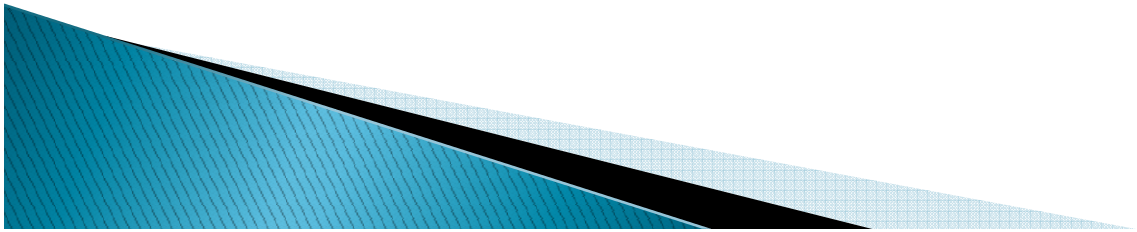
MnDOT Project Management Office Presents:

WBS – Work Breakdown Structure

Presenter: Jonathan McNatty, PSP
Senior Schedule Consultant
DRMcNatty & Associates, Inc.

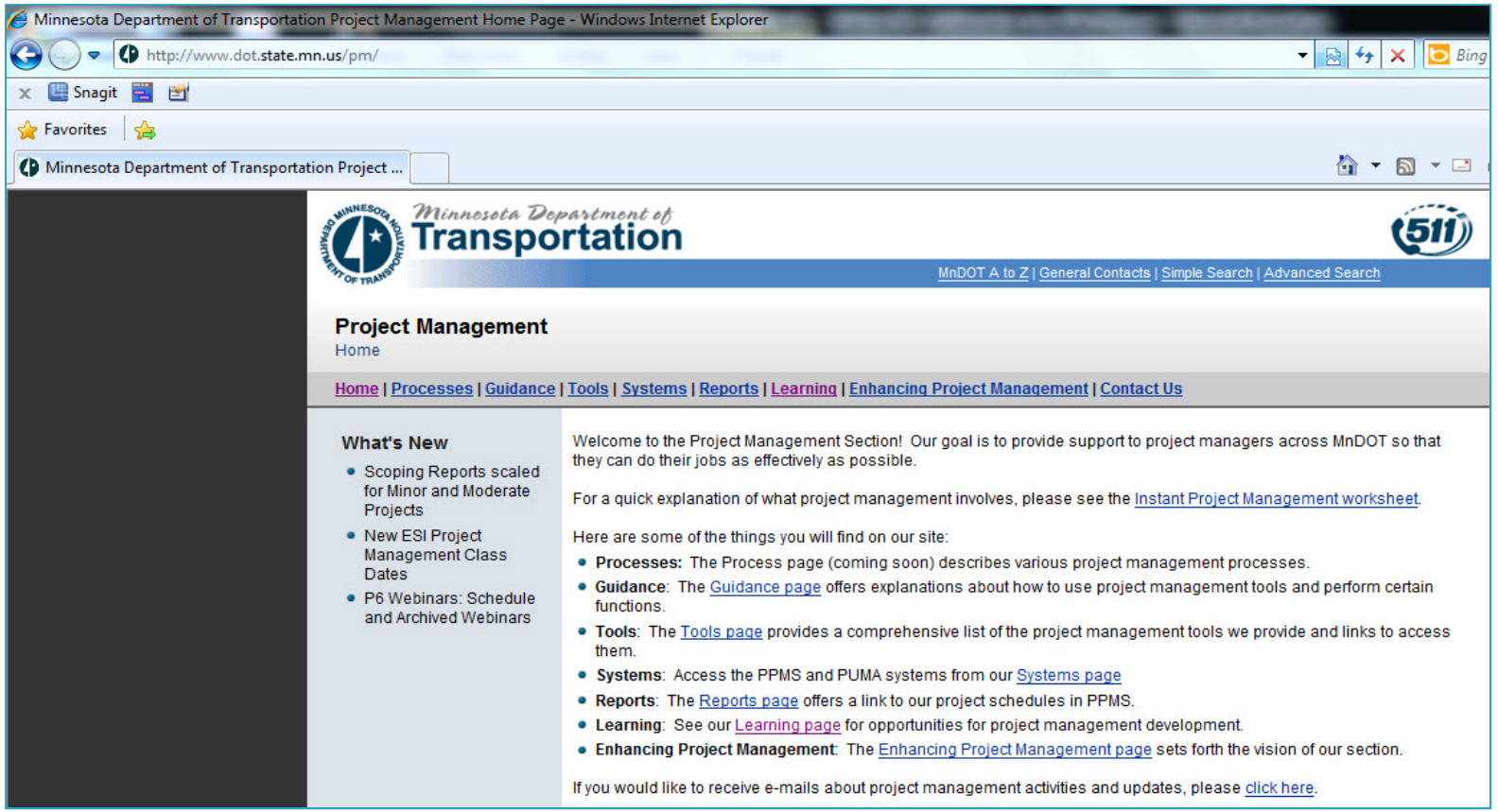
Housekeeping Items

- Lines will be muted during the webinar
- Questions can be submitted thru the GoToWebinar Questions box on right of your screen
- Webinar slides available in pdf on MnDOT webiste within 5 days
- Questions will be posted on the MnDOT website with answers within in 5 days
- Webinar is being recorded and will be available on the MnDOT website within 5 days
- http://www.dot.state.mn.us/pm/



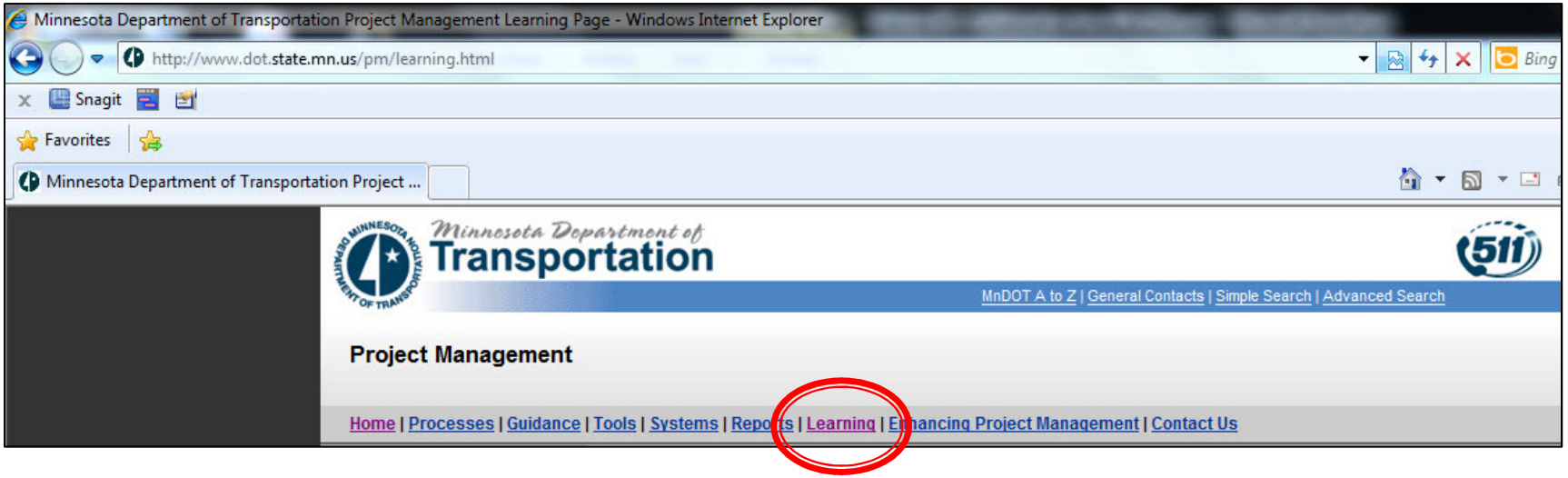
MnDOT Webinars

- http://www.dot.state.mn.us/pm/



MnDOT Webinars

- http://www.dot.state.mn.us/pm/learning.html



- Click on the “Learning” link

MnDOT Webinars

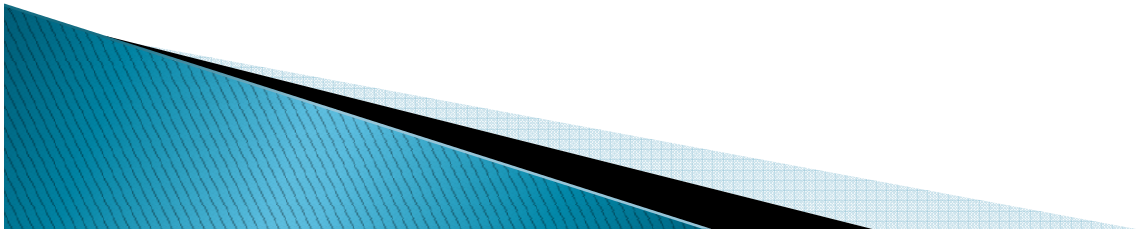
Primavera P6 Webinars: Each webinar will start at 1:00 p.m. and last 1/2 hour. Click the links below to register for a session. After each webinar, a recording will be made available from this page.

To request ASL or a foreign language interpreter or other resonable accomodations for the live webinars, call Janet Miller at 651-336-4720 or 1-800-657-3774 (Greater Minnesota). You may send an email to janet.rae.miller@state.mn.us (please request at least one week in advance).

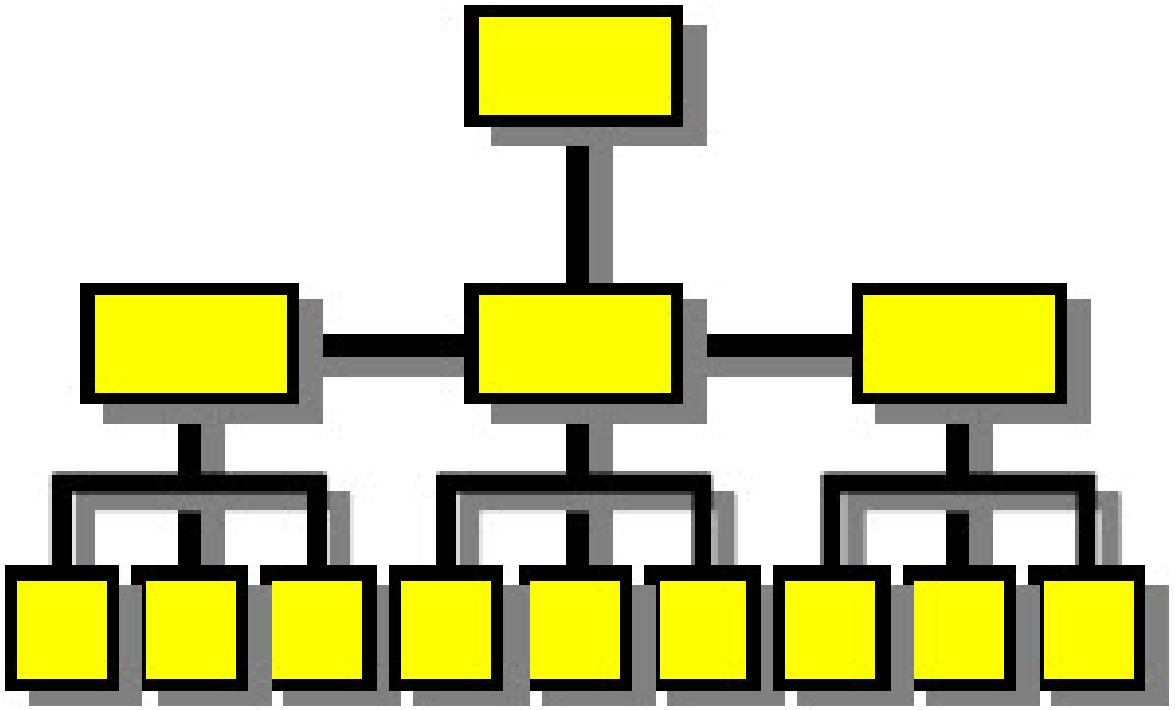
The Future of MnDOT Project Controls	March 13, 2013	
• View this Presentation (13:51, WMV 17 MB)		
• View Slides (PDF 2MB)		
Primavera P6 in the Project Management Process	March 20, 2013	
• View this Presentation (28:39, WMV 40 MB)		
• View Slides (PDF 8MB)		
• View Q&A (PDF 17KB)		
• View Script (Word 25KB)		
Collaborative Scheduling using the CPM Method	March 27, 2013	
• View this Presentation (32:57, WMV 34MB)		
• View Slides (PDF 15MB)		
Work Breakdown Structures	April 3, 2013	Reserve your Webinar seat now
Scheduling Float	April 10, 2013	Reserve your Webinar seat now
Schedule Baselines	April 17, 2013	Reserve your Webinar seat now
Schedule Updates	April 24, 2013	Reserve your Webinar seat now
Project Reporting	May 1, 2013	Reserve your Webinar seat now
Impact Schedules	May 8, 2013	Reserve your Webinar seat now
MnDOT use of Calendars in Primavera P6	May 15, 2013	Reserve your Webinar seat now
Roles and Resource Management	May 22, 2013	Reserve your Webinar seat now
Risk Management	May 29, 2013	Reserve your Webinar seat now
Views and Layouts for Program Management	June 5, 2013	Reserve your Webinar seat now
Dashboards and Reporting for Program Management	June 12, 2013	Reserve your Webinar seat now

Introduction to Webinar

A well-developed WBS is a critical aspect to managing the project schedule. Learn how the WBS assists the Project Team in managing Work Packages at the schedule level for organizing, reporting and tracking.



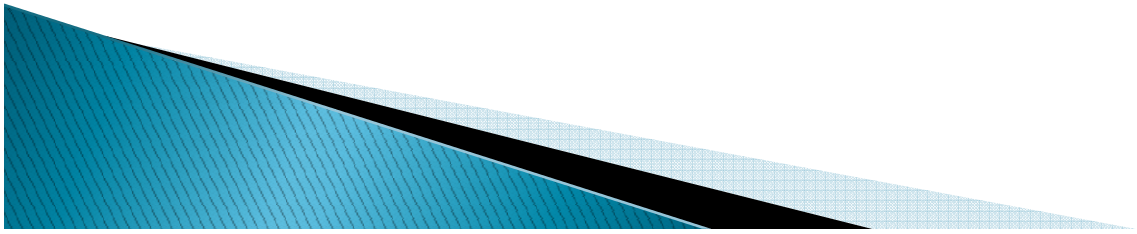
What is a WBS?



Definition of a WBS

❖ A Work Breakdown Structure (WBS) is a fundamental project management technique for defining and organizing the total scope of a project, using a hierarchical tree structure.

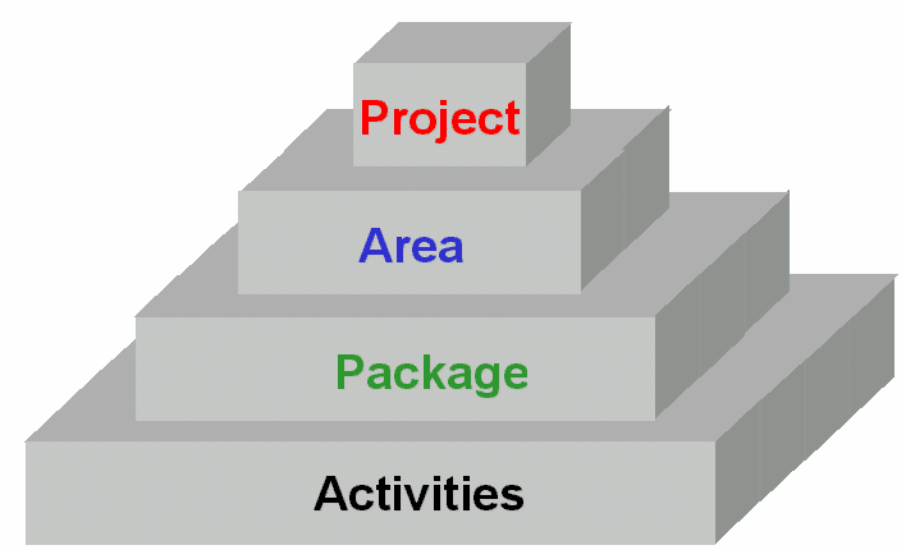
❖ A well-designed WBS describes planned outcomes instead of planned actions. Outcomes are the desired ends of the project, such as a product, result, or service, and can be predicted accurately.



Levels of a WBS

❖ The first two levels of the WBS (the root node and Level 2) define a set of *planned outcomes that collectively and exclusively* represent 100% of the project scope.

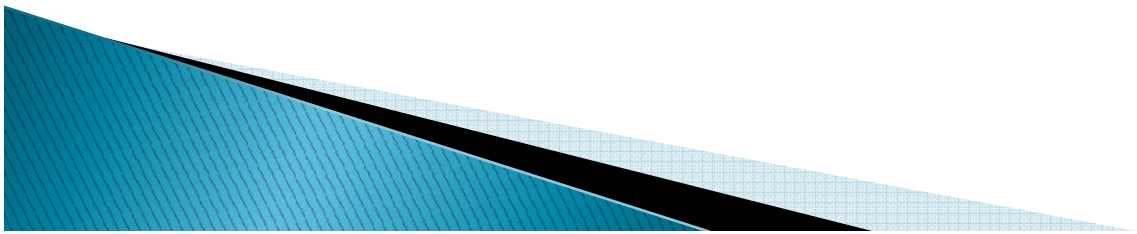
❖At each subsequent level, the children of a parent node collectively and exclusively represent 100% of the scope of their parent node.



The 100% Rule

❖ The 100% Rule…states that the WBS includes 100% of the work defined by the project scope and captures ALL deliverables – internal, external, interim – in terms of the work to be completed, including project management.

❖ The 100% rule is one of the most important principles guiding the development, decomposition and evaluation of the WBS.



W5 – Concept

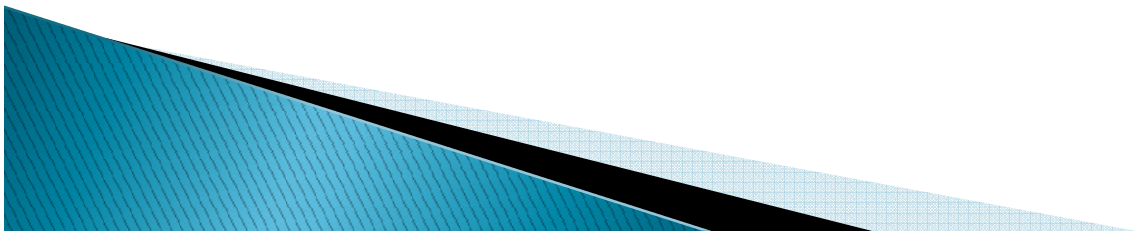
- What has to be done?
- Where does it take place?
- Who has to do it?
- When does it have to be done?
- How much will it cost?

When a project manager has this information, the pm has the basis for "control"

WBS–Work Breakdown Structure

What has to be done?

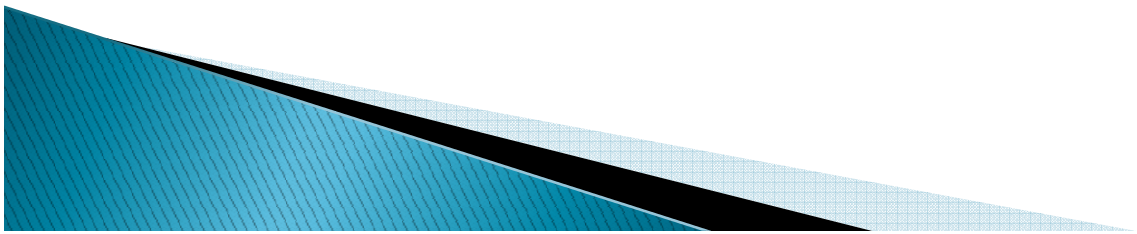
- Part of Project WBS
- Scope
- Deliverables
- Level Of Detail Required
- Site Conditions



WBS–Work Breakdown Structure

Where does it take place?

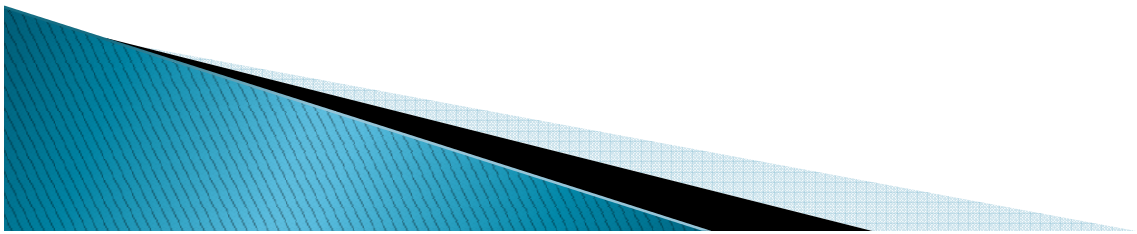
- Part of Project WBS
- Area
- Zone
- Location
- Level
- Stationing



WBS–Work Breakdown Structure

Who has to do it?

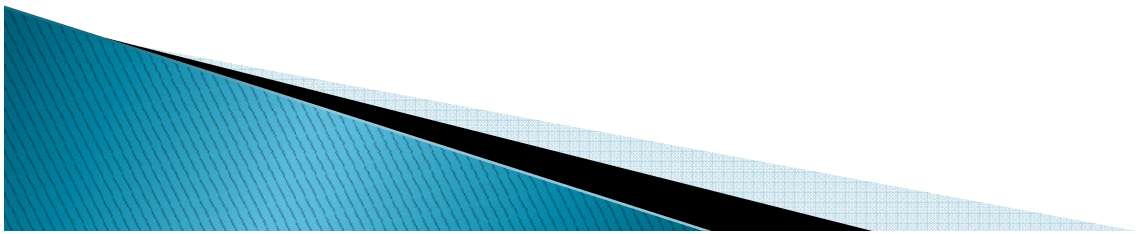
- Part of Project OBS
- Responsible Firm / Person
- Key Agency Interaction
- Responsibility Matrix



WBS–Work Breakdown Structure

When does it have to be done?

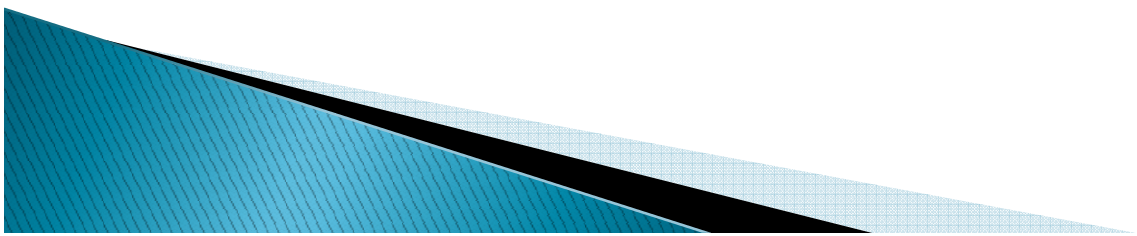
- – Contractual Milestones
- – Access / Interface Dates
- – Limitations on Work Schedule/Dates



WBS–Work Breakdown Structure

- The Project WBS should not be any more detailed than needed to communicate information to various levels of management

- A well defined and communicated WBS is the key to controlling information and effective communications



The Four Elements in Each WBS Element

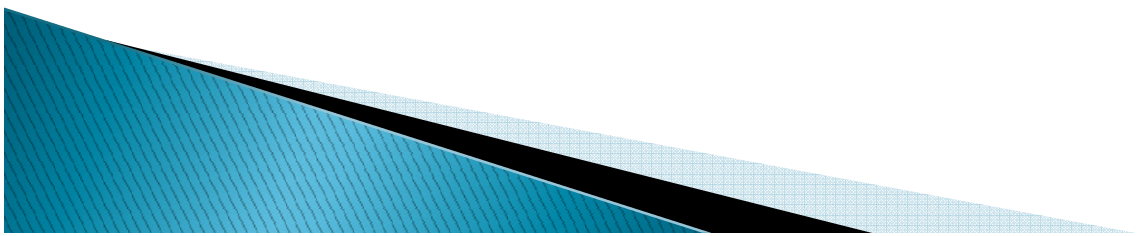
❖ Each WBS element, when completed should contain the following four items:

1. The scope of work, including any “deliverables.”

2. The beginning and end dates for the scope of work.

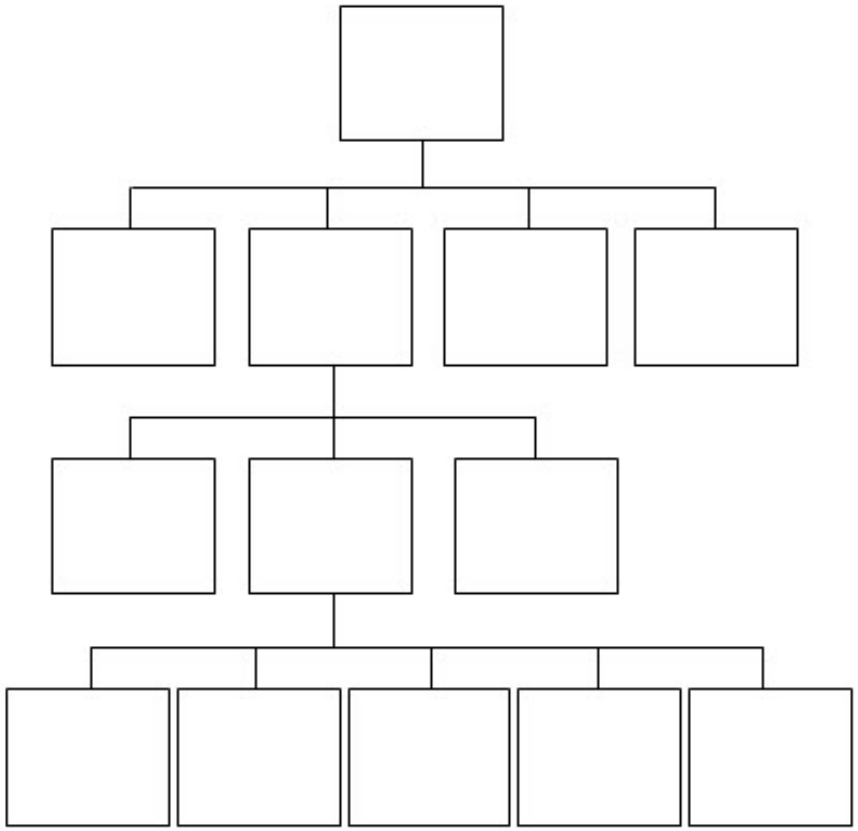
3. The budget for the scope of work.

4. The name of the person responsible for the scope of work.



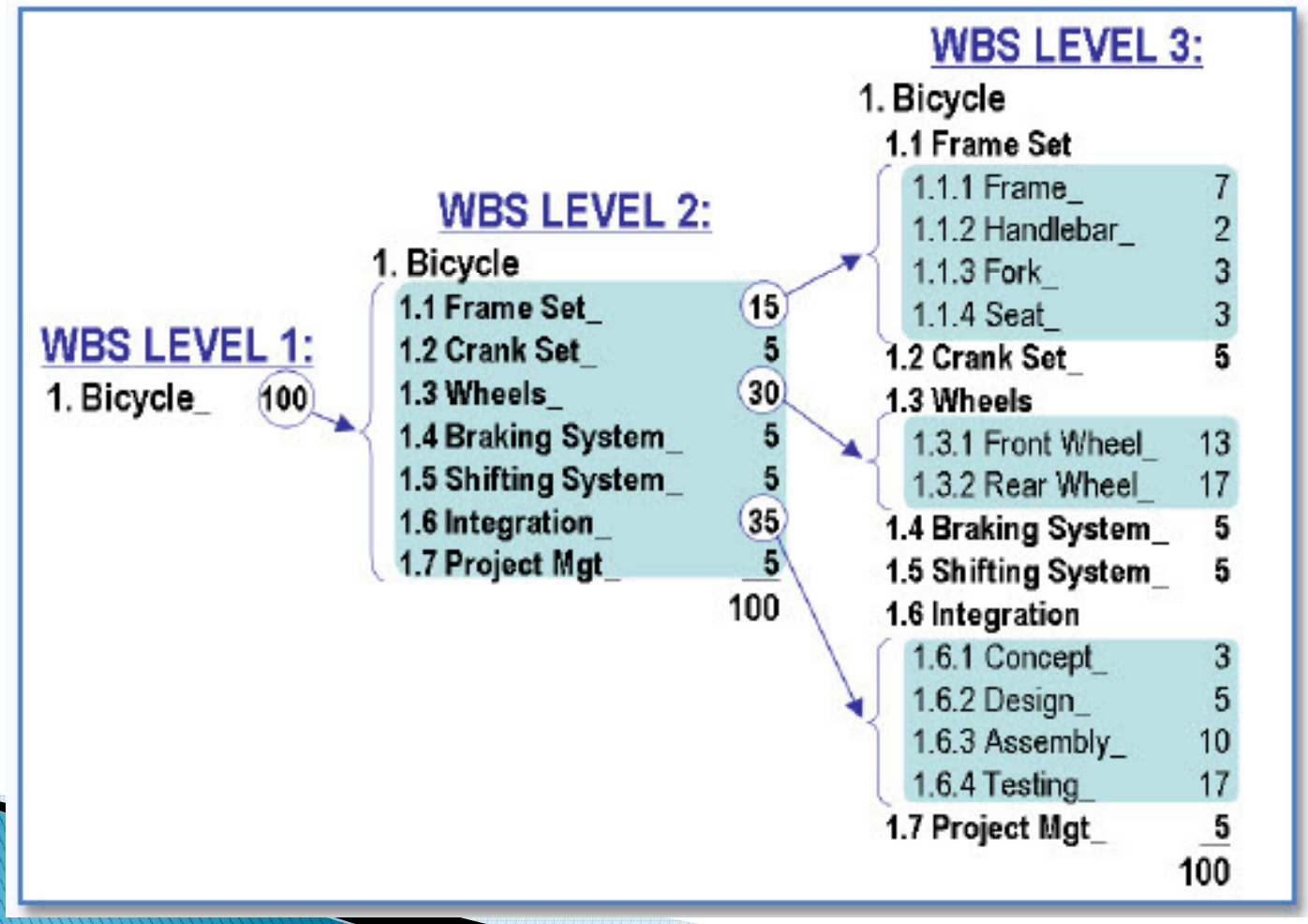
WBS – Project Team Exercise

- Use a White Board
- Use Post it Notes
- Build in software (P6) using a projector to display on wall



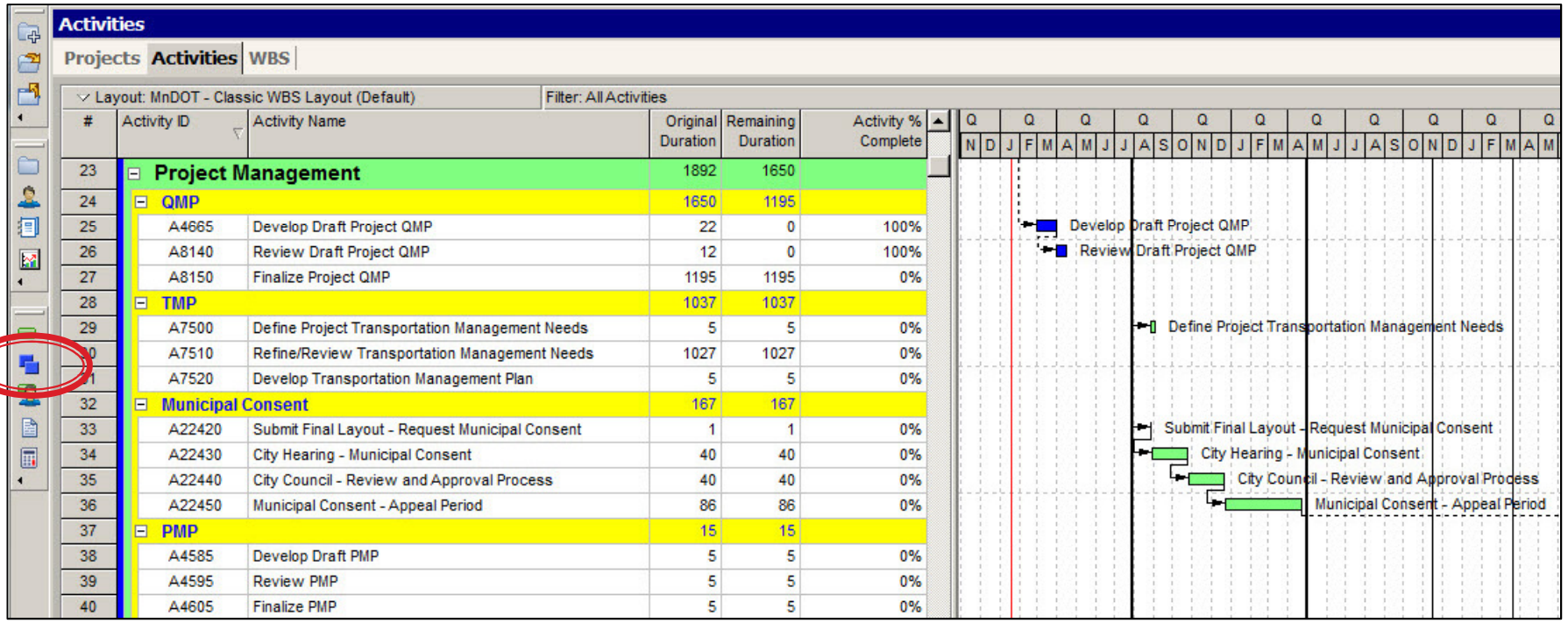
WBS – Identification Numbering

❖ It is common for WBS elements to be numbered sequentially to reveal the hierarchical structure.



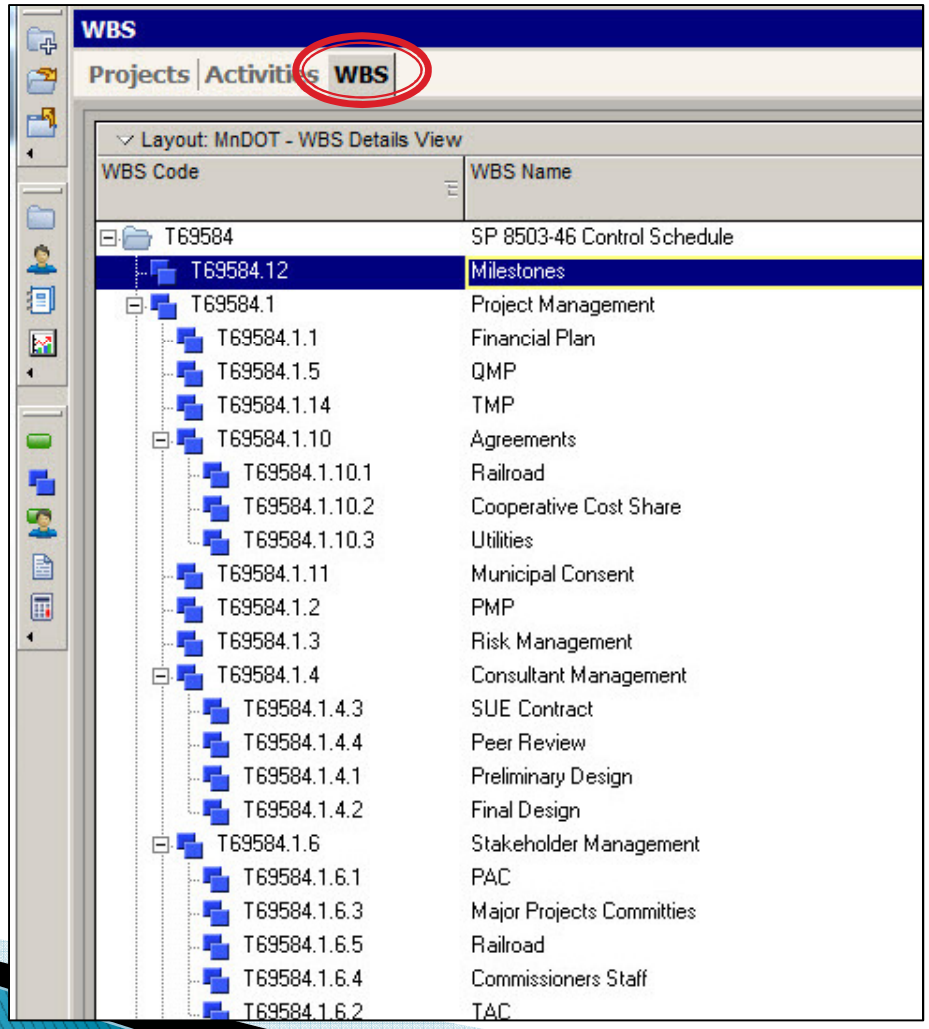
WBS – MnDOT Projects

- Click on the "WBS" Icon to modify the WBS Structure



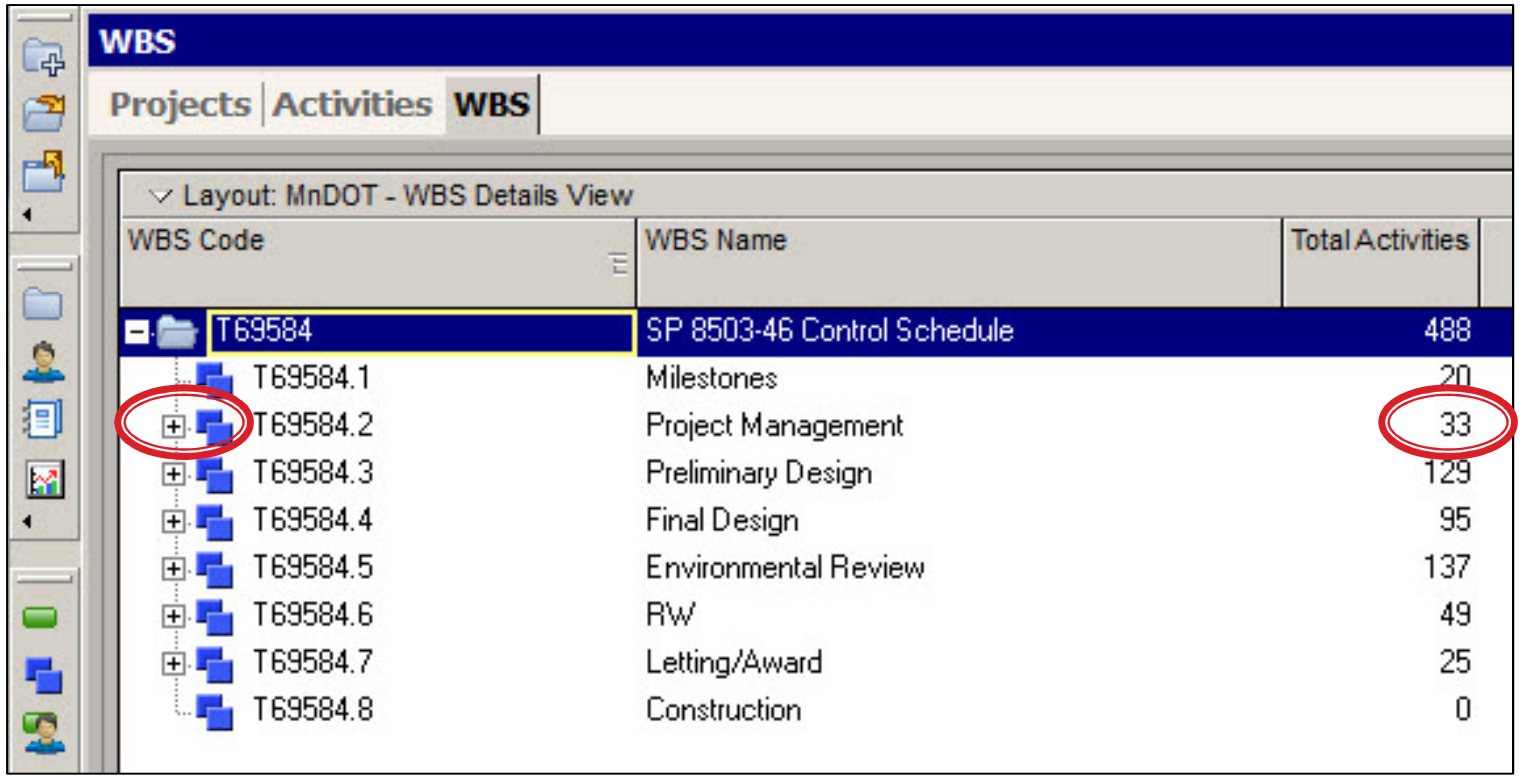
WBS – MnDOT Projects

- Use the “WBS Tab” to access the project WBS Structure



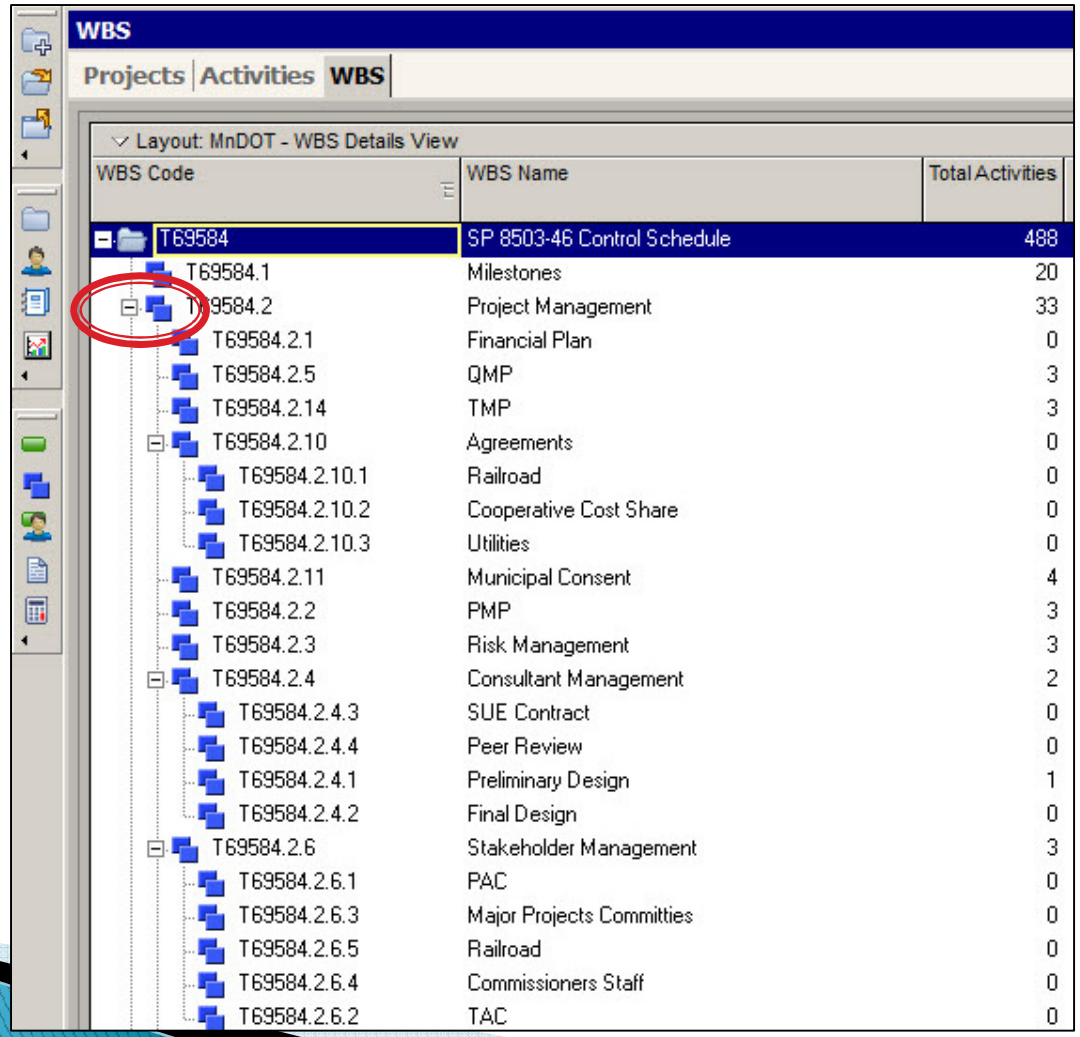
WBS – MnDOT Projects

- Role Up the WBS Structure to Level 1 & 2 for Summary Information



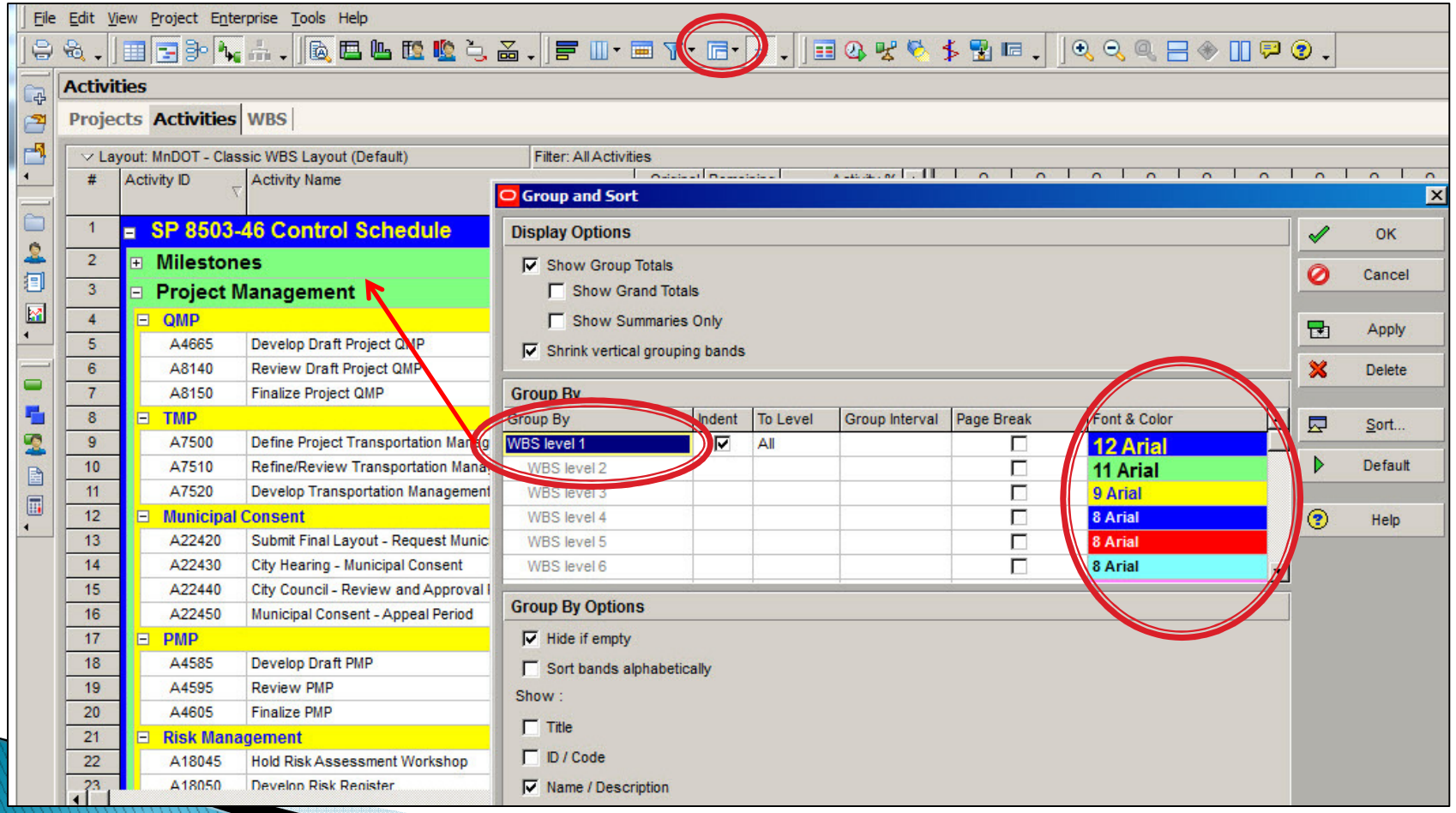
WBS – MnDOT Projects

- Drill Down into Level 3 for more WBS detail



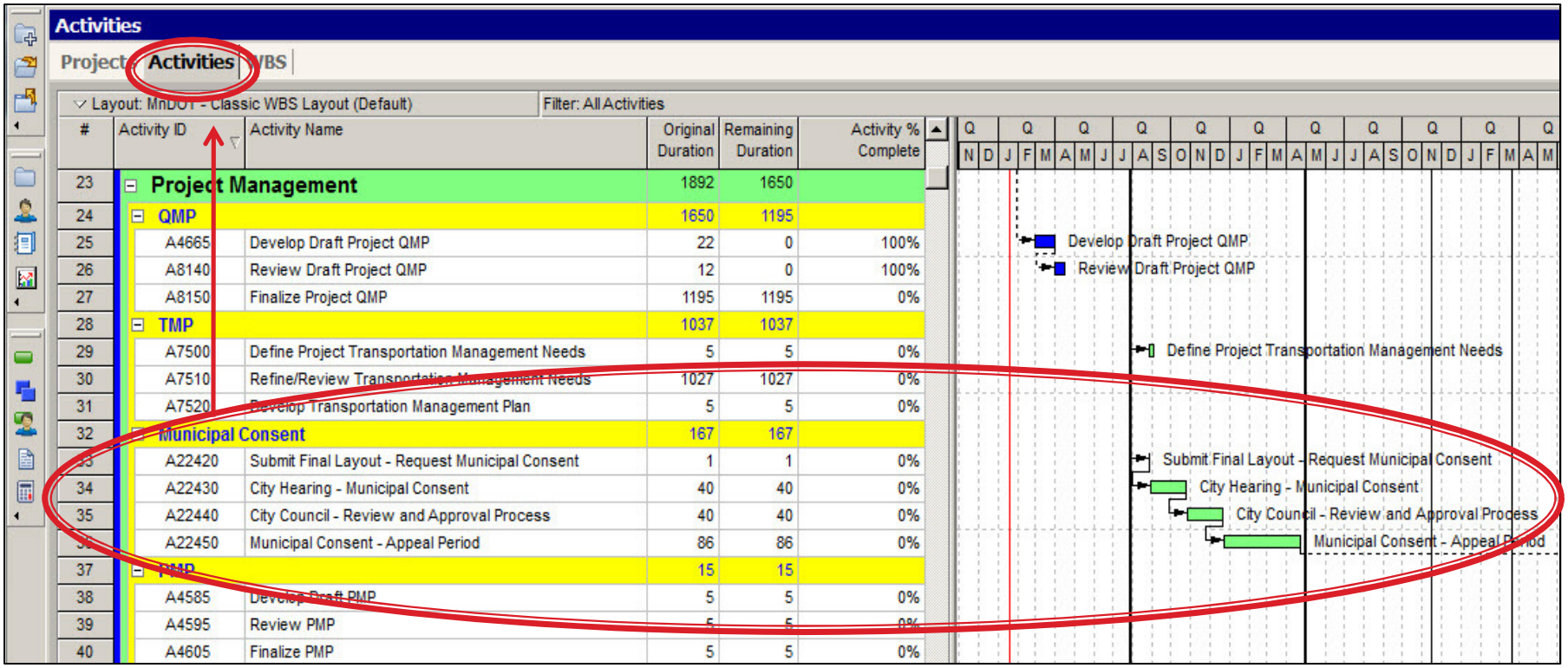
WBS – MnDOT Projects

- Group the schedule by “WBS Level 1” to view in the Activity Window



Group by WBS in Activity Window

- Grouping by WBS is the Standard “Layout” for the Project Schedule
- Use the “MnDOT – Classic WBS Layout (Default)”



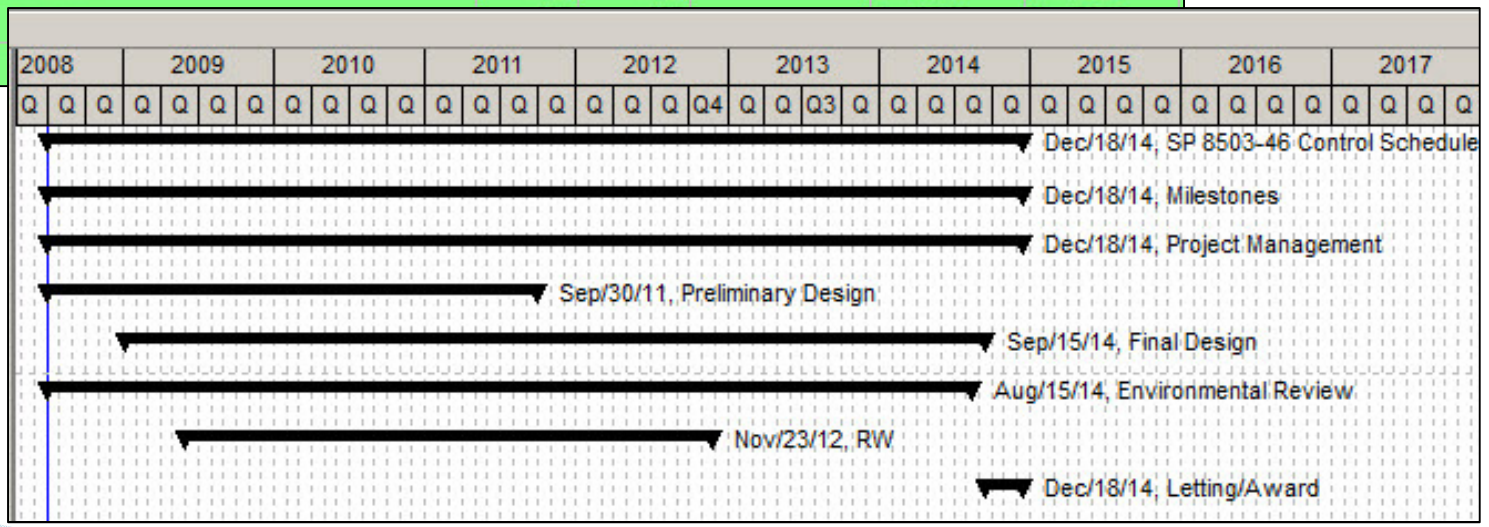
Summary Level WBS Reporting

Activities

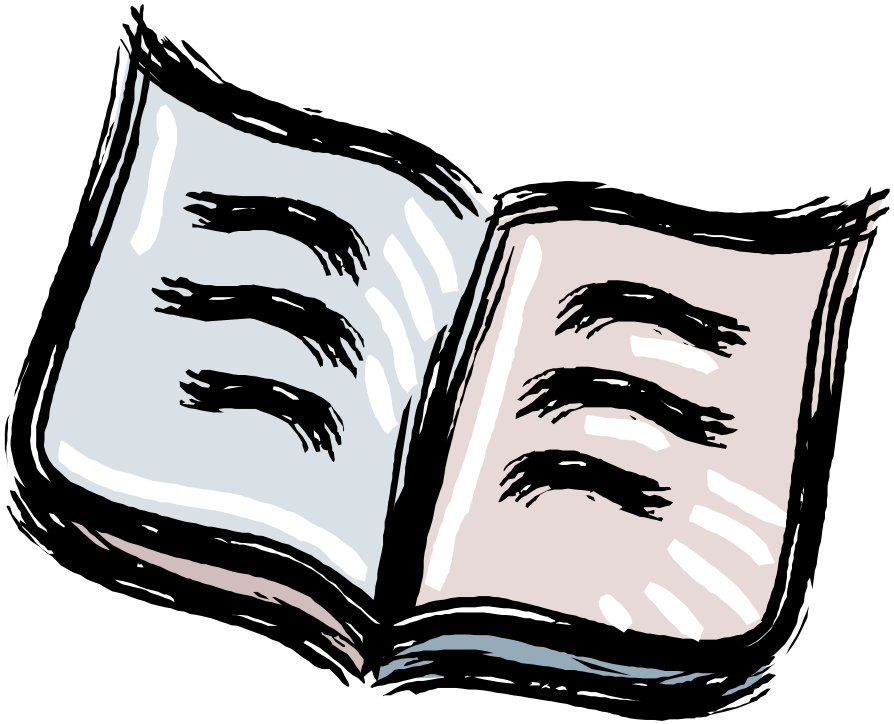
Projects | Activities | WBS

Layout: MnDOT - Classic WBS Layout (Default) | Filter: All Activities

#	Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Early Start	Early Finish
1	SP 8503-46	Control Schedule	1921	1669		Jul/01/08	Dec/18/14
2		Milestones	1669	1669		Jul/01/08	Dec/18/14
3		Project Management	1892	1650		Jul/01/08	Dec/18/14
4		Preliminary Design	830	830		Jul/01/08	Sep/30/11
5		Final Design	1457	1457		Jan/05/09	Sep/15/14
6		Environmental Review	1565	1565		Jul/01/08	Aug/15/14
7		RW					
8		Letting/Award					



Glossary of CPM Terms



Glossary of CPM Terms

Activity - An individual work task that is the basic component of a project.

Activity Codes - Values assigned to project activities to organize then into manageable groups for updating, analyzing, reporting, plotting, and summarizing.

Actual Cost - The cost incurred to date for a resource or activity.

Actual Dates - Start (AS) and Finish (AF) dates that you record for an activity that has progress or is complete.

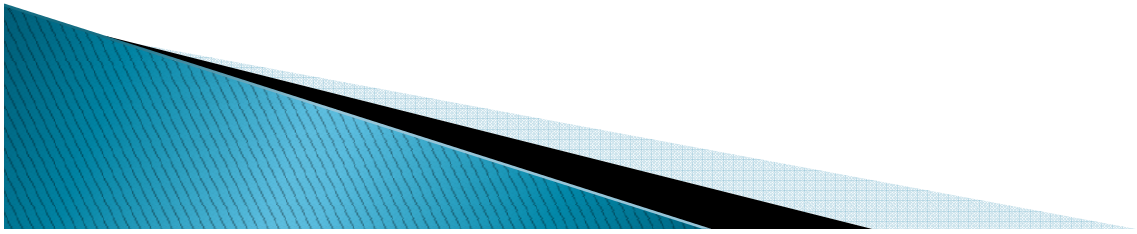
Actual Quantity - The amount of a resource used to date.

Backward Pass - The calculation of a network's late dates.

Bar Chart - The graphical display of activities according to time. Relationships between activities are not shown. A bar chart is also called a Gantt Chart.

Baseline Schedule -The original planned schedule for a project.

Budget - The estimate of the total units or costs required by a resource or cost account for an activity.



Glossary of CPM Terms

Calendar - The workdays and holidays defined for a project that determine when an activity can be scheduled.

Completion - The date on which a project is to be finished.

Constraint - A restriction imposed on the start or finish of an activity.

Critical Activity - An activity that has the least amount of total float.

Critical Path - The series of activities in a project that will take the longest to complete.

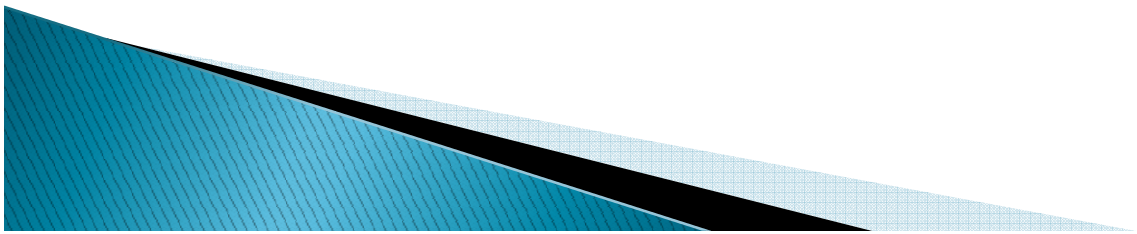
Critical Path Method (CPM) - The calculation of the earliest and latest start and finish dates of activities based on their duration and relationships to other activities.

Data Date - The date used as the starting point for schedule calculations.

Driving - A predecessor/successor relationship in which the predecessor

Relationship - Determines the successor's early dates.

Duration - The amount of time (in workdays) needed to complete an activity.



Glossary of CPM Terms

Early Start (ES) - The earliest date when an activity can begin after its predecessors have been completed.

Earned Value - The value of work performed rather than actual work performed.

Exception - A day when work must occur that was originally designated as a nonworkday.

Finish to Finish - A type of relationship in which a successor activity finish depends on its **(FF)** predecessor activity's finish.

Finish-to Start - A type of relationship in which a successor activity can begin only when its **(FS)** predecessor activity finishes.

Float - The amount of time that the start or finish of an activity can be delayed without affecting the project finish date.

Forward Pass - The calculation of the network's early dates.

Free Float - The amount of time that an activity's early start can be delayed without delaying the early start of a successor activity.

Lag - An offset or delay from an activity to its successor.

Late Finish (LF) - The latest date when an activity can start without delaying the project's completion.

Glossary of CPM Terms

Late Start (LS) - The latest date when an activity can start without delaying the project's completion.

Loop - Circular logic within a network.

Milestone - An activity that represents a significant point in time, that has no duration.

Negative Float - The total number of days that the start or finish of an activity exceeds the time allowed. Negative float indicates a delay in the schedule.

Negative Lag - An offset or lead time from an activity to its successor in which the successor's start date is earlier than the predecessor's start date.

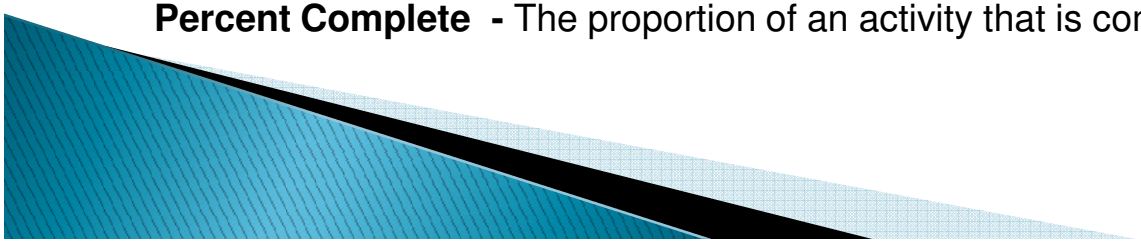
Network - The series of activities required to complete a project.

Nonworkperiod - A period of time when work may not occur.

Open End - An activity that has no successor or predecessor relationships to other activities in the network.

Out-of-Sequence Progress - Work completed for an activity before it is logically scheduled to occur.

Percent Complete - The proportion of an activity that is complete.



Glossary of CPM Terms

Performance Measurement - The comparison of the current plan to a target plan to assess whether it is progressing as intended.

Planning Unit - The increment of time used to schedule a project. The planning unit can be in hours, days, weeks, or months.

Predecessor - An activity that must logically occur before another activity.

Progress - The completion of work.

Resources - The people, materials, equipment or services required to complete a project.

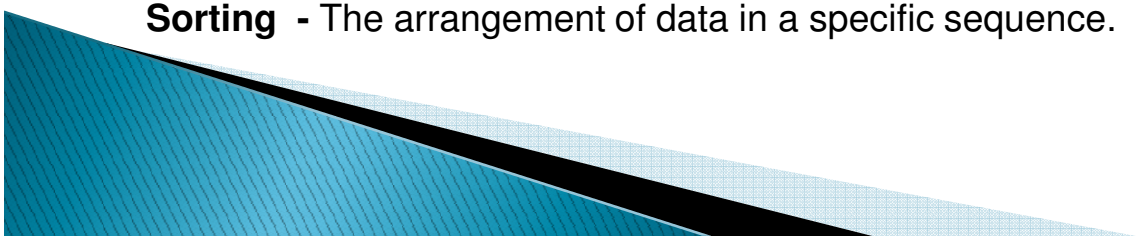
Schedule - A list of the activities needed to complete a project, along with their start and finish dates.

Schedule Calculation - The calculation of early and late dates for each activity in the project.

Slack - See Float**.**

Slippage - Lateness determined by measuring the target finish of an activity from its actual or current early finish.

Sorting - The arrangement of data in a specific sequence.



Glossary of CPM Terms

Start-to Start (SS) - A type of relationship in which a successor's start depends on the start of its predecessor.

Status - The process of updating a project by indicating progress at regular intervals.

Successor - An activity that must logically occur after another activity.

Target - A project plan that can be compared to the current schedule to measure progress.

Task - A unit of work. Also called an activity.

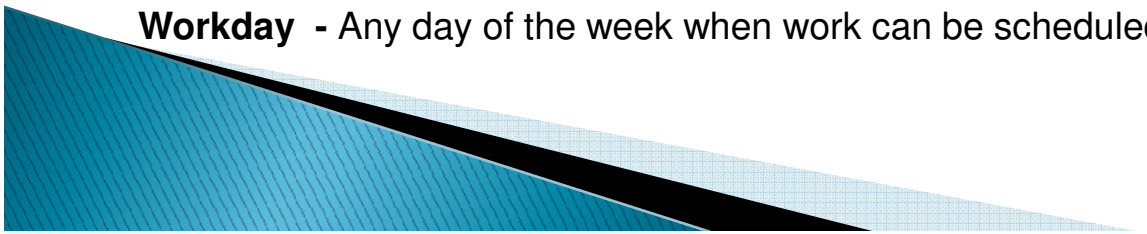
Total Float (TF) - The total number of days that the start or finish of an activity can be delayed without affecting the project finish date. Float can be negative,zero, or positive.

Updating - The process of recording progress in a project at regular intervals.

Variance - The difference between the current and target schedule dates.

Work Breakdown Structure (WBS) - The graphical depiction of the hierarchy of work needed to complete a project.

Workday - Any day of the week when work can be scheduled.



MnDOT Goals Going Forward

Projects in Construction Phase

- Contractor's Build Their Schedule in our Network 1/1/13
- Piloting Providing BIM Models and CTD Schedules to Contractors 3/1/13
- Select "Unit Rate" project- Resource and Cost Loaded 3/1/13
- Role and Resource Loaded of CE&I staff 6/1/14

MnDOT Goals Going Forward

Projects in Scoping and Design Phase

- "Active Projects" Role and Resource Loaded 6/30/13
- All planned projects Role loaded by June 30, 2014
- Taxpayer Transportation Accountability Act

Questions or Comments

Tom Wiener
thomas.wiener@state.mn.us
MnDOT Project Management Office
651-366-4239

Peter Harff
peter.harff@state.mn.us
MnDOT Project Management Office
507-514-1095

http://www.dot.state.mn.us/pm

Next Webinar: Wednesday, April 10, 2013
Time: 1:00 p.m.
Topic: Schedule Float
Presenter: Jonathan McNatty
DRMcNatty & Associates, Inc.