

## HELICAL [3/8" 9mm] WALL TIES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Work Included: The Work of this Section includes, but is not limited to the following:
  - 1. Retrofit wall ties and lateral restraints for masonry.

#### 1.2 DEFINITIONS

- A. Pilot Hole: Small hole drilled into masonry material and into substrate with drill bit(s).
- B. Weather: Use in any temperature, including sub-zero conditions.
- C. Setting Tools: Patented adaptors with axial recess for speeding installation rates by utilizing impact from the drill. A single unit without telescopic tools.
- D. Drills: Electric SDS-plus Rotary Hammer/3-Jaw chuck.
- E. Drill Bits: SDS plus or hex shank.
- F. Helical Ties: Patented precise pitch, high tensile 304/316 grade, narrow band selected stainless steel, die-cast helical ties measuring 3/8" (9mm) in diameter, average core thickness 1/8" (4.67mm), **must** have consistent surface friction and full interlock capabilities with the host material.

#### 1.3 ACTION SUBMITTALS

- A. General: Submit the following information in compliance with the requirements of the Contract Documents. Process all submittals as "Action Submittals." Revise and resubmit each item as necessary to obtain Engineer/Architect's approval.
- B. Product Data: Manufacturer's published technical data for each product to use in work of this Section including material description, physical properties, recommendations for application and use, test reports and certificates verifying that the product complies with specified requirements and Material Safety Data Sheets.
- C. Work Description: Detailed description of proposed methods and procedures for remedial ties and retrofit lateral restraints. Detailed description shall also include the proposed methods for installation of helical ties and spacing layout as specified in this Section.
- D. Pull Test: Pull out test must be carried out at the lesser of each floor of the building or at every 12 feet increment on site to prove the sustainability of the tie system adopted on the

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construction plan. Any deviation of values published on the plans shall be brought to the attention of the Architect/Engineer.

#### 1.4 QUALITY ASSURANCE

- A. Building Façade Restoration Specialist Qualifications: Contractor shall have completed work similar in material, design and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing standard unit masonry or new masonry is insufficient experience for façade restoration repair work. Contractor shall also be a Thor certified, trained in safe and effective installation of wall ties/lateral restraint systems.
- B. Quality Control Program: Prepare a written quality control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging existing masonry. Include provisions of supervising performance and preventing damage.
- C. Laws, Codes and Regulations: Work of this Section shall comply with applicable federal, state and local laws, codes and regulations.
  - 1. Referenced Standards: Comply with applicable requirements and recommendations of the latest editions of the referenced standards listed herein, except as modified by more stringent requirements of the Contract Documents and of applicable laws, codes and regulations. Provide a reference copy of each of the following standards at shop and at Project site when work of this Section is being performed in each location. In each case in which there is conflict between requirements of referenced standards; requirements of laws, codes and regulations; and requirements of this Section, the most stringent or restrictive requirement shall govern. Reference Standard 10
- D. Documentation of Existing Conditions: Document configurations and conditions of existing masonry units indicated to be restored before beginning restoration with photographs showing overall units and with additional detailed photographs showing areas of damage and deterioration to be repaired if such areas are not clearly visible and understandable in the overall photograph of the units. Key detailed photographs to overall photographs and to drawings. Clearly show all existing conditions including conditions that might be misconstrued as damage resulting from work of this section.
  - 1. Images: Clear, sharp, high-resolution color images. Unclear images, out-of-focus images, underexposed images and overexposed images will not be accepted.
  - 2. Format: One of the following:
    - a. Photographic Prints: Glossy color prints, minimum 5-inch x 7-inch.
    - b. Digital Images: High-resolution JPEG (.jpeg) color images (minimum 6 megapixels images with color information yielding files of at least 2 megabytes each) on archival quality CDs made with Phthalocyanine dyes with a gold reflective layer. Provide two copies of each CD. Clearly label

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CDs using method that will not cause images to deteriorate and that will not contribute to image deterioration.

- E. The Contractor agrees that, before submitting a proposal for the Work, they have carefully examined the Contract Documents, together with the site of the proposed work as well as its surrounding area, and are fully informed regarding all of the conditions affecting the work to be done and labor and materials to be furnished for the completion of this contract, including the existence of poles, wires, pipes, ducts, conduits and other facilities and structures of municipal or other public service corporation on, or over, or under the site, and that his information was secured by personal investigation and research and not from the estimates or records of the Owner/Engineer or Architect, and that the Contractor shall make no claim against the Owner/Engineer or Architect by reason of estimates, test or representations of any officer or agent of the Owner/Engineer or Architect.
1. Dimensions and existing material properties shown on the Contract Plans have been obtained from available plans of the existing structures and limited field survey and may not accurately reflect actual field conditions. Accordingly, the Contractor shall be solely responsible for verifying existing materials and making field measurement of all existing installations impacted by the new work to assure consistency with the proposed modifications. Any discrepancies in dimensions, character or extent of the existing features shall be brought to the attention of the Architect/Engineer before starting the work.
  2. Before submitting a bid, the Contractor shall review all records on file at the Building Department such as may contain information concerning the building's construction, past alterations, violations, etc. and as may be required to obtain a complete understanding of the conditions which exists with this Project. Before submitting a bid, the Contractor shall review all contract documents carefully. He shall also investigate, wherever appropriate, all utilities that are available at the site. The Contractor shall be deemed at the time of presentation of bid to have full knowledge of all conditions pertinent, subject only to such limitations as to what knowledge could be reasonably obtained from the above noted investigations by a prudent bidder. Bidders shall notify the Architect of any inconsistencies, ambiguities or errors which they may become aware of as a result of examining the bidding documents of by means conditions at or near the site or by any other method.
- F. Access for Observation and Approvals: Provide Architect/Engineer access on a continuing basis to locations on which mock-ups are being carried out, on which work is ongoing and where work has been completed to allow for observation and approvals. Provide pipe scaffolding and manpower to move and reconfigure scaffolding and planking, personnel lift and manpower to operate lift, or other means of access complying with laws and regulations regarding safety and acceptable to Architect/Engineer. Provide manpower and equipment to facilitate observation and approvals.
1. Extent of Access: Provide Architect/Engineer with hands-on access to each and every area of masonry that has been restored. No approval of masonry restoration

will be given before Architect/Engineer is provided hands-on access to all masonry surfaces that have been restored. Provide access for re-inspection of areas where masonry restoration work was not approved on first or subsequent inspections until Architect/Engineer approved the work.

2. Relocation of Means of Access: If Contractor moves scaffolding, lift, or other means of access before providing Architect/Engineer with hands-on access on each and every location in which masonry has been restored; and to each and every location in which masonry has been restored after previous masonry restoration work was rejected, Contractor shall reinstall means of access to provide for close-up inspection by Architect/Engineer at no additional cost to Owner.
- G. Manufacturers' Technical Representatives: Technical representatives of manufacturers whose products have been selected for use shall visit site at request of Contractor, Architect/Engineer or other Owner's Representative to advise on proper use and installation of products at no additional cost to Owner. A signed letter from the Manufacturer stating their approval of the material used and warranty shall be submitted to the Architect/Engineer by the Contractor.
- H. Knowledge of Site and Project Conditions: Before submitting bid, Bidders shall make themselves thoroughly familiar with the Drawings and Specifications, with the scope of this Project, and with conditions at the Project site relating to requirements of this Section and limitations under which the work will be performed and shall determine or verify dimensions and quantities. Submissions of a bid shall be considered conclusive evidence that Contractor is thoroughly familiar with Project requirements and site conditions and limitations.
- I. Restoration of Damaged Masonry: Repair or replace broken, lost, and damaged masonry resulting from work of this Section to configuration and condition existing before work began to /Engineer/Architect's satisfaction at no additional cost to Owner.
- J. Mockups: Mockups shall be prepared per requirements noted in Section 1.3-E "Samples" prior to the execution of the work.

## 1.5 PRODUCT HANDLING

- A. Deliver materials in manufacturer's original containers and packaging clearly labeled with manufacturer's names, address and product identification.
- B. Keep materials under cover and dry during delivery and storage. Protect against exposure to weather and contact with damp or wet surfaces.

## 1.6 PROJECT CONDITIONS

- A. Safety: Protect all persons whether or not involved in work of this Section, from harm caused by or resulting from work of this Section.

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1. Protection from Hazardous Materials: Protect workers and other persons from contact with hazardous materials resulting from work of this Section.
  - B. Protection of the Building: Protect building elements and finishes from damage and from deterioration caused by work of this Section. Repair materials and finishes damaged as a result of the work of this section to the Engineer/Architect's satisfaction at no additional cost to the Owner.
  - C. Support: Provide shoring, bracing and reinforcement necessary to prevent damage or deterioration prior to repairing masonry units or portions of units.
  - D. Surfaces to Receive Work: The Drawings are two-dimensional representations of three-dimensional objects and do not show all surfaces of building components on which work is to be performed, including surfaces concealed from view behind objects shown; surfaces of projections, reveals, returns, and other elements perpendicular to or at an oblique angle to surfaces shown; concealed surfaces of profiled members and of ornament; and surfaces of profiled members and of ornament not drawn in detail. Perform work on surfaces of projections, reveals, returns, profiled members and ornaments associated with surfaces indicated to receive work and on surfaces of building components concealed behind building components shown. It is the specific intent of the Contract Documents to include the work on all surfaces within the Project area, whether or not shown on the Drawings, except as specifically indicated otherwise.
  - E. Responsibility for Dimensions: Dimensions of existing elements and conditions in Contract Documents, whether numerical, tabular or graphic are provided for bidding purposes and for Contractor's information and are not guaranteed. Contractor shall measure existing elements and conditions in field before preparing shop drawings, ordering materials or starting construction and shall certify on shop drawings that dimensions have been field verified. Contractor is responsible for verifying dimensions of existing construction and for preparation of new work and replacement work fitting into and aligning with existing condition.
  - F. Underlying Conditions: The Drawings show the current understanding of the area being addressed within the Project scope. The Contractor shall be solely responsible for verifying existing materials and making field measurements of all existing installations impacted by the new work to assure consistency with the proposed modifications. Probes have not been completed and it is the Contractor's responsibility to notify the Architect/Engineer of the existing field conditions that differ from those shown.
  - G. Dust: Use of equipment(s) and procedures that generate as little dust as possible in the execution of work in this section and minimize dissemination of dust generated during work of this section to greatest extent possible.
    1. Contractor shall hold Owner, Architect/Engineer and their consultants harmless from claims relating to dust resulting from work of this Section.
  - H. Debris Removal

1. Do not drop or throw materials from any height. Remove debris using suitable containers or conveyances. Lower materials to ground in containers. Use methods that keep dust and impact to absolute minimum.
  2. Keep premises clean by removing accumulation of waste materials, rubbish and debris from site daily. Dispose of waste, rubbish and debris in a proper manner in accordance with federal, state and local laws and regulations, to the satisfaction of authorities having jurisdiction and to the satisfaction of the Architect/Engineer. Keep site and public rights of way clear.
  3. Do not store or permit excess debris to accumulate on site.
- I. Preconstruction Meetings: Convene a preconstruction meeting to discuss installation of the ties Project and its effect on adjacent elements, materials and finishes. Attendees shall include the Owner's Representatives, Engineer/Architect, Construction Manager, firms that will perform the installation.

## 1.7 ENVIRONMENTAL REQUIREMENTS

### A. General

1. Conflicting Requirements: In each case in which there is a conflict between manufacturer's recommendations, recommendations of referenced standards and other requirements specified in this Section, the most stringent and restrictive shall govern.

## PART 2 PRODUCTS

### 2.1

- A. Helical Ties: Patented precise pitch, high tensile 304/316 grade stainless steel, die-cast helical ties measuring 3/8" (9mm) diameter, minimum core size 1/8", or approved equal. [by THOR-Helical USA 340 West Passaic Street, Rochelle Park, NJ 07662 (Tel No. 201-880-8819) ]
- B. Manufacturer's Instructions: Comply with material manufacturer's instructions for use of products. In case of conflict with requirements of this section, the more stringent requirements shall govern.

### 2.3 EQUIPMENT AND TOOLS FOR INSTALLING WALL TIES

- A. 7/32" and/or 1/4" bits
- B. Light SDS-plus Rotary Hammer.

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- C. 3/8" (9mm) setting tools.
- D. Thor precise pitch high tensile 304/306 grade stainless die-cast helical wall ties.

### **PART 3 EXECUTION**

#### **3.1 PROTECTION**

- A. Remove poles, wires, pipes, ducts and associated hardware adjacent to masonry and store during masonry repair. Reinstall when repairs are complete.

#### **3.2 INSTALLATION, GENERAL**

- A. Remedial patented precise pitch 304/316 stainless steel die-cast helical wall ties. Installation work shall be performed by a THOR certified contractor.
- B. The Contractor shall follow the installation instructions and consult with the Architect/Engineer-of-Record for interpretation of any conflicts.
  - 1. Drill pilot hole, 7/32" / 1/4" diameter through masonry, all holes through masonry must be horizontal or inclined slightly downward towards the outside, use depth stop gauge to prevent over drilling.
  - 2. Insert Ties: Hammer tie into pre-drilled pilot hole, with SDS Rotary Hammer drill. Attach setting tool to SDS Plus Rotary Hammer Drill, insert Thor Wall tie into setting tool, placed tie into pre-drilled pilot hole, recess tie 3/8" into masonry unit, patch masonry to match existing in type, color and texture. Set SDS Plus Rotary Hammer on "rotate/hammer."

END OF SECTION