SHIPCONSTRUCTOR ESSENTIALS

1. **Introduction to SCE**
   - Navigating/Searching this Document
2. **Prerequisites**
   - SSI Nexus – The Answer!
   - Help and Assistance
   - Desktop App
3. **Installing AutoCAD**
4. **The ShipConstructor Project**
   - Learning Objectives
   - Overview
   - The Project .PRO File
   - The Drawing Files
   - 3D Model Drawings
   - 3D Reference Drawings
   - 2D Production Drawings
   - Template Drawings
5. **Deploying the Training Project**
   - Deploying the Training Project
6. **Training Project Licensing**
   - Using the Training Project License
   - Other Types of Licensing
   - Product Editions
   - Suites
   - Special Licenses
   - Compatibility with Previous Versions of ShipConstructor
7. **ShipConstructor (Application) Installation Procedure**
   - Installing ShipConstructor
   - Configuring Your SQL Server Express Installation
8. **ShipConstructor Tools**
   - Administrator
   - Configure ShipConstructor 20XX
   - NC-Pyros
   - Project Insights
   - Report
   - RuleManager

- The Project
- Working with Navigator
- Units

14. **Working with Drawings**
    - Creating Drawings
    - Opening Drawings
    - Deleting Drawings
    - Additional Navigator Tools
    - Change Project
    - Reload DB
    - Searching and Filtering Revisions
    - Other Options
    - Navigating with the Project Explorer
15. **SSI Portal**
    - Learning Objectives
    - Overview
    - Introduction
    - Launching Portal
    - The Portal Interface
    - Searching within Portal
    - Object Properties Grid
    - Navigating within Portal
    - Navigational Elements
16. **ShipConstructor Grid Types**
    - Telerik Grid
    - Flexgrid
17. **ShipConstructor and AutoCAD Design Tools**
    - Properties Palette
    - Layers
    - List
    - OSnaps
    - Grips
    - Visual Styles
    - Orbit/Pan/Zoom
18. **Product Hierarchy**
    - Learning Objectives

Overview
Levels
Steps to Developing a Product Hierarchy
Product Hierarchy Tools
Set up Multiple Product Hierarchies
Copy a Product Hierarchy
Export a Product Hierarchy to another ShipConstructor Project
Import a Product Hierarchy from another ShipConstructor Project
Set up Product Hierarchy Drawings
Product Hierarchy Drawing Interactions
Key Point
Hide, Show, Find, Zoom, and Remove Parts
To Assign a User-defined Attribute (UDA) to a Product Hierarchy
To Remove a User-defined Attribute
Set up Assembly Levels
Set up Assemblies - Add an Assembly
Set up Assemblies - Rename an Assembly
Set up Assemblies - Edit an Assembly
Set up Assemblies – Change the Level of an Assembly
Set up Assemblies - Copy an Assembly
Set up Assemblies - Deleting Assemblies
Set up Product Hierarchy for Training
Alternative ways to set up Product Hierarchy for Training
Exploded Assembly View
Product Hierarchy and Naming Conventions
Product Hierarchy and Production Drawings
Product Hierarchy and Nesting

19. **ShipConstructor Utilities**

Learning Objectives
3D Viewpoint
Activate UCS
UCS
Flip UCS X
Flip UCS Y
Swap UCS XY Axis
Hide Objects

Unhide Objects
Unhide All Objects
Clip Current View
Remove Clip
3D to 2D
Orthographic Projection
Remove Vertices below Tolerance
Convert Ellipse/Spline to Polyline
Layer
Tool Path
Fillet
Mirror about Centerline
Reload Drawing
Check for Clashes
Overview of Clash Checking
Setting up Your Project for Clash Checking
Local Clash Check
Global Clash Check
Review Clashes Across Your Project
Create a Quality Matrix
Property Labels
Reference Lines
PartViews
Loading PartViews
Checking PartView Properties
Viewing PartViews in the Product Hierarchy
PartView Delete All
Menu Options
PartView Menu
Create WorkView
PartView Refresh
PartView Drawing Options
The Model Link Manager Palette
Model Link Manager Options
Main Menu Commands
Context Menu Commands

- Drawing Selection
- List Item within MLink/XRef Drawings
- Referencing Navisworks Files (Lightweight Model Links)
- Edit All Dwg Options
- Structure
- Hangers
- Pipe
- HVAC
- Electrical
- Equipment
- Export
- Export to DWG
- More with Export to NWC
- Extract Centerline
- Snap
- Snap Settings
- Random Color

20. **Verifying & Submitting Your Project**
21. **Additional Training Information**
22. **SSI Learning**
23. **Certification**
24. **Class Hierarchies & Time Needed (with an instructor)**
    - Hull and Structure Classes
    - Outfitting Classes

Structure Modeling

1. **Product Hierarchy**

   Learning Objectives

   Primary and Non-primary Product Hierarchies

   Naming Convention for Parts

   Product Hierarchy and Nesting

   Renaming Parts and Autonumber

   Planar Groups

   Learning Objectives

   What are Planar Groups?

   Activate Automatic Beveling

   Before You Begin Creating Planar Groups

   Create Planar Groups

   From a Hull Drawing

   From Other Drawing Types

   Interacting with Planar Groups

   Editing Planar Group Settings

   Understanding Planar Groups

   Move Planar Groups

   Regular Exercises SM-R001

2. **Construction Lines**

   Learning Objectives

   What Are Construction Lines?

   Types of Construction Lines

   The Default Layers for Different Lines

   Hull Trace

   PlanarGroupPlane

   User-Defined Construction Line

   Offset Construction Line

   Relationships

   Mirror

   Identicals

   Breaking Line Relationships

   Trimming, Breaking and Polyline Edit

   Editing Offset Construction Lines

Swapping and Replacing Construction Lines
Reviewing Properties of Construction Lines
Managing Relationships
Regular Exercises SM-R002
Advanced Exercise SM-A001

3. Plate Parts

Learning Objectives
Creating Plate parts
Editing Plate Parts
Splitting a Plate Part into Multiple Plate Parts
Boundary Diagnostics
Fixing Invalid Parts
Structure Display Options
Construction Line and Part Relationships

4. Detailing

Flanging
Create and Modify Flanges on Plate Parts
Green
Adding and Modifying Green Material
Marking
Adding Contour Construction Lines and Cutouts
Adding User Construction Lines
Adding Marking Lines
Adding Dynamic Marking Blocks
Managing Datum Lines
Orientation Icons
Editing Piecemarks
Corner Treatments
Adding and Removing Corner Treatments
Moving Construction Lines Affects Parts
Bevel Standards
Defining Bevel Standards
Adding and Removing Bevel Standards
Viewing and Verifying Bevel Solids

Weld Shrinkage
Managing the Weld Shrinkage Icon
Autobevel
Showing Bevel Angles on Plate Parts
Regular Exercises SM-R003
Advanced Exercise SM-A002

5. **Profile Parts**
   Learning Objectives
   Creating & Modifying Stiffeners
   Creating Stiffeners and Loose Stiffeners on Plate Parts
   Attaching Loose Stiffeners to a Plate
   Editing Stiffeners
   Creating & Modifying Face Plates
   Trimming Profiles
   Adding Cutouts in Profiles
   Editing Added Cutouts
   Inserting Welding Seam Reliefs
   Profile Tools & Utilities
   Extracting lines from stiffener (mold line, neutral axis)
   Regular Exercises SM-R004
   Advanced Exercise SM-A003
6. **Curved Plates**
   Learning Objectives
   Creating Curved Plates
   Editing Surface Properties
   Editing Surface Geometric Details
   Editing Marklines
   Replacing the Outer Toolpath
   Adding and Removing Objects to and from a Curved Plate
   Thinning Production Information
   Extracting Production Information from a Curved Plate
   Regular Exercises SM-R005
   Advanced Exercise SM-A004

7. **Plank Parts**
   - Learning Objectives
   - Creating planks
   - Editing Planks
   - Editing Plank Collections
   - Splitting Plank Collections
   - Deleting Planks
   - Deleting Plank Collections
   - Regular Exercises SM-R006
   - Advanced Exercise SM-A005

8. **Corrugated Plates**
   - Learning Objectives
   - Overview
   - Creating Corrugated Plate from Corrugated Stock
   - Creating Corrugated Plate from Plate Stock
   - Modifying Corrugated Plate
   - Detailing Corrugated Plate
   - Adding Objects to Corrugated Plate
   - Corrugated Plate Tools
   - Extracting production information
   - Extracting the Cross section of Corrugated Plate
   - Regular Exercises SM-R007

9. **Custom Plate Parts**
   - Learning Objectives
   - Overview
   - Creating Custom Plate Parts
   - Converting Plate Part to a Custom Plate Part

10. **Twisted Stiffeners**
    - Learning Objectives
    - Overview
    - Creating Twisted Stiffener
    - Editing Twisted Stiffeners
    - Cleaning the Geometry of a Twisted Stiffener

Detailing of Twisted Stiffeners

11. Standard Parts and Standard Assemblies

Learning Objectives
Inserting a Standard Part
Inserting Standard Part on a Stiffener
Modify a Standard Part's Standard
Converting a Standard Part to a Structure Part
Inserting a Standard Assembly
Editing a Standard Assembly
Managing Part Names in a Standard assembly
Anchoring/Un-anchoring Standard Assemblies
Regular Exercises SM-R008
Advanced Exercise SM-A006

12. General Modeling

Learning Objectives
Drawing Options
Managing Structure Drawing Options and Visibility
Copying, Moving and Mirroring Parts
Mirroring Parts
Moving the Parts
Copying the Parts
Modifying Related Parts
Editing Parts that have Identicals or Mirrors
Replicating Parts to Other Planar Groups
Transferring Parts to Other Planar Group
Automatic Cutouts
Making Identical Part Names the Same
Showing and Working with the List of Parts
Checking Planar Groups
Showing Unused Objects in Planar Groups
Part Information
Piecemark Editing
Orientation Icon Editing
Weld Shrinkage

Stiffener Editing

Structure Cutout Editing

Marklines Editing

Construction Line Editing

Miscellaneous Commands

Extract Components

Add Manual Cutouts

Pipe Modeling

1. **Pipe Model Drawing**
   - Learning Objectives
   - Creating a Pipe Model Drawing
   - What Can be Modeled in a Pipe Model Drawing?
   - Interface Settings
   - Optional Configuration Options
   - The Pipe Ribbon
   - Model Drawing Interface and Options
   - Learning Outcomes
   - ShipConstructor Drawing Options
   - Pipe Drawing Options: The NavAid and Behaviour Settings
   - Visual Styles
2. **System Manager**
   - Learning Objectives
   - System Management
   - The Spec Level
   - The System Level
   - The Branch Level
   - Strategies of System Modeling
   - Regular Exercise P-R001
3. **Placing Straight Pipe Elements**
   - Learning Objectives
   - Inserting a Straight Pipe Element
   - Connections
   - Regular Exercise P-R002
4. **Creating Bent Pipe Elements**
   - Learning Objectives
   - Overview
   - Inserting Bent Pipe Elements
   - Mitered Bent Pipes
   - Dynamic Routing Options
   - Routing Along a Polyline

14. Finding and Replacing Stocks

Learning Objectives

Overview

Finding and Replacing Stocks

Regular Exercise P-R013

15. Spooling a System

Learning Objectives

Overview

What are Spools?

The Lifecycle of a Spool

Adding and Removing Spool Breaks

The Spool Manager

Regular Exercise P-R014

16. Pipe Utilities

Learning Objectives

Overview

Transferring Parts to another Model Drawing

Connecting Parts from Different Drawings

Pipe Catalog

1. **Pipe Stock Catalog – Prerequisites**
   Learning Objectives
   The Materials Library
   Grades
   Material Characteristics
   Where and How the Material Characteristics are used

2. **Manufacturers Library**
   Learning Objectives
   Structure of the Library
   Adding Manufacture to the Library

3. **Accessory Packages Library**
   Learning Objectives
   Accessory Packages
   Creating a new type of Accessory
   Creating a new Item
   Creating a New Package
   Collecting items to package & Setting up quantity of items
   Assigning Packages to a Spec (when necessary)
   Copying Packages

4. **User Defined Attributes**
   Learning Objectives
   Creating New UDAs
   Assigning UDA to part/stock/spool.
   Defining Type of UDAs

5. **Naming Conventions - Why You Need Naming Conventions**
   Learning Objectives
   Types of Fields in a Naming Convention
   Available Settings for the DB Field
   Settings of the AutoNumber Field

6. **Pipe Stock Catalog, Size Definitions**
   - Learning Objectives
   - Filtering List of Nominal Sizes
   - Filtering by Units (metric/imperial)
   - Filtering by Contents of Columns
   - Nominal Sizes
   - Creating a Nominal Size
   - Alternative Nominal Sizes
   - Standards
   - Creating an International Standard
   - Creating a Geometrical Standard
   - Creating a Pressure Ratings List
   - Assigning Geometrical Standards (and pressure ratings) to different types of Pipe Elements
   - Size Definitions
   - Creating a Size Definition
   - Creating a Size Definition using the 'New next size' Command

7. **Pipe Stock Catalog, End Treatments**
   - Learning Objectives
   - LineMode Icons
   - Creating a New Icon
   - Treatment Types
   - Learning Objectives
   - Creating a New Treatment Type
   - Properties
   - Learning Objectives
   - End Treatments
   - Learning Objectives
   - Creating End Treatments

8. **Pipe Stock Catalog, Create/Edit Pipe Elements**
   - Learning Objectives
   - Types of Pipe Elements
   - Types/subtypes of Pipe Elements
   - Common Properties of Stock Types and Sub-Types

9. **Specs**
   - Learning Objectives
   - Creating a new Spec
   - Assigning Stocks to Spec/Specs

10. **Catalogs**
    - Learning Objectives
    - Creating a New Catalog
    - Assigning Stocks to Catalog/Catalogs
    - Filtering the List
    - Filtering by Units
    - Filtering by any Column or Group of Columns

11. **Creating Pipe Elements**
    - Learning Objectives
    - Creating New Pipe
    - Creating a new Branch
    - Creating a Cap
    - Generic Ends
    - Valves
    - Creating Different Types of Valves
    - Assigning Icons to Valve Types
    - Creating Handles and 2D Geometry for Handles

12. **Pipe Stock Catalog and Connections**
    - Learning Objectives
    - Accessory Packages
    - Creating Accessory Packages
    - Assigning Accessory Packages to Connections
    - Assigning UDAs to Accessories
    - Regular Exercise PC-R005
    - Pipe Benders Catalog
    - Learning Objectives
    - Bending Machines
    - Types of Bending Machines
    - Parameters of Bending Machines