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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat*™, *SectionFormat*™ and *PageFormat*™. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets [ ]; delete optional text in final copy of specification. Specifier Notes precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate product model numbers, styles and types are used in Specifier Notes and in the specification text Article titled "Acceptable Material." Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies hydraulic- and gas-powered concrete cutting chainsaws as manufactured by ICS, Blount Inc. Revise MANU-SPEC Section Number and Title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

Specifier Note: The same methodology can be used for masonry and landscaping applications. If non-concrete applications are part of the project, change Section Number and Title to suit project requirements. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 03 81 00
CONCRETE CUTTING

PART 1 GENERAL

Specifier Note: The same methodology can be used for masonry and landscaping applications. If non-concrete applications are part of the project, change Summary to suit project requirements.

1.01 SUMMARY

A. Section Includes: This Section specifies methodology for cutting concrete using hydraulic- or gas-powered chainsaws with a small percentage of or no over-cutting.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Contract Conditions or Section 01 42 19 - Reference Standards may establish the edition date of standards. This Article does not require compliance with the standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section. Retain only those reference standards to be used within the text of this Section. Add and delete as required for a specific project.

1.02 REFERENCES

A. Concrete Sawing and Drilling Association (CSDA):

1. CSDA-HS-108 Hand Sawing.
2. CSDA-CS-109 Chain Sawing.

B. International Code Council (ICC):

1. International Building Code.

1.03 ACTION SUBMITTALS

A. General: Submit listed action submittals in accordance with Contract Conditions and Section [01 33 00 - Submittal Procedures] [_____].

B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.

1. Material Safety Data Sheets (MSDS).

1.04 INFORMATION SUBMITTALS

A. Quality Assurance:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

2. Certificates: Product certificates signed by manufacturer certifying that materials comply with specified performance characteristics, criteria and physical requirements.

3. Manufacturer's installation instructions.

1.05 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit operation and maintenance data for products in accordance with Section [01 78 00 - Closeout Submittals] [_____].

1. Include: Manufacturer's instructions covering maintenance requirements, and parts catalog giving complete list of repair and replacement parts with cuts and identifying numbers.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. Worker experienced in performing work of this section who has specialized in work similar to that required of this project.

B. Regulatory Requirements.

Specifier Note: Concrete cutting must also meet the requirements of building codes and zoning bylaws issued by federal, state and local government authorities having jurisdiction. Ensure project specification section reflects the need to meet these requirements. Edit Article below as applicable.

1. Comply with [Uniform Building Code (UBC)] [International Building Code (IBC)] [Building Code for [State] [City] of [_____]].

C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements and manufacturer's instructions. Comply with [Section 01 31 19 - Project Meetings] [_____].

1.07 STORAGE & HANDLING

A. Storage and Protection:

1. Store saws protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.08 SEQUENCING

A. Sequence with Other Work: Comply with concrete-cutting equipment manufacturer's written recommendations for sequencing construction operations.

1.09 MAINTENANCE

A. Include complete maintenance on concrete-cutting equipment for duration of project.

B. Regularly and systematically examine, clean, adjust and lubricate moving parts.

C. Repair or replace concrete-cutting equipment parts whenever required due to defect and normal wear and tear.

D. Use only standard parts from manufacturer's concrete-cutting equipment product line.

E. Maintain locally adequate stock of parts for replacement or emergency purposes.

F. Perform work during regular trade working hours as satisfactory to [Owner] [Architect] [Consultant] [_____].

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Ensure manufacturer has minimum [5] [_____] years experience in manufacturing components similar to or exceeding requirements of project.

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material

standards and descriptions as applicable. Use of such phrases as “or equal,” “or approved equal” or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining “or equal” products.

2.02 PROPRIETARY PRODUCTS/SYSTEMS

A. Manufacturer: ICS, Blount Inc.

1. Contact: 4909 SE International Way, Portland, OR 97222-4679; Telephone: (800) 321-1240, Ext. 2, (503) 653-4341; Fax: (503) 653-4393; website: www.icsbestway.com/specifier.

2.03 DESCRIPTION

A. Gas- and hydraulic-powered chainsaws with diamond-segmented chains capable of cutting square or irregular shaped holes in reinforced concrete, stone and masonry without over-cuts.

Specifier Note: Edit the following Article to meet project requirements and gas-powered chainsaw models.

2.04 GAS-POWERED CHAINSAWS

A. Cut Depth: [10 inches (254 mm)] [12 inches (305 mm)] [14 inches (356 mm)] [16 inches (406 mm)], maximum.

B. Bar Length: [10 inches (254 mm)] [12 inches (305 mm)] [14 inches (356 mm)] [16 inches (406 mm)].

C. Weight: [17.6 lb (8.0 kg)] [21 lb (9.5 kg)] [27.5 lb (12.5 kg)].

D. Engine: Internal combustion, gas-powered, 2-stroke, single cylinder, air cooled, rated [4.2 hp (3.1 kW)] [5.7 hp (4.2 kW)] [6.5 hp (4.8 kW)] at [9500] [9000] [8700] rpm.

1. Engine Speed: [11,500] [12,000] ± 500 rpm mechanically governed, [2500 - 2800] [2800 - 3200] rpm idle.

Specifier Note: Although the cubic centimeter is not generally recognized as an official part of the metric SI system of measurement, it is widely recognized in the North American marketplace as the unit of measurement for small engine capacities and has been included in the following paragraph.

2. Engine Displacement: [3.9 cubic inches (64 cc)] [4.9 cubic inches (80 cc)] [6.2 cubic inches (101 cc)].

E. Chain Speed: [4950 fpm (25 meters per second)] [5300 fpm (27 meters per second)].

Specifier Note: The metric SI system of measurement does not use the term “bar” as a measurement of pressure since “bar” is based more on atmospheric pressure. However, an approximate comparison is 13.33 psi = 1 bar = 92 kPa.

F. Water Supply: 20 psi (138 kPa).

G. Noise Level: [100] [101] [102] db at 3.28 feet (1 m) maximum.

H. Fuel Ratio Mix: 25:1 gasoline to oil.

I. Vibration Level: [8] [10.1] [10.5] meters per second squared, maximum, at front handle.

Specifier Note: A full tank of fuel will allow 12 - 18 minutes of run time, depending upon the material being cut.

J. Fuel Capacity: [0.23 gal (0.87 L)] [0.26 gal (0.98 L)].

Specifier Note: For cuts to 10 inches (254 mm) deep, use model 603GC; for cuts to 14 inches (356 mm) deep, use model 613GC; for cuts to 16 inches (406 mm) deep, use model 633GC.

K. Acceptable Material: ICS, Blount Inc. Diamond Cut Chainsaw Model Number [ICS 603GC] [ICS 613GC] [ICS 633GC].

Specifier Note: Hydraulic-powered chainsaws are designed for heavier duty than gas-powered chainsaws. Edit the following Article to meet project requirements.

2.05 HYDRAULIC-POWERED CHAINSAWS

A. Cut Depth: [10 inches (254 mm)] [11 inches (280 mm)] [13 inches (330 mm)] [15 inches (381 mm)] [19 inches (483 mm)] [24 inches (610 mm)] [30 inches (762 mm)], maximum.

B. Bar Length: [10 inches (254 mm)] [11 inches (280 mm)] [13 inches (330 mm)] [15 inches (381 mm)] [19 inches (483 mm)]

[24 inches (610 mm)] [30 inches (762 mm)].

C. Weight: [15 lb (6.8 kg)] [27.3 lb (12.4 kg)] [28 lb (12.7 kg)] [29 lb (13.2 kg)].

D. Engine:

1. Engine Size: [11 hp (8.203 kW)] [15 hp (11.185 kW)].
2. Operating Speed: [5700] [5500] [4950] rpm.
3. Engine Torque: [95 inch-pounds (10.729 Nm)] [150 inch-pounds (16.941 Nm)].

E. Noise Level: 88 db at 3.28 feet (1 m), maximum.

F. Vibration Level: [3.5] [4] meters per second squared, maximum, at front handle.

Specifier Note: For cuts to 13 inches (330 mm) and for openings as small as 3.5 inches × 3.5 inches (89 × 89 mm), use model 814PRO; for cuts to 30 inches (762 mm), use model 853PRO or 853PRO Plus. The 853PRO Plus has a heavier duty motor.

G. Acceptable Material: ICS, Blount Inc. [ICS 814PRO] [ICS 853PRO] [ICS 853PRO Plus].

2.06 ACCESSORIES

A. Chainsaw Chain: Bumper design, diamond-segmented to suit project application.

Specifier Note: A variety of diamond chains is available. Check with manufacturer's literature to determine the best chain for the chainsaw and project application. Popular choices from ICS, Blount Inc. for cutting hard reinforced concrete are models TwinMAX Plus and PremiumPRO.

1. Acceptable Material: ICS, Blount Inc. Model [_____].

B. Portable Hydraulic Power Pack: Briggs and Stratton, electric start, 18 hp (13.43 kW) engine with 7 gallon (26.5 L) minimum fuel capacity.

1. Hydraulic System: [8 gal per minute (0.5 L per second) at 2500 psi (17.24 MPa)] [5 gal per minute (0.33 L per second) at 2500 psi (17.24 MPa)].
2. Reservoir Capacity: [2.7] gal ([11] L) minimum.
3. Relief Valve Setting: 2100 - 2300 psi (14.5 - 15.8 MPa).

Specifier Note: Heavier duty hydraulic power packs for concrete-cutting equipment other than that specified are also available. Check availability with manufacturer if project requirements warrant heavier duty equipment.

4. Acceptable Material: ICS, Blount Inc. Model ICS Multiflow Power Pack.

C. Flow Adapter Valve: To suit [8 gal per minute (0.5 L per second)] [12 gal per minute (0.75 L per second)] chainsaw capacity.

1. Acceptable Material: ICS, Blount Inc. Model ICS Flow Adapter Valve.

Specifier Note: The chainsaw mounting apparatus supports the weight of the chainsaw to reduce operator fatigue and prolong the chain life.

D. Chainsaw Mounting Support: Adjustable, 2-anchor mounting, convertible for right side or left side use.

1. Expandable Sections: [21 inches (533 mm)] [42 inches (1067 mm)].
2. Weight: 18 lb (8 kg) maximum.
3. Acceptable Material: ICS, Blount Inc. Model ICS SpeedHook.

E. Slurry Vacuum System: 15 gallon (56.8 L) minimum capacity polyethylene tank with float assembly and automatic shut-off, electric 110 V, 60 Hertz, 2 hp (1.491 kW) bypass motor. Acceptable Material: ICS, Blount Inc. Model TSS15/55.

F. Chainsaw Carrying Case:

1. Acceptable Material: ICS, Blount Inc. Model [_____].

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below.

2.07 PRODUCT SUBSTITUTIONS

A. Substitutions: [In accordance with Section 01 25 13 - Product Substitution Procedures] [_____]] [No substitutions permitted].

PART 3 EXECUTION

3.01 CONCRETE CUTTERS

A. Provide experienced and qualified workers to carry out concrete cutting.

3.02 MANUFACTURER'S INSTRUCTIONS

Specifier Note: Article below is an addition to CSI *SectionFormat* and a supplement to this section. Revise Article below to suit project requirements and specifier's practice.

A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions and ICS, Blount Inc. SPEC-DATA® sheets.

3.03 EXAMINATION

A. Site Verification of Conditions:

1. Verify that substrate conditions, for substrates that have been previously installed under other sections or contracts, are acceptable for use with concrete-cutting equipment.

Specifier Note: The Diamond Chain is capable of cutting most reinforced concrete. However, rebar thicker than 1 inch (25.4 mm) diameter would be extremely difficult and should be considered an unacceptable condition.

2. Inform [Owner] [Architect] [Consultant] [_____] of unacceptable conditions immediately upon discovery.
3. Proceed with installation only after unacceptable conditions have been remedied.

3.04 PREPARATION

A. Inspect saw, saw bar and chain for damage prior to mounting.

B. Ensure side cover and guard flap are in place, unmodified and undamaged prior to commencement of work, and are fastened to saw in accordance with manufacturer's written instructions.

C. Inspect [Hydraulic hoses] [Water hoses] [Electrical cords] prior to commencement of work.

D. Confirm saw chain is adequate for material to be cut and is mounted correctly.

Specifier Note: Chain tension in chainsaws for cutting concrete or masonry is generally much looser than chainsaw tension on wood-cutting chainsaws. If the chain is too tight, it could be a serious safety issue.

E. Ensure that chain can be moved by hand with the power source disconnected.

F. Create rigging holes into concrete structure as required and in accordance with work plan.

G. Strap concrete core in accordance with CSDA and manufacturer's instructions.

H. Make provisions to contain slurry from concrete cutting. Collect and dispose of in accordance with manufacturer's instructions. Prevent slurry from entering storm water system.

3.05 CUTTING METHODOLOGY

Specifier Note: When sawing interior concrete walls or slabs with internal combustion-powered saws, precautions must be taken to ensure adequate ventilation and oxygen replacement to meet OSHA requirements. OSHA requirements are covered under the CDSA standards referenced in this section.

A. Perform hand sawing work to CSDA-HS-108.

B. Perform chain sawing work to CSDA-CS-109.

C. Outline cut with permanent marker.

D. Start chainsaw and allow warm-up period of 5 seconds minimum by revving saw and holding trigger at full throttle.

Specifier Note: Cutting work should be planned in advance to ensure that the weight of the removed material does not cause the saw to

jam or stall. The last cut in any opening should be a higher cut supporting the weight of material to be removed.

E. Ensure that the bottom cut of each opening is not the last cut made.

F. Prior to plunging the saw straight into the cut, align the guidebar nose with the cut line and slowly touch the chain to the surface to be cut.

G. Push the saw hard enough to ensure the engine rpm is reduced by 20 - 30%.

H. Cut heavy rebar by slowly rocking the saw and ensuring that the saw chain comes in contact with the concrete, as well as with the rebar.

I. Maintain full throttle on the saw throughout the cut.

Specifier Note: The metric SI system of measurement does not use the term “bar” as a measurement of pressure since “bar” is based more on atmospheric pressure. However, an approximate comparison is 13.33 psi = 1 bar = 92 kPa.

1. Ensure water pressure of 20 psi (138 kPa) minimum.

Specifier Note: Delete the following paragraph if only hydraulic-powered chainsaws are being used.

2. Ensure 25:1 gas/oil mix ratio for gas-operated chainsaws.

3.06 ADJUSTMENT

A. Lubricate moving parts to operate smoothly.

3.07 FINAL CLEANING

A. Perform cleanup in accordance with Section [01 74 00 - Cleaning and Waste Management] [_____].

B. Upon completion, remove surplus and excess materials, rubbish, tools and equipment.

3.08 PROTECTION

Specifier Note: Coordinate the following Article with Section 01 76 00 - Protecting Installed Construction.

A. Protect concrete cuts from damage during construction in accordance with Section [01 76 00 - Protecting Installed Construction] [_____].

B. Repair any damage to adjacent materials caused by concrete cutting.

END OF SECTION