NOTES:

1. THIS DOCUMENT CONTROLS INSTALLATION OF INFOCHIP DURAPLUG 6 RFID TAG PRODUCTS IN THE FOLLOWING INSTALLATION TYPES: "NEAR-FLUSH" AND "RECESSED".

2. IT IS THE CUSTOMER RESPONSIBILITY TO ENSURE THAT THE TARGET ASSET MAINTAINS SUFFICIENT STRUCTURAL INTEGRITY AFTER DRILLING AND INSTALLATION OF THE DURAPLUG 6 DEVICE ON THE ASSET.

3. IT IS THE CUSTOMER RESPONSIBILITY TO ENSURE THAT THE INSTALLED LOCATION OF THE DURAPLUG DEVICE ON THE ASSET WILL PERMIT THE TAG TO BE SCANNED BY ANY RFID READERS DESIGNED FOR USE BY THE CUSTOMER.

4. INFOCHIP REQUIRES THE USE OF CUSTOM INFOCHIP-SUPPLIED DRILL BITS TO ENSURE THE DRILLED HOLES EXHIBIT THE CRITICAL FEATURES AND ACCURACY NEEDED FOR A RELIABLE PRESS-FITTED INSTALLATION.

5. INFOCHIP REQUIRES THE USE OF A CUSTOM INFOCHIP-SUPPLIED TOOL (HOLETOL-6) FOR ANY INSTALLATIONS TO BE USED IN SERVO ENVIRONMENTS WHICH WOULD NEED INCREASED PRESS-FIT RETENTION. THE HOLETOL-6 IS A BASIC HAND-OPERATED TOOL USED TO ADD AN UNDERCUT TO THE DRILLED HOLE BEFORE PRESS-FITTING.

6. INFOCHIP RECOMMENDS THE USE OF MILLING/DRILLING EQUIPMENT WITH A COLLET-TYPE CHUCK TO ENSURE HIGH RIGIDITY OF THE DRILLING SETUP WITH MINIMAL RUNOUT. A "DRILL-CHUCK" SHOULD NOT BE USED. A COLLET CHUCK TO BE USED SHOULD BE VERIFICATION BY DIAL INDICATOR WITH A TOTAL INCLUDED RUNOUT OF LESS THAN 0.013MM (0.0005").

7. INSTALLATION PROCEDURE FOR "NEAR-FLUSH" INSTALL IS SHOWN ON SHEET 5. INSTALLATION PROCEDURE FOR "RECESSED" INSTALL IS SIMILAR AND IS NOT SHOWN ON THIS DRAWING.
NOTES:
1. NEAR-FLUSH DRILL BITS FOR DURAPLUG 6 ARE OFFERED IN TWO CONFIGURATIONS:
   BIT-6-F-TOOLREQD: THE BIT MUST ONLY BE USED WITH HOLES WHICH WILL BE TREATED WITH THE 6mm SEVERE SERVICE HOLE TOOL.
   BIT-6-F-NO-TOOL: THE BIT MUST NOT BE USED WITH HOLES WHICH WILL BE MODIFIED WITH THE 6mm SEVERE SERVICE HOLE TOOL.
2. A MODEL OF BIT-6-F-TOOLREQD IS SHOWN ON THE LEFT OF THIS PAGE FOR REFERENCE (DRILL FLUTES ARE NOT SHOWN).
3. BITS ARE DESIGNED TO BE USED IN A SINGLE PLUNGE OPERATION.
4. BITS ARE 2-FLUTE HELICAL TYPE, GROUND TO INFOCHIP SPECIFICATION FROM SOLID MICRO-GRAIN CARBIDE. BITS ARE COATED WITH TITANIUM NITRIDE.
5. BITS ARE TO HAVE PERMANENT MARKINGS AS SHOWN IN THE TABLE ON THIS SHEET, INCLUDING THE DESIGN REVISION AS SHOWN.
6. BITS ARE TO BE INDIVIDUALLY PACKAGED AND CUTTING END SHOULD BE PROTECTED.
7. BITS ARE TO BE USED IN A SINGLE PLUNGE OPERATION.
8. EFFECTIVE HOLE DEPTH TOLERANCE IS ENSUERED BY THE USE OF INFOCHIP "NEAR-FLUSH" DRILL PROVIDED THAT THE DRILLING DEPTH IS SUFFICIENT TO PRODUCE THE "SPOT-FACE" FEATURE.
9. THE "NEAR-FLUSH" BITS ARE TYPICALLY USED FOR INSTALLATION ON FLAT ASSET SURFACES. IT IS ALSO ACCEPTABLE FOR INSTALLATION TO ASSETS WITH CONVEX CURVATURE WHERE THE RADIUS OF CURVATURE IS A MINIMUM OF APPROXIMATELY 0.75 INCHES. AS AN EXAMPLE, THE "NEAR-FLUSH" BIT CAN BE USED FOR INSTALLATIONS ON A PIPE MEASURING 2 INCHES IN OUTER DIAMETER.
10. INFOCHIP RECOMMENDS THAT THE PRIMARY BORE (LOWER) BE MEASURED AFTER DRILLING TO ENSURE A PROPER PRESS-FIT. SUGGESTED MAXIMUM ALLOWABLE & MEASURED BORES ARE SHOWN IN THE TABLE ON THIS SHEET. THE LOWER BORE DIAMETER CAN BE MEASURED USING A HALF-BALL TYPE HOLE GAUGE ALONG WITH A MICROMETER.
NOTES:
1. RECESSED DRILL BITS FOR DURAPLUG 6 ARE OFFERED IN TWO CONFIGURATIONS: BIT-6-R-TOOLREQD: THIS BIT MUST ONLY BE USED WITH HOLES WHICH WILL BE MODIFIED WITH THE 6mm SEVERE SERVICE HOLE TOOL.
   BIT-6-R-NO-TOOL: THIS BIT MUST NOT BE USED WITH HOLES WHICH WILL BE MODIFIED WITH THE 6mm SEVERE SERVICE HOLE TOOL.
2. A MODEL OF BIT-6-R-TOOLREQD IS SHOWN ON THE LEFT OF THIS PAGE FOR REFERENCE (DRILL FLUTES ARE NOT SHOWN).
3. BITS ARE DESIGNED TO BE USED TO CREATE A VARIABLE-DEPTH COUNTERSUNK RECESS, IN A SINGLE PLUNGE OPERATION.
4. BITS ARE 2 FLUTE HELICAL TYPE, GROUND TO INFOCHIP SPECIFICATION FROM SOLID MICRO-GRAIN CARBIDE. BITS ARE COATED WITH TITANIUM NITRIDE.
5. BITS ARE TO HAVE PERMANENT MARKINGS AS SHOWN IN THE TABLE ON THIS SHEET INCLUDING THE DESIGN REVISION AS SHOWN.
6. BITS ARE TO BE INDIVIDUALLY PACKAGED AND CUTTING END SHOULD BE PROTECTED.
7. THE DRAWING INCLUDES VIEWS OF A REFERENCE ASSET DRILLED TO AN ARBITRARY RECESS DEPTH SHOWN FOR EXAMPLE. THE BIT SHOULD BE ABLE TO ACCOMMODATE A MAXIMUM RECESS DEPTH AS SHOWN ABOVE (MAXIMUM THEORETICAL RECESS).
8. ALL FEATURES ON THE CUTTING END OF THE BIT ARE CUTTING FEATURES INCLUDING RADII. THERE ARE NO NON-CUTTING FEATURES.
9. INFOCHIP RECOMMENDS THAT THE PRIMARY BORE (LOWER) BE MEASURED AFTER DRILLING TO ENSURE A PROPER PRESS-FIT. SUGGESTED MAXIMUM ALLOWABLE MEASURABLE BORES ARE SHOWN IN THE TABLE ON THIS SHEET. THE LOWER BORE DIAMETER CAN BE MEASURED USING A HALF BALL TYPE HOLE GAUGE ALONG WITH A MICROMETER.
PROCEDURE FOR USING SEVERE SERVICE HOLE TREATMENT TOOL FOR DURAPlug 6:

1. Check that the lower bore is within specification for tool required type hole before proceeding.
2. Remove any debris from the drilled hole.
3. Locate the hole plug 6 over the hole and ensure the tip of the tap is engaged in the hole.
4. Hold the base firmly against the asset with one hand to prevent the hole plug 6 from twisting or moving during use.
5. Apply rough 3 pounds of downward force to the knob and turn the knob clockwise by hand.
6. Continue pressing down while turning until the tap contacts the bottom of the hole. At this point, a sharp rise in the driving torque will be felt and tapping should be stopped at this point (about 2.5 turns)...
7. Keep holding the base firmly and rotate the knob counter-clockwise to extract the tap. Once the tap is disengaged with the threads (about 2.5 turns) the jig can be lifted away and hole treatment is competed.

ADDITIONAL NOTES:

- The hole plug 6 is used to create a controlled undercut in the lower bore of drilled holes for DURAPlug 6. Pressure-fitting a treated (undercut) hole allows maximum press-out force and maximum retention of the installed DURAPlug.
- The resulting controlled undercut is a thread form with partial depth and is visible to the naked eye. An example photograph of side-by-side treated and untreated drilled holes is shown below.
- The hole plug 6 can be used to treat both flush and recessed holes.
- The tool is designed to be used by hand where holes are drilled into assets on flat surfaces; the tool base is designed to be used with other asset surfaces (such as cylindrical surfaces).

PHOTOGRAPHIC EXAMPLE OF TREATED AND UNTREATED DRILLED HOLES

Visible Helical Form

No Visible Form

TREATED HOLE

UNTREATED HOLE
Installation Steps (Near-Flush Type):

1. Ensure that the Asset is Drilled and that the Hole is Treated, as Applicable to Specifications and the Install Hole is Cleaned of Any Cutting Fluid or Debris.

2. Place the Duraplug with Logo Side Up on the Asset near the Hole. Use Finger on the Tag to Slide it into Position. When Nested in Position, the Tag Will Drop Down Slightly. At This Point it is Nested, Ready to Be Press-Fit.

3. Use a Press such as an Arbor Press or Drill Press and Check the Driver Tool in the Press (Not Shown).

4. Use the Press to Install the Duraplug until it is Flush with the Drilled Countersink. Use Only Enough Force Needed to Seat the Plug Flush with the Spotface Surface.

5. Visually Inspect the Installation for Full Insertion and Carry Out Reading Test.

Additional Notes:

- An Example of a Driver Tool is Shown which Will Fit to a Drill Chuck of a Drill Press. The Driver Tool Geometry Can Be Changed as Needed Based on the Type of Press that Will be Used. Ensure that the Driving Face of the Tool Is Flat, Smooth and Square. Acetal Material (Delrin, Acetron, etc.) Is Recommended for the Material.

- For Treated Holes, Infochip Strongly Recommends to Use a Press for the Installation.

- For UnTreated Holes, A Duraplug 6 Can Be Removed Without Damaging the Installation Hole. The Following Procedure Can Be Used with Flush and Recessed Installations and With Treated and Untreated Holes:

1. Drill a 9/64" Hole Through the Tag Using a Twist Drill, Try to Drill Close to Center. Drill to approximately 2mm Deep.

2. Tap a T25 (Torx) Screwdriver until it Bottoms Out. Try to Drill Close to Center. Drill to Approximately 2.5mm Deep.

3. For a Treated Hole: Simply Twist the Tag Counter-Clockwise and the Plug Will Screw Out in Approximately 2.5 Turns.

4. For an Untreated Hole, Twist and Lift Slightly and the Plug Will Move Out of the Hole Remaining Fixed to the Screwdriver Tip.