SIM
CONCRETE SCANNING CHECKLIST

✓ TRAINING
✓ EQUIPMENT
✓ METHODOLOGY

NONDESTRUCTIVE LOCATION AND MARKING OF CRITICAL EMBEDMENTS IN CONCRETE

Site Name: _____ Project #: _____

Site Address: _____

City: _____ State: _____ Zip: _____

Site Contact Name: _____ Phone: _____

Contact Email: _____ Site-Specific Notes: _____

Contract with Qualified Concrete Scanning Contractor:

- ☐ Scanning contractor shall submit record of certification of training that exceeds ASNT, "Practice SNT-TC-1A, Personnel Qualification and Certification in Nondestructive Testing Level I," GPR. 8 hours classroom /60 hours field GPR practice.
- ☐ Field personnel at minimum certified OSHA 10 Construction Safety Training. Specific safety training may apply per site specifics.

Concrete Scanning Work Scope:

- ☐ Locate and mark embedments and relevant structural features inside contractor/owner designated area utilizing Ground Penetrating RADAR (GPR) and additional equipment/technologies if required per SIM Spec. Additional work scope notes: _____
- ☐ Confirmed work scope communication with site contact. (check box after agreed upon scope)

GPR System Model# _____ GPR Antenna Model# _____

Anticipated Embedments:

- ☐ Rebar
- ☐ PT Cables
- ☐ Wire mesh
- ☐ Conduits
- ☐ Radiant heat lines
- ☐ Drain piping
- ☐ Communication/data conduits
- ☐ Industrial Process lines
- ☐ Pre-stressed cables

Structural Features Detailed:

- ☐ Bottom of slab/back of wall, depth est.
- ☐ Structural beam, steel or concrete
- ☐ Precast hollow core
- ☐ Rebar depth
- ☐ CMU filled/not filled
- ☐ Under slab voids
- ☐ Pan decking, highs/lows

SIM Investigative Technologies:

- ☐ Concrete antenna
- ☐ EM Pipe Locator
- ☐ EM Transmitter
- ☐ Traceable Rodder
- ☐ Traceable Sonde
- ☐ Underground GPR Antenna

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SIM Pre-Investigation Checklist:

- ☐ Confirm Job Hazard Analysis (JSA), or equal site safety review documentation.
- ☐ Confirm and sign site safety plan if applicable.
- ☐ Review and utilize available as-builts, prints/plans and previous equipment findings.
- ☐ Perform site walk and project scope meeting, review scan locations. Note: visible clues such as electrical rooms, PT grout pockets, visible conduits, etc.
- ☐ Interview site contact, slab construction, thickness, age, anticipated critical targets.
- ☐ Request to view the slab underneath if a suspended slab is present.
- ☐ Determine whether GPR data samples be required for reporting.
- ☐ Determine type of markings (permanent vs. temporary).
- ☐ Determine client deliverable requirements, report format/documentation.
- ☐ Review of equipment capabilities and potential job-site performance impedances.
- ☐ Review whether markout may include depth estimates of targets.
- ☐ Review slab on grade procedures. If the scan area includes a slab on grade and the post scan work requires trenching, a lower frequency antenna may be used to locate targets in the subsurface material under the slab.

SIM Quality Assurance Procedures:

- ☐ Calibrate the GPR system to the concrete per SIM spec guidelines. This calibration may be estimated, or a test performed to determine the correct dielectric of the concrete. This may be an automated function of the equipment.
- ☐ Perform several line scans in the scan area to determine a rough understanding of how the structural reinforcement was placed in the concrete and the potential for other targets.
- ☐ Note the ability to see the bottom of the concrete slab. If it is not apparent, determine possible reasons for its not being seen.
- ☐ Review the clarity of the scan data. Adjustments in gain, depth range, filters, and other settings may be necessary.

SIM Investigation Methods for Complete Concrete Investigation:

Confirm slab specification as detailed by site contact or available prints.

- ☐ Basic reinforcement structure
- ☐ Suspended slab construction
- ☐ Thickness of slab
- ☐ Slab on grade
- ☐ Other: _____

- ☐ Scan and mark targets in the scan area.
- ☐ Collect line scan data perpendicular to steel reinforcement targets.
- ☐ Mark out one target at a time in one direction at a time.
- ☐ Mark a minimum of 3 points per item.
- ☐ Draw all markout lines using a straight edge.
- ☐ Draw each target 1" wide or greater per SIM specification.
- ☐ Use continuation arrows at the end of each line if the item continues out of scan area.
- ☐ Check findings using angled scans with at least 2 scans at each 45-degree angle.
- ☐ Check findings using cross polarized scans. Collect least 2 scans at each 90-degree angle.
- ☐ Check accuracy of all markings by inserting a reference dash at the center of each marking while scanning forward.

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SIM Investigation Methods for Complete Concrete Investigation, Continued:

- ☐ Use electromagnetic receiver and transmitter to connect to exposed utilities if possible. Follow SIM Spec utility investigation procedures.
- ☐ Perform a passive sweep of each area with electromagnetic receiver using both Power and Radio modes.
- ☐ Mark the scan boundaries for each scan location.
- ☐ Document findings with photos and additional reporting if required.

SIM Post Investigation Hand Off:

- ☐ Conduct a recap and review of findings with site contact.
- ☐ Explain scan findings––Where did the technologies work well and where results were inconclusive due to interference and or soil conditions.
- ☐ Explain markings and depth estimates.
- ☐ Review original scope to confirm expectations were met/exceeded.

Notes Regarding Scan Data Collection and Quality:

Additional Investigation Notes: _____

This checklist details steps and methods that ensure the best nondestructive concrete scan results. The SIM approach, (experienced-based training combined with multiple technologies, and step by step site methods) has proven to be consistently accurate and efficient in accounting for site variability.

Please visit www.simspec.org for more information and detailed SIM specification.