

NOTES: (UNLESS OTHERWISE SPECIFIED)

- THREE DIMENSIONAL CAD GEOMETRY PROVIDED BY APPLE INC. SHALL BE USED FOR CREATION OF THIS PART OR ASSEMBLY. DRAWING SHALL BE USED TO IDENTIFY CRITICAL TOLERANCES AND REFERENCE FEATURES. DIMENSIONS ON DRAWING SHALL BE USED AS REFERENCE ONLY UNLESS OTHERWISE SPECIFIED ON DRAWING.
- ALL DIMENSIONS AND TOLERANCES APPLY PER ASME Y14.5, 2009. IT IS EXPECTED THAT THE SUPPLIER UNDERSTAND AND COMPLY WITH ALL TOLERANCES AS DESCRIBED IN THIS STANDARD AND APPLIED TO THIS DRAWING.
- ALL DIMENSIONS THAT LOCATE GEOMETRICALLY TOLERANCE FEATURES (PROFILE AND POSITION CHARACTERISTICS) ARE CONSIDERED BASIC AS DEFINED IN THE ASME Y14.5M, 2009 STANDARD.
- ON PARTS SUBJECT TO FREE STATE VARIATION, ALL GEOMETRIC TOLERANCES APPLY WHEN THE PART IS RESTRAINED ACCORDING TO FUNCTIONAL MATING CONDITIONS AS DEFINED BY THE FEATURE CONTROL FRAME (DATUM'S A, B, AND C). SEE APPLE INC. MECHANICAL QUALITY ENGINEER (MQE) FOR APPROVAL/CLARIFICATION ON INDIVIDUAL PARTS.
- WHEN DATUMS ARE SPECIFIED ON A DRAWING, DIMENSIONS ARE RELATED TO DATUM A (AS THE PRIMARY DATUM), DATUM B (SECONDARY), AND DATUM C (TERTIARY).
- PERFECT ORIENTATION AND/OR PERFECT LOCATION AT MMC REQUIRED FOR THE INTERRELATIONSHIP OF ALL DATUM FEATURES OF SIZE, UNLESS OTHERWISE SPECIFIED ON DRAWING.
- UNLESS OTHERWISE SPECIFIED, ALL SURFACES TO BE WITHIN A SURFACE PROFILE TOLERANCE OF $\sqrt{0.15} \sqrt{A} \sqrt{B} \sqrt{C}$.
- DIMENSIONS DESIGNATED WITH THE M SYMBOL SHALL BE FIRST ARTICLE INSPECTION DIMENSIONS. THREE SAMPLE PARTS MUST BE FULLY INSPECTED. FAI REPORT MUST BE VALIDATED AND APPROVED BY APPLE INC. MQE.
- DIMENSIONS DESIGNATED WITH THE S SYMBOL SHALL BE PRODUCED WITH STATISTICAL TOLERANCE PROCESS CONTROLS. IN ORDER TO USE THE TOLERANCE ON A FEATURE, THE STATISTICAL PROCESS (CP, CPK, ETC) OF THE PART MUST BE VALIDATED AND APPROVED BY APPLE INC. MQE.
- ALL TOOLING, FIXTURING AND OTHER UNIQUE ITEMS THAT ARE USED TO CREATE THIS PART ARE THE PROPERTY OF APPLE INC. AND SHALL BE PERMANENTLY MARKED WITH APPLE INC.'S NAME AND APPROPRIATE APPLE INC. PART NUMBER.
- THE DESIGN OF ALL TOOLING OR FIXTURING REQUIRED FOR THE MANUFACTURING OR VERIFICATION OF THE PART SHALL BE APPROVED BY THE APPROPRIATE APPLE INC. ENGINEER PRIOR TO TOOL OR FIXTURE FABRICATION.
- ALL HOMOGENEOUS MATERIALS MUST COMPLY WITH THE FOLLOWING ENVIRONMENTAL SPECIFICATIONS:
 - APPLE INC. REGULATED SUBSTANCES SPECIFICATION, 069-0135
 - APPLE INC. RECYCLED & RENEWABLE MATERIAL SPECIFICATION, 099-15583
- MATERIAL: APAL-6R01-100 AS SPECIFIED PER APPLE INC. SPEC 088-02104, LATEST REVISION.
 - EXTRUDED PROFILE TO BE MANUFACTURED FROM DC CAST BILLET AS SPECIFIED IN APPLE INC. SPEC 099-13353, LATEST REVISION.
 - EXTRUDED PROFILE TO BE MANUFACTURED ACCORDING TO AN APPLE INC. APPROVED PROCESS DFM, LATEST REVISION.
 - ALL IPOC PARAMETERS TO BE REPORTED PER APPLE INC. APPROVED DFM, LATEST REVISION.
 - EXTRUSION SHALL CONSIST OF 100% 6XXX SCRAP OR AS SPECIFIED IN THE APPLE INC. APPROVED PROCESS DFM LATEST REVISION, INCLUDING PERCENTAGES, TOLERANCES, AND TYPES OF RECYCLED INPUT.
 - NO PRIMARY ALUMINUM IS TO BE USED.
 - ALL CHANGES MUST BE APPROVED BY APPLE INC.
- AGE CONDITION: T6
- NO VISIBLE STREAKING, SURFACE STRETCHING, NON-UNIFORM GLOSS OR COLOR, DIE LINES, DEEP DENTS, SURFACE DEFECT, BUBBLE, PINHOLES, DEEP PITTING, PIPING DEFECT, EXTRUSION LINES, BLACK LINES, OR WHITE LINES TO BE PRESENT
- GRAIN DIRECTION
 - GRAIN DIRECTION = PARALLEL TO LONG DIMENSION, INDICATED BY GRAIN DIRECTION INDICATOR
- MEASURE EXTRUDED BAR PROPERTIES AS SPECIFIED BY APPLE INC. QUALITY PLAN 099-02353, LATEST REVISION
 - REFER TO TABLE 1-1 FOR MATERIAL PROPERTIES
 - COSMETIC PLANE DEPTH: 0.90MM
 - MACHINE TENSILE SPECIMENS FROM EXTRUDED BAR
- RESPONSE TO ANODIZING TEST TO BE ESTABLISHED WITH APPLE INC. MQE FOR OQC AND IOC TESTING
- ALL CNC CHIPS AND STAMPED SHEET SCRAP PRODUCED FROM ENCLOSURE MANUFACTURING PROCESS SHALL BE SEGREGATED AND RETURNED TO AN APPLE INC. DESIGNATED VENDOR
- EXTRUSION 2D BARCODE LOCATION
- ALL ADHESIVES, COATINGS AND PAINTS, PRINTING INKS, AND CLEANING AGENTS USED IN THE MANUFACTURING OF THIS PART MUST COMPLY WITH THE APPLE INC. VOC SPECIFICATION, 099-22549

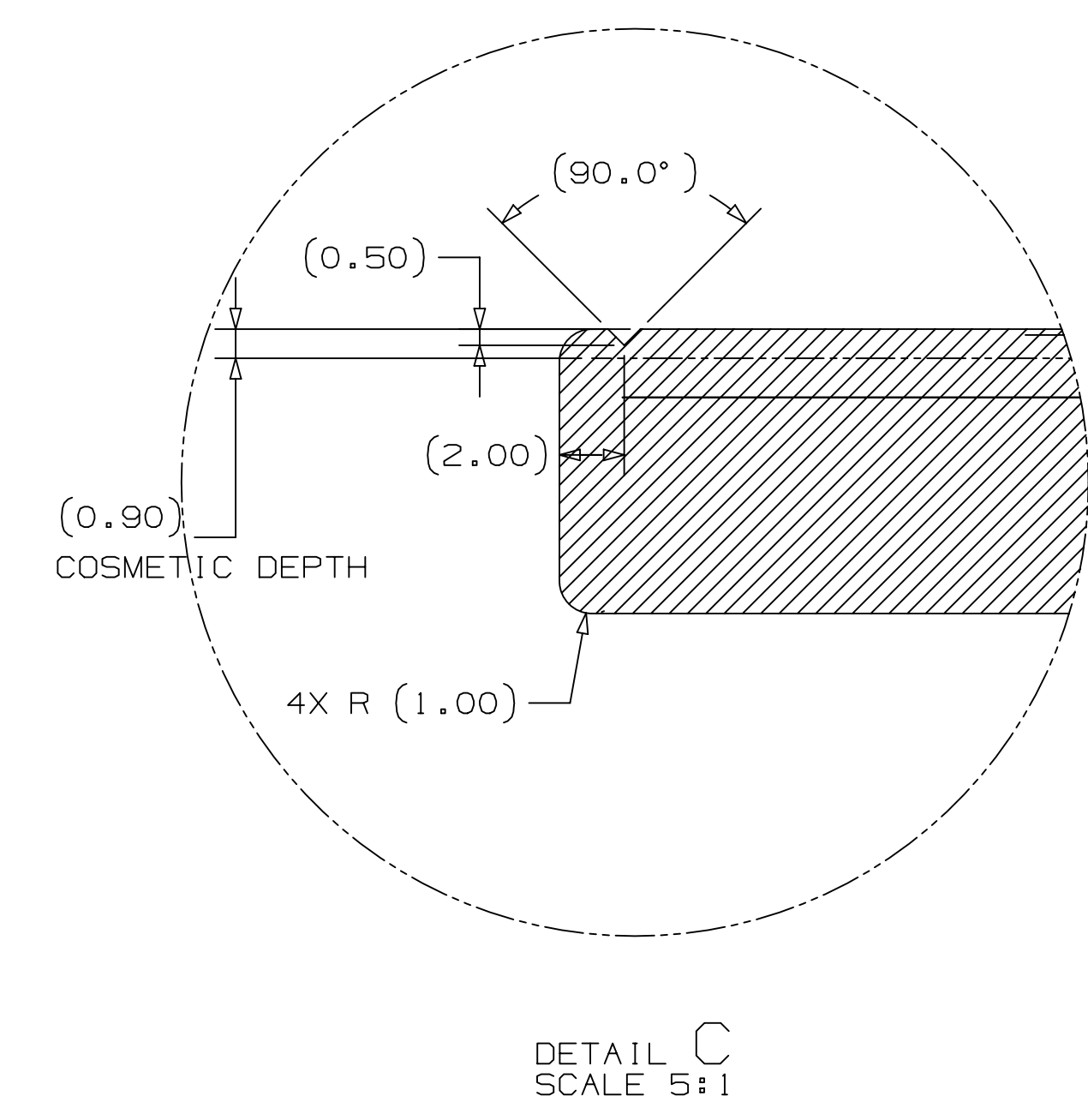
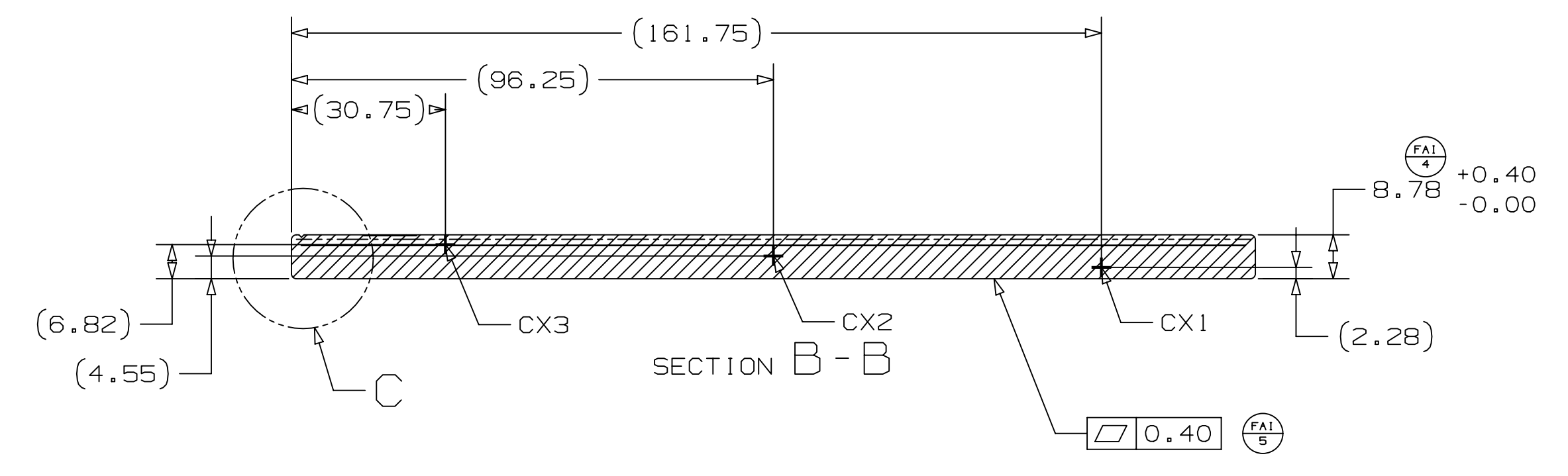
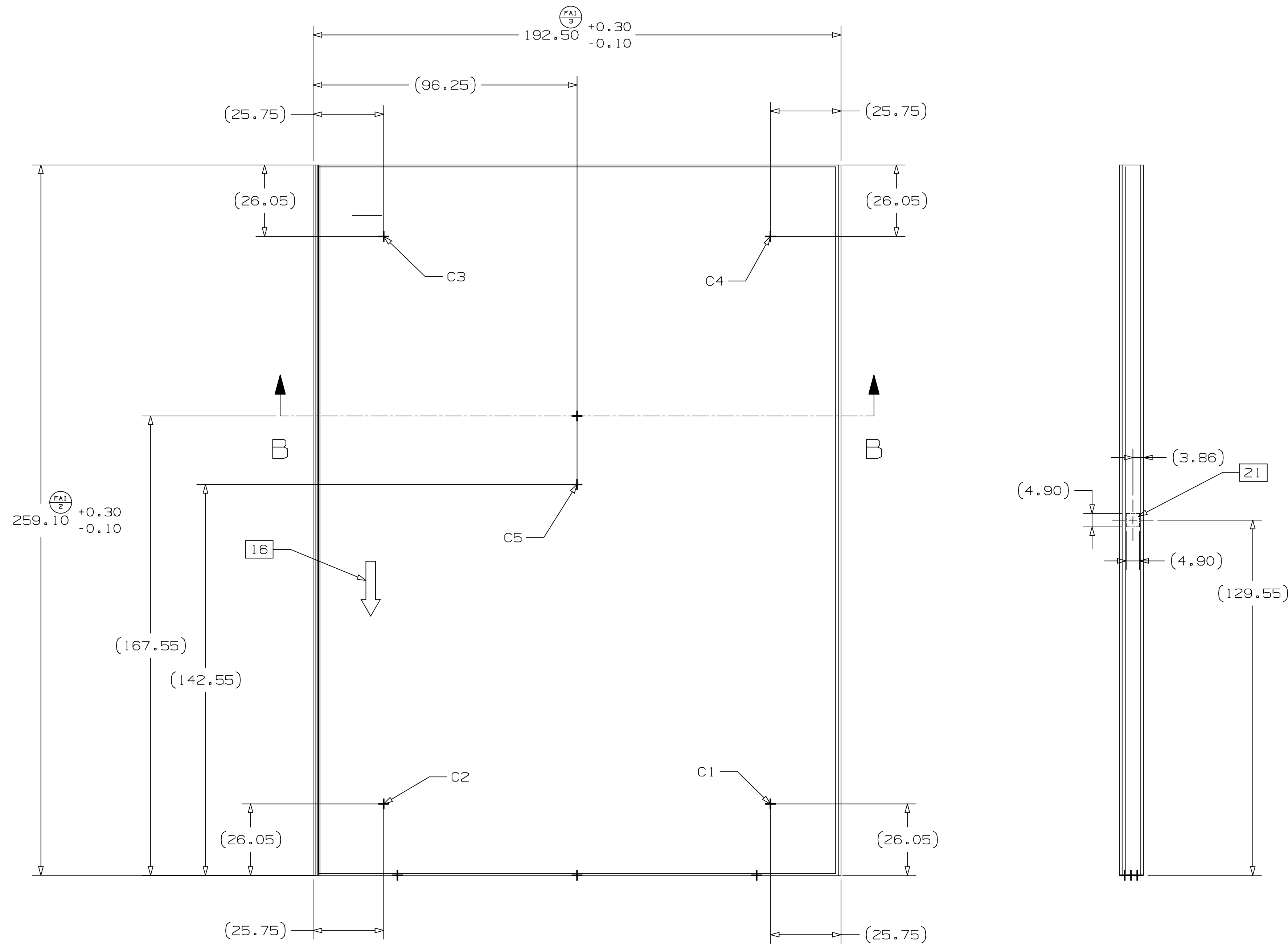


TABLE 1-1: MATERIAL PROPERTIES

TEST	SPEC	TEST LOCATION
LONGITUDINAL TENSILE YIELD STRENGTH	235 MPa MIN	C5
LONGITUDINAL ULTIMATE TENSILE STRENGTH	255 MPa MIN	
ELONGATION AT BREAK	8% MIN	C1, C3, C5, CX2, CX3
HARDNESS	80 HV5 MIN	
AVERAGE GRAIN SIZE	160 μm MAX	C1, C3, C5 AT COSMETIC PLANE DEPTH AND AT CX2, CX3
ALA GRAIN SIZE	525 μm MAX	
AVERAGE GRAIN SIZE AT 0.40MM DEPTH (PERIPHERAL COARSE GRAIN LAYER)	200 μm MAX	CX1, CX3, CX5
GRAIN ASPECT RATIO	0.8-1.25	C5 AT COSMETIC PLANE DEPTH
INCLUSION SIZE	25 μm MAX	
ELECTRICAL CONDUCTIVITY	50% IACS MIN	C1, C3, C5

REV	ECO*	DESCRIPTION OF REVISION
02		INITIAL RELEASE.
03	0031238081	UPDATED COSMETIC DEPTH. ROSS 03/29/21
04	0034604248	RELEASE FOR EVT, CHANGED EXTRUSION LENGTH FROM 275.5 TO 259.1MM. ROSS 09/08/21
05	0036957414	ADDED NOTE 22 VOC SPECIFICATION, UPDATED COSMETIC DEPTH, NOTES TYPO CLEANUP. RICHARD.L1 04/08/22 RICHARD.L1 06/08/22

METRIC		Apple Inc.	
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DESIGNED BY APPLE PD	DATE 08/22/19	TITLE SPEC, EXTRUSION, 6R01, NY, J271	REV. 05
DIMENSIONS ARE IN MILLIMETERS		DRAWING NUMBER 088-04277	SCALE NONE
TOLERANCES		SHEET 1 OF 1	
X.X	±0.2		
X.XX	±0.10		
X.XXX	±0.050		
ANGLES	±0.5°		
DO NOT SCALE DRAWINGS			
THIRD ANGLE PROJECTION			