**3D CAD File Checklist**

**General Requirements**

1. File names of the part or print to be provided, following naming convention here:
	1. NNNNNN(space)Name,(space)Descriptor,(space)rN
	2. For example: 284561 Housing, Back, r2
	3. 387498 SCREW, PAN, M3X12, SS
2. All parts and prints to be done in SOLIDWORKS 2017 (please ask, this is flexible)
3. Part files and print dimensioning to be done using part, assy, drawing file templates at link

**3D Part Files (General):**

1. All external references locked (not broken)
2. Material is applied to part
3. Appearance is verified for part
4. No part configurations, unless confirmed with designer.
5. Units of part are consistent with design intent
6. Sketches fully constrained
7. Part designed with reasonable orientation with respect to origin and principle planes
8. Features in tree grouped according to basic function
9. Core geometry is at top of feature tree, no fillets in core geometry (with few exceptions).
10. Fillets for rounding edges grouped in folder at end of feature tree
11. Multi-body parts must be saved into separate parts via Save Bodies or Split, etc.
12. Size of features is reasonable relative to manufacturing process
13. Part or Assembly metadata/properties are correct and accurate.

**Master Model (used to drive mating plastic housings and assemblies):**

1. Master Model part file opens with:
	1. No errors in the feature tree
	2. No suppressed features
	3. Fully defined sketches
2. All Master Model geometry is fully editable within its feature tree, no imported bodies.
3. Master Model features grouped in folders for clarity:



Master Model file has basic part interfaces and core surface geometry defined. Parting line is defined and main parting line draft is specified.



Child part creation: Insert Part (Master Model)



Delete/Keep Bodies (upper housing)
Add any additional features in part (non-mating ribs, part-specific draft, fillets, etc.

**3D CAD – Manufacturing Review**

**Injection Molded / Die Cast Parts**

1. Draft Analysis run, draft is acceptable for providing the desired surface finish (generally 1 degree for up to around 1” of feature depth)
2. Thickness Analysis run, no issues
3. Shut off faces (mold steel coming into contact with mold steel during the closing of the mold) to be drafted 3 degrees or more
4. Thin knife-edges of steel in mold are avoided
5. Undercuts or side-actions/cams are approved by mfg or engineering
6. Boss wall thickness and reinforcing ribs to be 40-60% of the nominal wall thickness.
7. Wall thickness not too thin in which case leads to lack of fill issues
8. Wall thickness correctly sized in areas to avoid shrink on cosmetic faces.

**Sheet Metal Parts:**

1. Features are modeled with Sheet Metal tools, and allows unfolding to create flat pattern
2. Standard thickness/gauge sheet metal is applied.
3. Tabs and features near bends are reviewed with mfg

**Machined Parts:**

1. Internal fillets for machined corners are appropriately sized.
2. Deep drilled holes are confirmed with machinist (5-10x diameter, ask questions, 10x dia is tricky)
3. Parts modeled with operations in mind, minimizing setup to minimize cost

**Assemblies:**

1. The 3D Assembly file should be fully constrained as it would be in the actual assembly.
2. Threaded inserts in assembly
3. Screw engagement is sufficient (2-3X diameter)
4. Adhesive or glue inserted into assembly as phantom part (no geometry) to ensure BOM is correct
5. Purchased components have their Part Number, mfg, and misc metadata in part properties