



SUGGESTED MASTER SPECIFICATION

Diamond Dowel® System

PART 1 - GENERAL

1.1 SUMMARY

- A. Products supplied under this section: diamond shaped load plates.
- B. Related sections:
 - 1. Section 03100 - Concrete forms and accessories.
 - 2. Section 03200 - Concrete reinforcement.
 - 3. Section 03300 - Cast-in-place concrete.

1.2 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 315R-18 Detailing Manual (SP-66)
 - 2. ACI 302.1R-15 Guide for Concrete Floor and Slab Construction.
 - 3. ACI 360R-10 Guide for Design of Slabs-on-Ground.
- B. American Society for Testing and Materials International (ASTM):
 - 1. A36 Standard Specifications for Carbon Structural Steel.
 - 2. A108 Standard Specifications for Steel Bar, Carbon and Alloy, Cold Finished.

1.3 SUBMITTALS

- A. Product data: Manufacturer's product data with application and installation instructions for proprietary materials and items, including but not limited to the Diamond Dowel® System.
- B. Shop drawings: Indicate placement of the Diamond Dowel® System.
 - 1. Indicate dimensions and spacings.
 - 2. Comply with ACI 302.1R-15, ACI 360R-10, ACI 315R-18 (SP-66), and PNA installation guides indicating arrangement of dowels.

1.4 QUALITY ASSURANCE

- A. Pre-construction meeting:
 - 1. Convene a pre-construction meeting before installation of PNA products. Require attendance of parties affecting the work of this section, including Contractor, Engineer, and installers.
 - 2. Review installation procedures and coordinate with other work.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver Diamond Dowel® System in manufacturer's packaging.
- B. Deliver and handle materials to prevent damage or weakening to systems.
- C. Store in an appropriate place to avoid accumulating rust, debris, or deleterious materials on assemblies. Store off ground and under cover.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Acceptable manufacturer: PNA Construction Technologies, www.pna-inc.com; 800-542-0214.

2.2 DIAMOND SHAPED LOAD PLATE FOR CONSTRUCTION JOINTS

- A. Acceptable product: PNA Diamond Dowel® System.
- B. Material:
 - 1. Diamond shaped load plate: 1/4", 3/8", and 3/4" saw cut from hot rolled steel plate meeting ASTM A36.
 - 2. Pocket former: High density plastic with central bracing rib to resist bending and crushing. Internal bendable fins and spacers that hold diamond shaped load plate in correct position and creates a void to its vertical faces. This void, in addition to its tapered shape, shall allow for differential movement and shall prevent horizontal stress accumulation at joint, thus reducing likelihood of random cracking.

Contact PNA Construction Technologies for an optimized selection of plate size and spacing. Alternatively: refer to ACI 360

- 3. Dimensions of plate: ** 1/4" by 4-1/2" by 4-1/2". ** 3/8" by 4-1/2" by 4-1/2". ** 3/4" by 4-1/2" by 4-1/2". ** (Fill in appropriate dimensions) **

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Notify Engineer at least 72 hours prior to placing concrete dowel system to allow time for examination of systems. Place no concrete in forms without Engineer's acceptance of concrete dowel systems.

3.2 INSTALLATION

- A. Install at formed construction joints.
- B. Mark center point for spacing of each Diamond Dowel® pocket former on top of wood form along entire length. Set forms along construction joints. Place such that center of Diamond Dowel® System is no fewer than 6" of joint intersection per industry guidelines. Installation template will ensure that the minimum requirement of 2 1/4" of coverage of concrete over the dowel is maintained.
- C. Use installation template. Insert correct tube, if needed, based on slab depth. Use orange template with 1/4". Use yellow template with 3/8". Use green template with 3/4".
 - 1. Orange 1/4":
 - a. 7" slab depth: Remove tube from template.

- b. 6" slab depth: Slide white tube onto template.
- c. 5" slab depth: Slide black tube onto template.
- d. 4" slab depth: Slide grey tube onto template.
- 2. Yellow 3/8":
 - a. 9" slab depth: Remove tube from template.
 - b. 8" slab depth: Slide white tube onto template.
 - c. 7" slab depth: Slide black tube onto template.
- 3. Green 3/4":
 - a. 11" slab depth: Remove tube from template.
 - b. 10" slab depth: Slide white tube onto template.
 - c. 9" slab depth: Slide black tube onto template.
- D. Insert Diamond Dowel® pocket former into installation template.
- E. Line up mark on top of wood form with center of template.
- F. Nail Diamond Dowel® pocket former and remove installation template. Repeat at specified spacing along entire length of form.
- G. Place and finish first slab. Use internal vibration to consolidate concrete around diamond shaped load plate pocket former per industry guidelines.
- H. Strip forms and bend nails flush with joint face.
- I. Insert Diamond Dowel® load plate into slot created by pocket former. Center corner of plate in middle of label and push straight through label into pocket former. Do not hammer or use excessive force to insert diamond shaped load plate. Inserted diamond shaped load plate shall be inserted within 24 hours of completion of each concrete placement.
- J. Place and finish second slab. Use internal vibration to consolidate concrete around Diamond Dowel® plate per industry guidelines.

3.4 PROTECTION:

- A. Protect the Diamond Dowel® System from displacement and from damage until concrete placement is complete.

END OF SECTION