Math-in-CTE Curriculum Map:
Architecture and Construction

CTE Course/Unit	CTE Concepts	Math Concepts	Middle School Common Core Math Standards	High School Common Core Math Standards
Safety	Tool usage; Shop safety	Statistics (Accidents in industry or schools); Reading and following flow charts	6.SP.4; 6.SP.5; 7.SP.2; 7.SP.3; 7.SP.4; 7.SP.5; 8.SP.1; 8.SP.3; 8.SP.4; 6.EE.2; 6.EE.3; 6.SP.4; 6.SP.5; 8.SP.3; 8.SP.4	S.ID.1; S.ID.2; S.ID.3; S.ID.5; S.ID.6; S.IC.1; S.IC.3; S.IC.4; S.IC.6; S.MD.1; S.CP.1; S.IC.1; S.IC.2; S.IC.5
Architectural design; Careers; Project design; Site layout; Types of drawings; Room planning & layout; Foundation types; Concrete foundations	Residential structure design types; Careers in construction and design; Layout of building site (solar angle); Room size requirements and layout; Different foundation types; Concrete foundation design and types	Symmetry; Earning potential; Trigonometric angle; Scale, ratio, and proportion; Area; Mathematical properties of concrete; Volume; Shear and compression ratios	7.G.5; 6.RP.1; 6.RP.2; 6.RP.3; 7.RP.1; 7.RP.2; 7.RP.3; 7.EE.3; 6.G.1; 6.G.2; 6.G.3; 7.G.1; 7.G.4; 7.G.6; 8.G.9; 6.EE.2	G.CO.9; G.CO.12; G.CO.13; G.SRT.6; G.SRT.8; F.TF.1; F.TF.2; F.TF.7; G.MG.3; G.GPE.7; G.MG.2; G.GMD.1; G.GMD.3
Methods of framing; Framing types; Live and dead loads; Plot plans; Contour and elevation data; Polar coordinates	Balloon framing and platform framing; Floor, wall, ceiling, and roof framing; Construction/ framing; **Stair layout and construction;**	**Measurement; Slope;** Angle; **Estimation; Tolerances;** Load and data analysis; Proportions/ Ratios; Graph interpretation; Spatial -	8.G.6; 8.G.7; 8.G.8; 7.EE.3; 6.RP.1; 6.RP.2; 6.RP.3; 7.RP.1; 7.RP.2; 7.RP.3; 6.EE.2; 6.EE.3; 6.SP.4; 6.SP.5; 7.SP.2; 7.SP.3; 7.SP.4; 8.SP.3; 8.SP.4; 7.G.1; 7.G.2	G.SRT.6; G.SRT.8; F.IF.8; N.Q.3; G.MG.3; S.IC.1; S.IC.2; S.IC.3; S.IC.4; S.IC.5; S.IC.6; S.ID.1; G.C0.5; G.MG.1; G.MG.3; G.CO.12; G.CO.13;

	Calculating loads (beams); Scale; Interpret elevation data; Use polar coordinates to lay out a site/plot plan	conversion of 3D to 2D; Graphing/ plotting		G.GMD.4
Roofing materials and methods; Windows and doors; Door and window schedules; Floor plans	Application and different types of roof coverings; Types of doors and windows; Aesthetics; Generation of window and door schedule; Floor plan requirements and generation	Area and cost information; Symmetry, area usage; Charts; Area, square footage	6.EE.2; 6.EE.3; 6.SP.4; 6.SP.5; 7.SP.2; 7.SP.3; 7.SP.4; 8.SP.3; 8.SP.4; 6.G.1; 6.G.2; 6.G.3; 7.G.1; 7.G.4; 7.G.6; 7.G.5	S.IC.1; S.IC.2; S.IC.3; S.IC.4; S.IC.5; S.IC.6; S.ID.1; G.GPE.7; G.MG.2; G.CO.9; G.CO.12; G.CO.13
Material and cost estimation; Interior and exterior finishes Construction details; Section drawings	Residential building material and cost estimation; Building cost restraints; Detail drawings and section views	Linear, area, and volumetric calculation of materials; Scale, ratios, and proportion	6.G.2; 6.G.3; 7.G.6; 8.G.9; 6.EE.2; 7.G.1; 6.G.1; 6.RP.1; 6.RP.2; 6.RP.3; 7.RP.1; 7.RP.2; 7.RP.3; 7.EE.3	G.GMD.1; G.GMD.3; G.MG.2; G.GPE.7; G.MG.3
Exterior finishes; Residential electrical	Types and uses of exterior finishes; Residential electrical requirements; Electrical plans	Linear and area calculations; Power, resistance, and current equations and their relationships; Electrical material estimation	6.G.1; 6.G.2; 6.G.3; 7.G.1; 7.G.4; 7.G.6; 6.EE.2; 7.EE.1; 7.EE.2; 8.G.6; 8.G.7; 8.G.8	G.GPE.7; G.MG.2; A.REI.1; A.REI.2;

Residential plumbing	Residential plumbing requirements; Plumbing plans	Slope and volume; Water pressure; Plumbing material estimate	6.G.2; 6.G.3; 7.G.6; 8.G.9; 6.EE.2; 7.G.1	G.GMD.1; G.GMD.3; G.MG.2; G.SRT.6; G.SRT.8; F.IF.8
Residential HVAC and Mechanical	Residential HVAC requirements; HVAC/ mechanical plans	Volume, cross-sectional area and flow ratios; HVAC materials estimate	6.G.2; 6.G.3; 7.G.6; 8.G.9; 6.EE.2; 7.G.1; 6.G.1	G.GMD.1; G.GMD.3; G.MG.2; G.GPE.7
Architectural modeling; Application of theory through drawing final project	Architecture model construction	Scale and proportions; Assessment of completed project	6.RP.1; 6.RP.2; 6.RP.3; 7.RP.1; 7.RP.2; 7.RP.3	