

ICC-ES Evaluation Report

ESR-4013

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This report also contains:

- [CA Supplement](#)

Subject to renewal October 2025

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<p>DIVISION: 03 00 00 — CONCRETE</p> <p>Section: 03 21 00 — Reinforcement Bars</p>	<p>REPORT HOLDER: SPLICE SLEEVE JAPAN, LTD.</p>	<p>EVALUATION SUBJECT: NMB SLIM-SLEEVE™ FACD1200 SYSTEMS FOR CONNECTING HIGH-STRENGTH STEEL REINFORCING BARS</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018, 2015, 2012 and 2009 [International Building Code® \(IBC\)](#)
- 2018, 2015, 2012 and 2009 [International Residential Code® \(IRC\)](#)

Property evaluated:

Structural

2.0 USES

The Splice Sleeve Japan, Ltd. (SSJL), NMB Slim-Sleeve™ FACD1200 systems are used as mechanical splices of uncoated, deformed, high-strength non-prestressed steel reinforcing bars in reinforced concrete construction. The NMB Slim-Sleeve FACD1200 systems comply with Section 25.5.7 of ACI 318-14 under the 2018 and 2015 IBC (Section 12.14.3.2 of ACI 318-11 and -08 for the 2012 IBC and 2009 IBC, respectively) for use as tension and compression mechanical connections of deformed, high-strength steel reinforcing bars. The NMB Slim-Sleeve FACD1200 systems comply with the performance requirements in ACI 318-14 Sections 25.5.7.1 and 18.2.7.1 for Type 1 and Type 2 mechanical splices respectively, under the 2018 and 2015 IBC, as applicable (ACI 318-11 Sections 12.14.3.2 and 21.1.6.1 for Type 1 and Type 2 mechanical splices respectively, under the 2012 IBC; ACI 318-08 Sections 12.14.3.2 and 21.1.6.1 for Type 1 and Type 2 mechanical splices respectively, under the 2009 IBC); except that use of the Slim-Sleeve FACD1200 systems in Earthquake-Resistant Structures, as described in ACI 318-14 Chapter 18 under the 2018 and 2015 IBC (ACI 318-11 and -08 Chapter 21 under the 2012 IBC and 2009 IBC respectively), must comply with Section 5.6 of this evaluation report for the 2018 and 2015 IBC (Section 5.7 of this evaluation report for the 2012 IBC, and Section 5.8 of this evaluation report for the 2009 IBC).

The Splice Sleeve Japan, Ltd. (SSJL), NMB Slim-Sleeve™ FACD1200 systems may also be used where an engineered design is submitted in accordance with Section R301.1.3 of the IRC.

3.0 DESCRIPTION

3.1 General:

Each NMB Slim-Sleeve FACD1200 system consists of the following four components: one NMB Slim-Sleeve FACD1200 coupler (or sleeve), two equal size uncoated, deformed, high-strength steel reinforcing bars, and SS Mortar 150N cementitious grout used to fill the annular space between the high-strength reinforcing bars

and the inside of the coupler. Components of NMB Slim-Sleeve FACD1200 systems are described in Sections 3.2 through 3.4.

3.2 NMB Slim-Sleeve™ FACD1200 Couplers:

The NMB Slim-Sleeve FACD1200 couplers consist of symmetrical, straight steel cylinders. Each coupler has an inlet for grout to be pumped into the inside of the coupler, and an outlet for grout to flow out of the coupler to indicate that the annular space between the high-strength steel reinforcing bars and the inside of the coupler is completely full of grout. The midsection of the interior of the coupler is provided with a rebar stop that establishes the proper embedment of the high-strength steel reinforcing bars. The couplers are iron castings manufactured in accordance with JIS G5503, Grade FACD1200-2 [minimum yield and tensile strengths of 130.5 and 174.0 ksi (900 and 1200 MPa) respectively] for all coupler sizes. The NMB Slim-Sleeve FACD1200 coupler configuration and dimensions, and the required high-strength steel reinforcing bar embedment lengths, are provided in [Figure 1](#) and [Tables 1](#) and [2](#).

3.3 SS Mortar® 150N™:

SS Mortar 150N is a non-shrink, high-early-strength, pre-dry-mixed, cement grout manufactured by Splice Sleeve Japan, Ltd., and is to be used with NMB Slim-Sleeve FACD1200 couplers. The dry-mix mortar is packaged in 55-pound (25 kg) moisture-resistant bags. The material has a shelf life of 6 months when stored in a cool and dry environment.

3.4 High-strength Steel Reinforcing Bars:

The high-strength steel reinforcing bars must be uncoated, deformed, No. 8, 11 and 14 steel reinforcing bars complying with ASTM A1035-16b, Type A1035CL, A1035CM or A1035CS, Grade 100, recognized in ICC-ES ESR-2107. The deformations of the high-strength steel reinforcing bars must have a diagonal geometrical pattern for No. 8 and 11 bars, and a bamboo geometrical pattern for No. 14 bars.

4.0 DESIGN AND INSTALLATION

4.1 General:

The NMB Slim-Sleeve FACD1200 systems must be designed and installed in accordance with the IBC and this evaluation report. The splice locations must be detailed on plans and approved by the code official. All required spacing and concrete protection (cover) must be in accordance with IBC and ACI 318 and must be measured from the outside surface of the splice systems.

4.2 Installation:

4.2.1 General: The NMB Slim-Sleeve FACD1200 systems must be prepared and installed in accordance with the IBC, this evaluation report, the approved construction documents, and the recommendations noted in the “NMB Splice Sleeve System User’s Manual for Slim-Sleeve FACD1200 with SS Mortar 150N”.

4.2.2 Preparation: All high-strength steel reinforcing bars must be clean and free from loose rust, oils, dust, and other foreign material. All foreign matter and water must be removed from the couplers.

4.2.3 Installations for Vertical and Horizontal Applications: Refer to Splice Sleeve Japan, Ltd. installation instructions for detailed requirements, including, but not limited to, required accessories, installation sequences, means to ensure that the minimum embedment lengths of high-strength reinforcing bars are achieved, and required visual inspections prior to grouting with the SS Mortar 150N.

4.2.4 Grouting: The NMB Slim-Sleeve FACD1200 couplers must be filled with SS Mortar 150N, which is mixed with clean water according to the Splice Sleeve Japan, Ltd. recommendations. Grout must be proportioned so that the cured grout can achieve a minimum compressive strength of not less than 19,000 psi (131 MPa) in 28 days, as determined by testing in accordance with ASTM C109 and recommendations of Splice Sleeve Japan, Ltd. Grout must be poured or pumped into the couplers with an appropriate hand-operated pump or hand injector as recommended by Splice Sleeve Japan, Ltd., depending upon the location of the couplers. For both vertical and horizontal applications, grout must be pumped into the inlet hole (grout valve) until it can be observed coming out from the rim of the coupler in case of a vertical application or coming out from the outlet hole in case of a horizontal application. All spaces within the coupler must be fully penetrated with the grout, and excess grout must be removed.

4.2.5 Grout Testing: Measurement of consistency of the grout is necessary in order to determine and maintain the proper amount of mixing water to assure a smooth, pumpable grout matrix. Consistency flow tests must be conducted by using a flow table to test the flow of batches of grout mixture in accordance

with the Japanese Architectural Standard Specification (JASS) Standard 15 M103, entitled “Tests for quality evaluation of self-leveling materials.” Immediately after the grout is placed into the grout cube mold, the top surfaces of the grout cubes and the mold must be covered with a piece of wet cloth and plastic food wrap to prevent the evaporation of water from the grout cubes. The mold with the grout cubes must be immediately placed into a curing box and kept in the curing box for the first 24 hours after casting of the grout cubes. After the first 24 hours, the grout cubes must be stripped from the mold and be fully submerged in a container with water, which must be kept at the same condition as the jobsite until the compressive strength testing of the cubes.

4.3 Special Inspection:

Special inspection is required in accordance with Section 1705 of the 2018, 2015 and 2012 IBC (Section 1704 of the 2009 IBC). The special inspector must verify, at a minimum, the following:

1. Construction of concrete structures utilizing high-strength steel reinforcing bars and NMB Slim-Sleeve FACD1200 systems described in this evaluation report is in accordance with the IBC, this evaluation report, the approved construction documents, and the report holder’s recommendations. In case of a conflict, the most restrictive requirements govern.
2. Requirements described in Section 4.3 of ESR-2107.
3. Installation of NMB Slim-Sleeve FACD1200 systems; the grade, size, and deformation pattern of high-strength steel reinforcing bars; high-strength steel reinforcing bar embedment; coupler identification; grout identification; field preparation of components; grout mixing, grouting, curing, and testing; and assembly of the components resulting in spliced bars.

5.0 CONDITIONS OF USE:

The NMB Slim-Sleeve™ FACD1200 systems described in this evaluation report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this evaluation report, subject to the following conditions:

- 5.1 Concrete structures utilizing NMB Slim-Sleeve FACD1200 systems described in this evaluation report must be in accordance with the IBC, this evaluation report, ESR-2107, the approved construction documents, and the report holder’s recommendations. In case of a conflict, the most restrictive requirements govern.
- 5.2 The mechanical splices must be identified and installed in accordance with the IBC, the manufacturer’s instructions, and this evaluation report. In the event of conflict between this evaluation report and the manufacturer’s instructions, this evaluation report governs.
- 5.3 The minimum concrete cover must be in accordance with the IBC and must be measured from the outer surface of the coupler.
- 5.4 Splice locations must comply with applicable IBC requirements and be noted on plans approved by the code official.
- 5.5 The high-strength steel reinforcing bars must comply with ESR-2107 and this evaluation report.
- 5.6 Under the 2018 and 2015 IBC, for structures regulated by Chapter 18 of ACI 318-14 (as required by 2018 and 2015 IBC Section 1905.1), use of the NMB Slim-Sleeve FACD1200 systems in Earthquake-Resistant Structures must comply with the requirements for high-strength steel reinforcing bars prescribed in ACI 318-14 Sections 20.2.2.4 and 18.4 and modifications by ESR-2107, Sections 4.1 and 5.4 and Annex 1, Section A2.20.
- 5.7 Under the 2012 IBC, for structures regulated by Chapter 21 of ACI 318-11 (as required by 2012 IBC Section 1905.1), use of the NMB Slim-Sleeve FACD1200 systems in Earthquake-Resistant Structures must comply with the requirements for high-strength steel reinforcing bars prescribed in ACI 318-11 Sections 21.1.5 and 21.3, and modifications by ESR-2107, Sections 4.1 and 5.4 and Annex 1, Section A2.20.
- 5.8 Under the 2009 IBC, for structures regulated by Chapter 21 of ACI 318-08 (as required by 2009 IBC Section 1908.1), use of the NMB Slim-Sleeve FACD1200 systems in Earthquake-Resistant Structures must comply with the requirements for high-strength steel reinforcing bars prescribed in ACI 318-08 Sections 21.1.5 and 21.3 and modifications by ESR-2107, Sections 4.1 and 5.4 and Annex 1, Section A2.20.
- 5.9 The NMB Slim-Sleeve couplers and SS Mortar 150N are manufactured under approved quality control program with inspections by ICC-ES.

- 5.10 The evaluation of corrosion resistance of the mechanical splice is outside the scope of this evaluation and shall be considered by the registered design professional during the design.
- 5.11 Use of NMB Slim-Sleeve FACD1200 systems in fire-resistance-rated construction is outside the scope of this evaluation report.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the [ICC-ES Acceptance Criteria for Mechanical Splice Systems for Steel Reinforcing Bars \(AC133\)](#), dated October 2020.
- 6.2 Data in accordance with Section 3.2.1 of the [ICC-ES Acceptance Criteria for High-strength Steel Reinforcing Bars \(AC429\)](#), dated April 2020.

7.0 IDENTIFICATION

- 7.1 Each NMB Slim-Sleeve FACD1200 coupler is marked with the company logo (NMB), the coupler model and size [such as S11U for NMB Slim-Sleeve coupler], a four-digit lot number, the rebar size (such as D25 for a No. 8 bar), rebar grade (G100) and "T2" indicating a Type 2 mechanical splice. Each container (canvas bag) of couplers is identified with a product label which includes the report holder's name (Splice Sleeve Japan, Ltd.) and address, the product model and size, and the ICC-ES evaluation report number (ESR-4013). Each bag of SS Mortar 150N is marked with report holder's name (Splice Sleeve Japan, Ltd.) and address, the product description (SS Mortar 150N), the ICC-ES evaluation report number (ESR-4013), and mixing instructions. Additionally, a lot number is printed on each bag of SS Mortar 150N which identifies the production date and manufacturing facility.
- 7.2 The report holder's contact information is the following:

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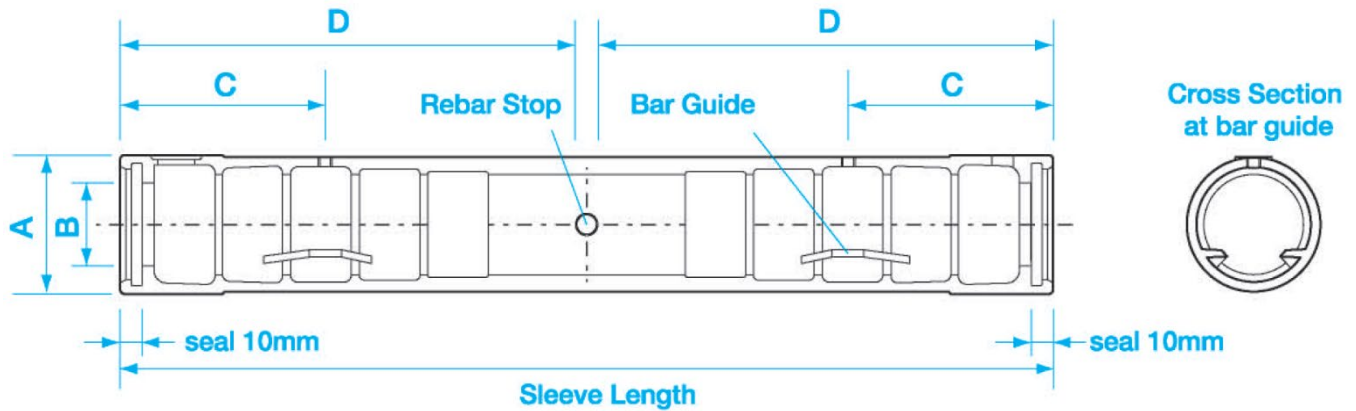


FIGURE 1—NMB SLIM-SLEEVE™ FACD1200 COUPLERS

TABLE 1—DIMENSIONS OF NMB SLIM-SLEEVE™ FACD1200 COUPLERS (IN.)

DIMENSIONS OF NMB SLIM-SLEEVE™ FACD1200 COUPLERS									REQUIRED REBAR EMBEDMENT LENGTH (in.)	
Sleeve No.	Bar Diameter (in.)	Bar Size		Sleeve Length (in.)	Sleeve Diameter (in.)		Set Screw Position (C) (in.)	Rebar Stop (D) (in.)	Min.	Max.
		ASTM	JIS		O.D. (A)	I.D. (B)				
S8U	1.000	#8	D25	12.99	1.89	1.22	2.36	6.30	5.91	6.50
S11U	1.410	#11	D36	17.72	2.56	1.69	3.54	8.66	8.27	8.86
S13U	1.693	#14	D43	21.65	2.99	2.01	4.72	10.63	10.24	10.83

For SI: 1 inch = 25.4 mm.

TABLE 2—DIMENSIONS OF NMB SLIM-SLEEVE™ FACD1200 COUPLERS (MM)

DIMENSIONS OF NMB SLIM-SLEEVE™ FACD1200 COUPLERS									REQUIRED REBAR EMBEDMENT LENGTH (mm)	
Sleeve No.	Bar Diameter (in.)	Bar Size		Sleeve Length (mm)	Sleeve Diameter (mm)		Set Screw Position (C) (mm)	Rebar Stop (D) (mm)	Min.	Max.
		ASTM	JIS		O.D. (A)	I.D. (B)				
S8U	1.000	#8	D25	330	48	31	60	160	150	165
S11U	1.410	#11	D36	450	65	43	90	220	210	225
S13U	1.693	#14	D43	550	76	51	120	270	260	275

DIVISION: 03 00 00—CONCRETE
Section: 03 21 00—Reinforcement Bars

REPORT HOLDER:

SPLICE SLEEVE JAPAN, LTD.

EVALUATION SUBJECT:

NMB SLIM-SLEEVE FACD1200 SYSTEMS FOR CONNECTING HIGH-STRENGTH STEEL REINFORCING BARS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that the Splice Sleeve Japan, NMB Slim-Sleeve FACD1200 Systems, described in ICC-ES evaluation report ESR-4013, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2019 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 *California Residential Code* (CRC)

2.0 CONCLUSIONS**2.1 CBC:**

The Splice Sleeve Japan, NMB Slim-Sleeve FACD1200 Systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-4013, comply with CBC Chapter 19, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 19, as applicable.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The Splice Sleeve Japan, NMB Slim-Sleeve FACD1200 Systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-4013, comply with CRC Section R301.1.3, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued October 2024.