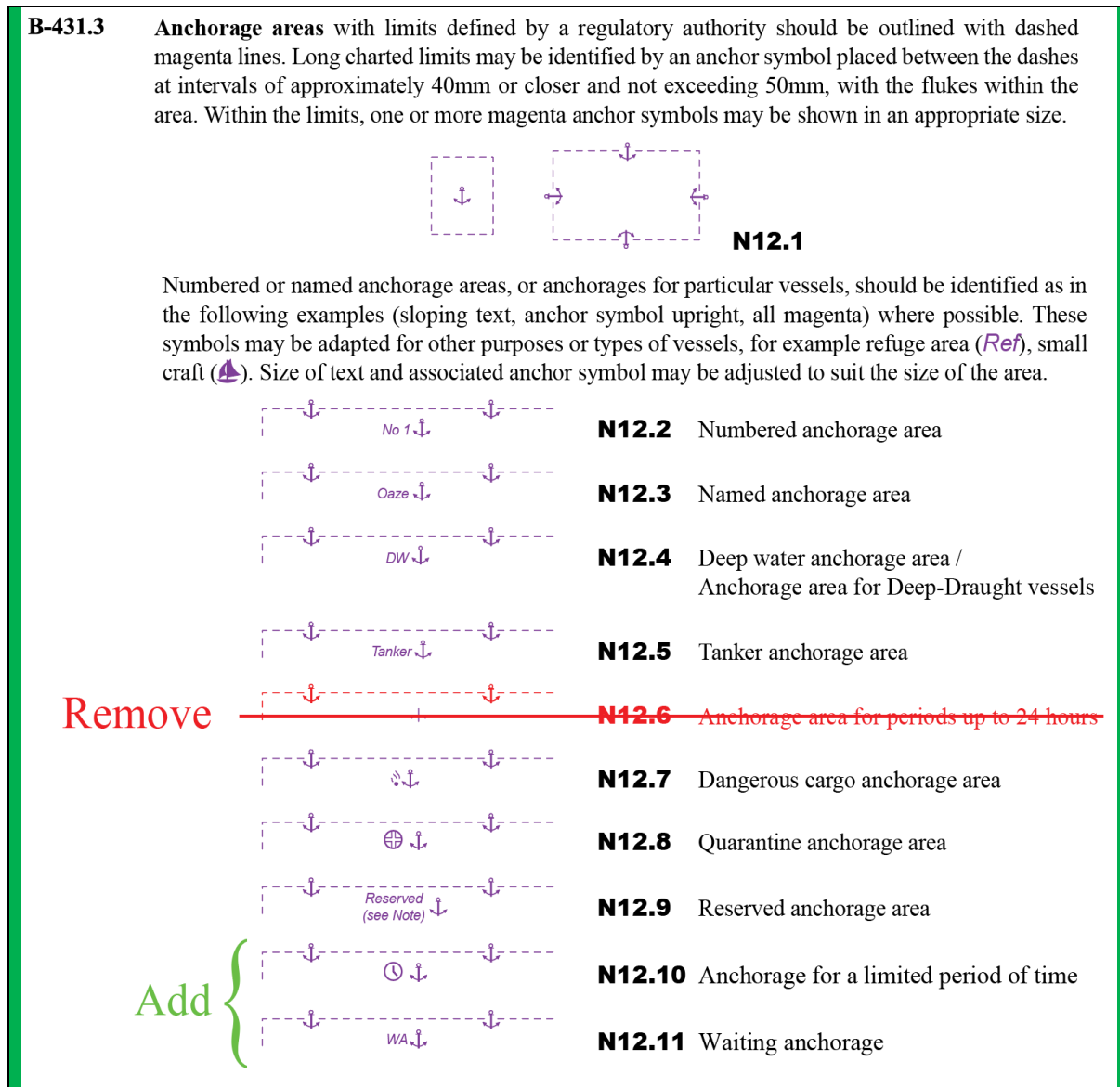


Figure 4. S-4, Section B-431.3 showing recommended changes

S-101 Project Team

During the NCWG10 discussion on this topic, the working group concluded that the S-101 encodings for category of anchorage #9: anchorage for periods up to 24 hours and #10: anchorage for a limited period of time were potentially redundant.

Therefore, this paper recommends the deprecation of category of anchorage #9: anchorage for periods up to 24 hours in DCEG Clause 16.9 Anchorage area, and requests the S-101 Project Team consider adding a new integer-type attribute to anchorage area geo feature to allow attribution for the maximum length of anchorage time in hours.

S-101 Portrayal Sub-working Group

The S-101 Portrayal Sub-working Group should consider the merits of using the proposed augmented symbols anchorage areas and analogous application for anchorage berths. The sub-working group should also establish the hierarchy or logic to be applied for use of the reserved anchorage symbol and the dangerous or hazardous cargo anchorage areas.

Justification and Impacts

Adopting augmented symbols for the portrayal of S-101 anchorage areas will make the purpose of various anchorages more apparent to mariners and provide more uniformity with the symbols used on paper charts. Discussion on this topic during NCWG10 led to further recommendations on S-101 attribution which will eliminate redundant encoding in the S-101 Electronic Navigational Chart standard.

Action Required of NCWG

The NCWG is invited to:

- a. note the paper and follow the recommendations noted above, which include,
- b. considering the proposed augmented symbols for portraying S-101 anchorage areas, and anchorage berths shown in Table 4. and make a recommendation to the S-101 Portrayal Sub-working Group to implement these or modified versions of these symbols,
- c. and considering making a recommendation to the S-101 Project Team to remove category of anchorage #9: anchorage for periods up to 24 hours from the allowable S-101 anchorage area geo feature encodings, as well as create a new integer attribute to encode the maximum length of anchorage time.

At NCWG10, members endorsed the recommendation to the S-101 Project Team to remove Category of Anchorage #9 and add an attribute to encode the length of anchorage time.

- d. and considering the addition of a clock symbol component in S-4 and INT1 to portray areas for anchorage “for a limited period of time” and the legend “WA” for “waiting anchorages” on paper charts,











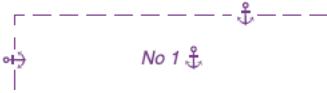
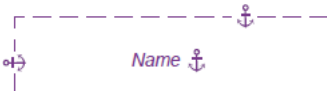

At NCWG 10 agenda item 06.6, members approved the use of “WA” as legend.

- e. and consider denoting the “for periods up to 24 hours” symbol component in S-4 and INT1 as obsolete.

Annex B – Proposed New Symbols

Table 4. Proposed augmented symbols for various types of anchorage areas

Note	S-101 Encoding	INT1	S-4 Section	INT1	Proposed S-101 Centred Symbol	Symbol Sources
1,7	anchorage area category of anchorage = 1 unrestricted anchorage	N12.1 Anchorage area in general	B-431.3			ACHARE51 Anchorage area
1,4	anchorage area category of anchorage = 2 deep water anchorage	N12.4 Deep water anchorage area, Anchorage area for deep draft vessels	B-431.3			ACHARE51 + DWRTP51 Part of deep water route
1,4	anchorage area category of anchorage = 3 tanker anchorage	N12.5 Tanker anchorage area	B-431.3			ACHARE51 + text
1	anchorage area category of anchorage = 5 quarantine anchorage	N12.8 Quarantine anchorage area	B-431.3			ACHARE51 + INT1 N12.8 Quarantine anchorage area
2	anchorage area [POINT] category of anchorage = 6 seaplane anchorage	N14 Anchorage for seaplanes	B-449.6			ACHARE02 + INT1 N14 Anchorage for seaplanes
2	anchorage area category of anchorage = 6 seaplane anchorage	N13 Seaplane operating area	B-449.6			ACHARE51 + INT1 N13 Seaplane operating area
3	anchorage area category of anchorage = 7 small craft anchorage	F11.2 Yacht berths without facilities				ACHARE51 + INT1 F11.2 Yacht berths without facilities
8	anchorage area category of anchorage = 9 anchorage for periods up to 24 Hours	N12.6 Anchorage area for periods up to 24 hours				ACHARE51 + text

5	anchorage area category of anchorage = 10 anchorage for a limited period of time	None	None	None		ACHARE51 + clock
4,5	anchorage area category of anchorage = 14 waiting anchorage	None	None	None		ACHARE51 + text
7	anchorage area [POINT] category of anchorage = 15 reported anchorage	N10 Reported anchorage (no defined limits)	B-431.1			ACHARE03 Reported Anchorage
7	anchorage area [POINT] category of anchorage = 1 unrestricted anchorage	N10 Reported anchorage (no defined limits)	B-431.1			ACHARE02 Anchorage area as a point at small scale
1	anchorage area category of cargo = 7 dangerous or hazardous	N12.7 Dangerous cargo anchorage area	B-431.3			ACHARE51 + BRTHDNG2 Dangerous or Hazardous Cargo
1,4	anchorage area status = 6 reserved	N12.9 Reserved anchorage area	B-431.3			ACHARE51 + text
6	anchorage area category of anchorage = unrestricted anchorage name <> NULL	N12.2 Numbered anchorage area	B-431.3			ACHARE51
6	anchorage area category of anchorage = unrestricted anchorage name <> NULL	N12.3 Named anchorage area	B-431.3			ACHARE51

Notes:

1. Based on existing S-4 INT1 symbol for the same feature.
2. Based on an existing S-4 INT symbol for a related feature (seaplane operating area > sea plane anchorage area).
3. Based on an existing S-4 INT symbol for a related feature (yacht berths without facilities > small craft anchorage area).
4. Text based symbols
5. New S-4 INT symbol.
6. Object name and/or designation number text would be labelled through S-101 Portrayal methods.
7. These S-101 symbols already exist. They are included here for the sake of completeness.
8. INT1 symbol N12.6 should be marked obsolete.

Annex C – Engineering Diagrams

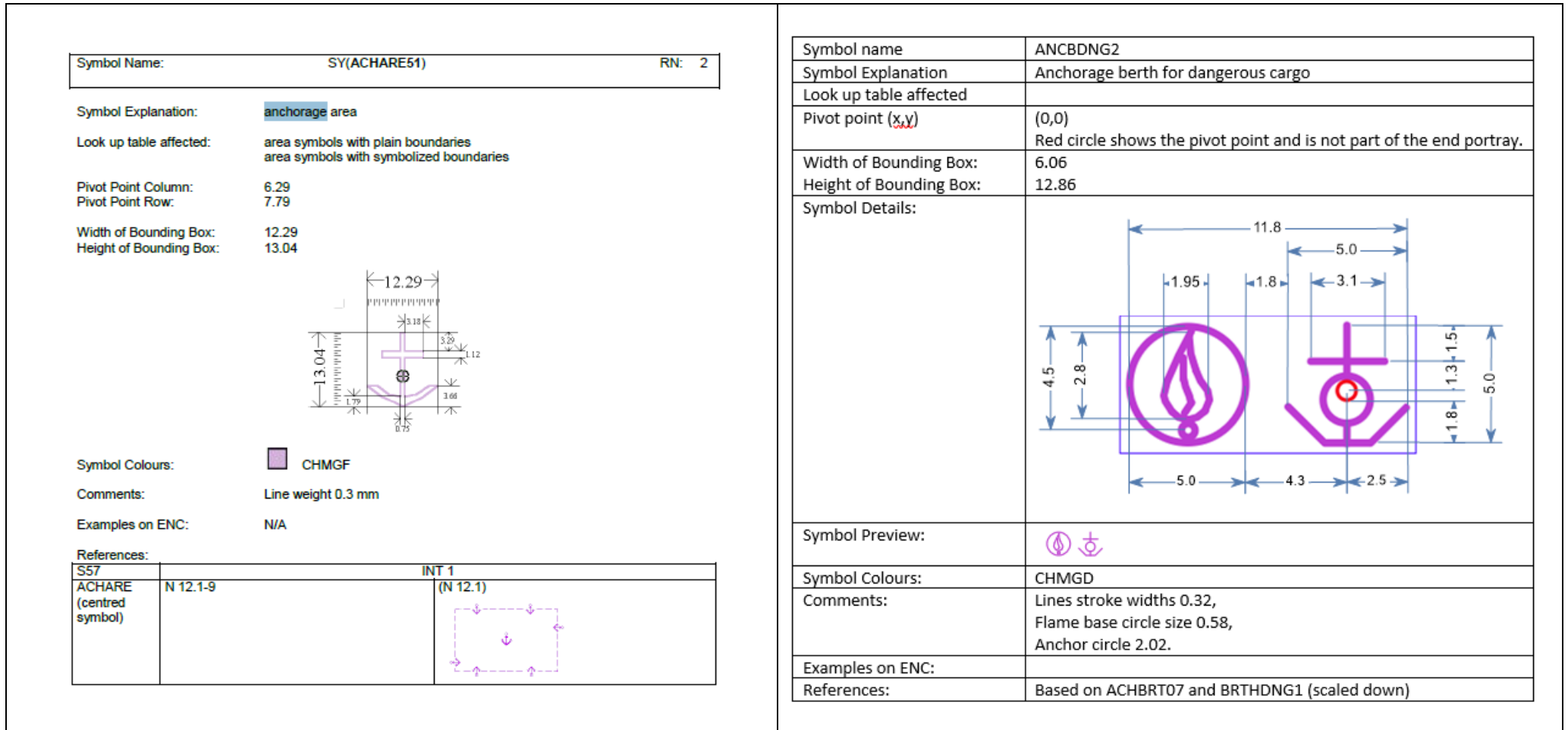


Figure 5. Engineering drawings for S-52 symbol ACHARE51 and S-101 symbol ANCBNG2