**Lesson Plan Outline Geometry in Construction**

**Title:**

Translations, Reflections, & Rotations

**Objective(s):**

Students will perform transformations of line segments and shapes in the coordinate plane

**Learning Standard(s):**

[CCSS.MATH.CONTENT.HSG.CO.A.2](http://www.corestandards.org/Math/Content/HSG/CO/A/2/)

Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

[CCSS.MATH.CONTENT.HSG.CO.A.3](http://www.corestandards.org/Math/Content/HSG/CO/A/3/)

Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

[CCSS.MATH.CONTENT.HSG.CO.A.4](http://www.corestandards.org/Math/Content/HSG/CO/A/4/)

Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

[CCSS.MATH.CONTENT.HSG.CO.A.5](http://www.corestandards.org/Math/Content/HSG/CO/A/5/)

Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

**Activities:**

Students will use software to determine definitions of translations, reflections, and rotations.  Students will discuss what is congruent in each of the shapes

Students will use software and coordinates to determine rules and procedures for performing a transformation in the coordinate plane.

**Materials:**

iPad with Geometry Pad App

Transformations W.S.