



Minnesota Department of Transportation

Role Loading

Prepared by: Project Management Unit, Office of Project Management & Technical Support,
6/13/14

Minnesota Department of Transportation
395 John Ireland Boulevard
Saint Paul, MN 55155

Phone: 800-657-3774
800-627-3529 (TTY, Voice, ASCII)
www.mndot.gov

TABLE OF CONTENTS

1.0 General Information	2
2.0 Process Details.....	3
1.0 Role Loading for a Project	3
2.0 Role Loading District-wide.....	4
3.0 Role Loading Functional Group Work Package	5
3.0 Process Summary (Project Role Loading only).....	6
4.0 Appendix	7
Role Loading an Activity	7
Role Review Process for SSC	8
Agendas for District-wide Role Loading Meetings.....	9
Sample Reports	10
Documentation of Process Used to Develop Role Loaded Project Schedules	13

1.0 GENERAL INFORMATION

The purpose of this information is to provide guidance on role loading schedules. Role loading is a process that involves assigning a role name and estimating the number of hours needed for each activity of a project.

Role loading each project, both within a district and within the department as a whole, will provide MnDOT with a tool to better assess staffing needs with respect to the current workload and to make informed decisions on how to manage both the current and future (three month to four year horizon) workloads at the functional group, districtwide, and statewide levels.

Definitions

- Role – a specific function on a project team that one or more people can fill (one role can consist of multiple people); the role names are meant to be generic and are not intended to relate directly to any work classification. Roles are defined in RD-00-07 Role Dictionary
- Role Dictionary - defines average tasks associated with that role
- Role Tree – a document that contains all roles that have been created, the office, section, and group for which they work, and a general definition of the work that they perform
- Budgeted Hours (Units) – the number of hours estimated for a role to complete a portion of the activity
- Actual Hours (Units) – the number of hours used; this value decreases as the Physical % Complete (progress) of an activity increases
- Remaining Hours (Units) – the number of hours remaining based on the progress of the activity (for an activity that hasn't started, this should equal the Budgeted Hours; for a completed activity, this will equal 0)
- Remaining Units/Time – the number of hours per day that a role would be required to work during the duration of the activity (multiple people filling a role would mitigate a number near or above 8 hours/day)

Reports

District, project managers and functional group leads will use report data to plan resource needs. The EPMS team has put together a series of reports as a starting point. But just like we did with the Functional Group reports that are now published on the website, we will have to show these to the relevant stakeholders, explain the data contained on them, and solicit feedback for improvements

- A. Project Level Role Reports – review individual budgeted units on activities for a project manager or functional group

Project manager and functional groups will use this report to process the Under Review schedule. See Section 1.0 General information in [PD-10-01 Schedule Creation and Baseline Process](#) for definition of Under Review schedule.

- B. Functional Group Summary reports – review the budgeted units by role over a specific time period to determine workload planning.
- C. Program Level Role Reports – review total district budgeted units by role/functional group to determine long term staffing and consultant needs. Project manager and functional groups will use this report to process the Approved schedule. See Section 1.0 General information in [PD-10-01 Schedule Creation and Baseline Process](#) for definition of Approved schedule. These reports show a functional group resource allocation across all projects over time.
- D. Resource Loading

- i. Resource loading is a near term planning tool. We recommend adding resources not more than one year before the activity is to take place and not making changes to resources for anything that will be complete within a month.
 - ii. It will be available for functional groups following role loading. It has not been resolved if it will be required.
 - iii. Resources have been populated in project schedules; metro design is using this information.
- E. Identify other needs for the end users i.e. find out what other questions they need answered with role reporting.

2.0 PROCESS DETAILS

All projects have been initially role-loaded based off of empirical data and formulas. This data is intended as a starting point only and the data is not meant to fit a specific project. The role loading process consists of a review of the roles and hours on each activity. The project manager and Functional Group Leads for each functional group should review and revise, as needed, the name of each role on the project and estimate the number of hours that each role in their group will need to complete their respective activities.

Role Loading has been separated into “project”, “district-wide” and “functional group work package”. The project role loading process will be completed on each new project initiated. The district-wide role loading will be completed with the initial implementation of role loading the schedules on a district-wide basis. The functional group role loading process will be used as the schedule work packages are developed by a functional group. See [Role Loading Process for SSC](#) in the appendix of this document for additional information.

1.0 ROLE LOADING FOR A PROJECT

Role Loading is required on every project with a schedule to quantify the work effort required on a specific project.

- 1.1 **Activity Review:** PM will review the activities and confirm the appropriate roles are assigned using the RD-00-07_Role Dictionary. SSC will update the roles as discussed with the PM and verify activities are coded to the appropriate functional group and role IDs using the RD-00-07_Role Dictionary. If this is not thoroughly completed, the roles will not summarize correctly possibly missing activities and showing lower budgeted hours in the reports.
 - 1.1.1 If no role is defined in the Role Dictionary for a particular activity, the PM should discuss the role with SSC. The Admin team will determine if a new role will be created.
 - 1.1.2 Role loading will not cover every person that will work on an activity. For example, if a manager has 1 hour QA review on a large activity, the Manager’s role does not need to be added to the activity.
- 1.2 **Role Review Reports:** SSC will create the MnDOT Role Review by Activity and MnDOT Role Review by Role layout reports for the identified projects. These layouts are available in Resource Assignment Tab of Primavera. See the [Role Review Process for SSC](#) and [Sample Reports](#) in the appendix of this document for additional information.
 - 1.2.1 Role Review by Activity Layout – recommended for project management review
 - 1.2.2 Role review by Role Layout– recommended for functional group Functional Group Lead review
- 1.3 **Report Distribution:** SSC will provide role and schedule reports to PM and Functional Group Leads; prior to the role loading meeting in order to provide Functional Group Leads with an opportunity to review and estimate roles and hours.

- 1.4 **Review Process:** PMs and Functional Group Leads will complete the following review for each activity on the project.
- 1.4.1 Functional Group Leads will review the base roles and hours for approximate accuracy based on their best judgment. PM and Functional Group Leads should add or remove roles to represent planned work.
 - 1.4.2 Preliminary review of *order of magnitude* on budgeted units for remaining roles to identify values consistently incorrect. Use the following rules of thumb:
 - 1.4.2.1 If budgeted units less than 40 hours: error greater than 4 budgeted hours or more revise.
 - 1.4.2.2 If budgeted units greater than 40 hours: revise to nearest 8 hours.
 - 1.4.2.3 If budgeted units greater than 100 hours: revise to nearest 20 hours
 - 1.4.3 If a Functional Group Lead elects to revise the hours included for one or more roles, he or she should estimate, using their best judgment, the number of hours each role would require to complete an activity
- 1.5 **Edit Summary:** PMs and Functional Group Leads will provide edits as redlines on the reports.
- 1.6 **Revision Updates:** SSC will update the project schedule.
- 1.7 **Project Team Review:** SSC will submit the updated role and schedule reports to the project team for final review and approval.
- 1.8 **Concurrence:** PM and Functional Group Leads will concur on the role loading information. PM will inform SSC that concurrence has been obtained and SSC will capture a schedule base line. See [PD-10-01 Schedule Creation and Baseline Process.docx](#) for baselining process.
- 1.9 **Future Revisions:** Any comments or requests for revisions after the schedule has approved for role loading will be submitted to the PM for approval. The SSC will update the schedule and re-baseline the project after the PM approves the change.

2.0 ROLE LOADING DISTRICT-WIDE

Role loading on a district-wide basis is similar to role loading on a project basis. However, district-wide role loading will require two meetings. The initial meeting will provide district specific information to SSC staff so they can adjust the district schedules prior to the second meeting when all district projects will be reviewed.

The purpose of identifying typical schedules is that there are likely a number of discrepancies in role assignments for that district that are common across all of the projects. If we identify them here and make blanket changes to the roles on all projects for that district, we can help streamline the process for examining the projects one-by-one.

- 2.1 **Identify Typical District Projects:** SSC will work with the district to identify a couple of typical projects that currently have schedules.
- 2.2 **Activity Review:** Same as 1.1
- 2.3 **Role Review Reports:** Same as 1.2
- 2.4 **Review Meeting:** SSC will set up a meeting with district PMs and Functional Group Leads. The meeting agenda will include:

An overview of what role loading is and how it can be used to manage the program and manage an individual functional group's work.

Distribution of the Role Dictionary and an explanation of how a role is defined.

Distribution and explanation of two reports: MnDOT Role Review by Activity and MnDOT Role Review by Role.

A review of the reports to identify the following items (this step can be begun in the meeting, but can be completed by PMs and Functional Group Leads on their own depending on time constraints). At this level, we are looking for information that is typical for all projects in a district. For example:

- Roles that are not used in the district for an activity.
- Roles that may be missing on an activity.
- Roles that are assigned incorrectly to an activity.

2.5 **Review Process:** Same as 1.4

2.6 **Edit Summary:** Same as 1.5

2.7 **Revision Updates:** SSC will update roles on ALL district projects based on the information received for these typical projects within the district.

2.8 **Role Review Reports:** SSC will create two reports (MnDOT Role Review by Activity and MnDOT Role Review by Role) for all projects in the entire district

2.9 **Review Meeting:** Set up a meeting with district project managers and functional group leads. The meeting agenda will include:

A discussion of how to estimate budgeted units

Distribution of reports on all district projects

A request for the following information:

- Any roles missing or assigned incorrectly on an activity.
- Revised budgeted unit estimates for each activity

2.10 **Review Process:** Same as 1.4

2.11 **Edit Summary:** Same as 1.5

2.12 **Revision Updates:** SSC will update the all schedules within the district and complete the audit.

2.13 Same as 1.7

3.0 ROLE LOADING FUNCTIONAL GROUP WORK PACKAGE

Role Loading is required on every work package that will be inserted into a project schedule. When a work package is developed it will be loaded with generic roles and estimated budget units (hours).

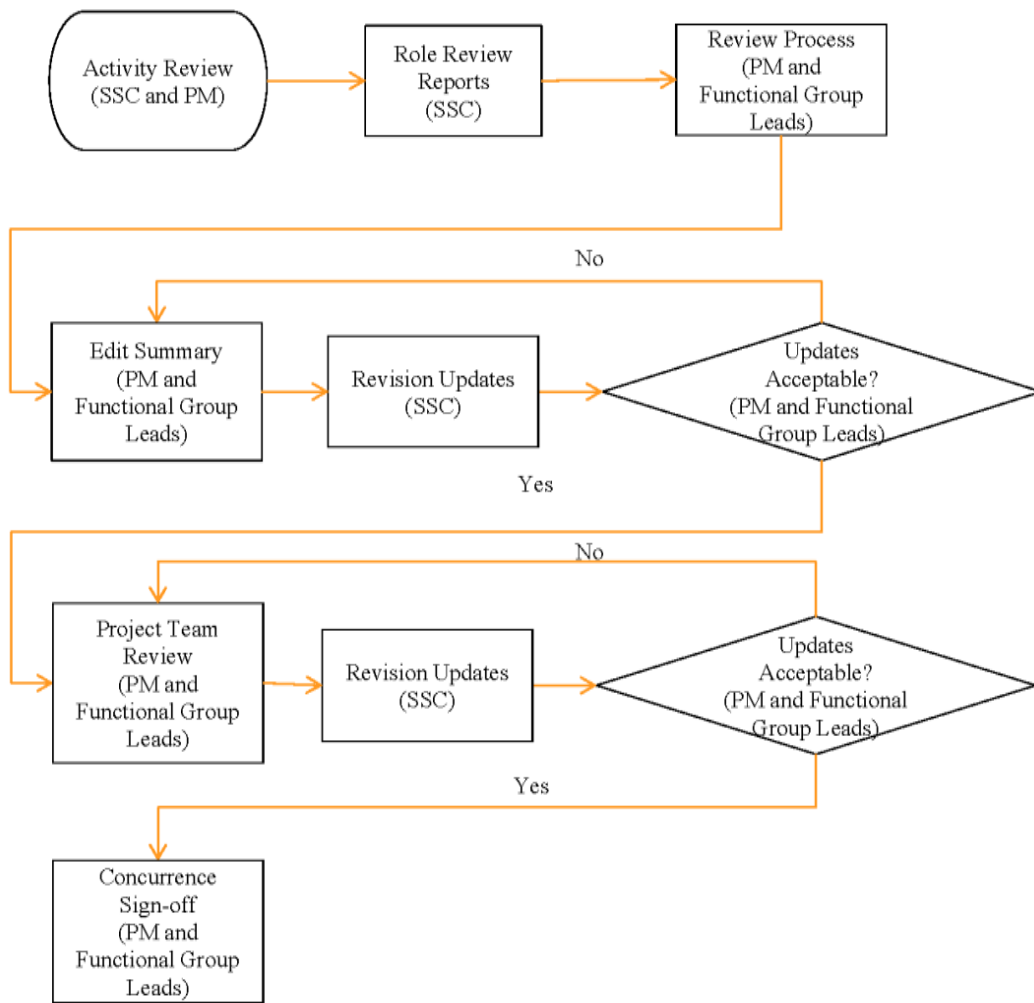
3.1 **Preliminary Role:** SSC will send the work package to Van Walling to populate the roles and role hours. Role hours should be applied to an activity as Budgeted Units.

OR

SSC will work with the Admin team to determine the role hours. There is a spreadsheet used by Ryan Johnson that is maintained for estimating the percentages and spread for role hours. See Ryan if more information is needed.

3.2 Same as 1.2 through 1.9 – Note: there will be no PM involved in work package development.

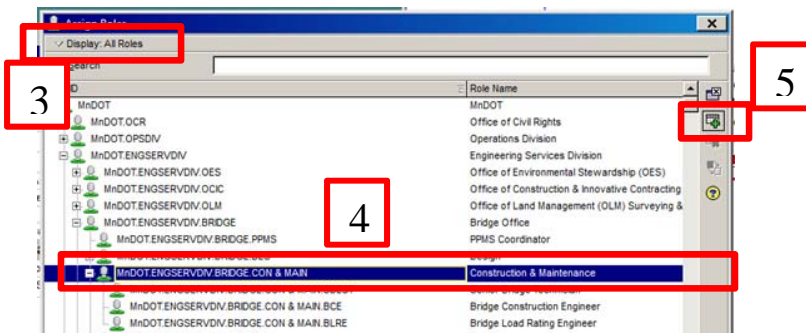
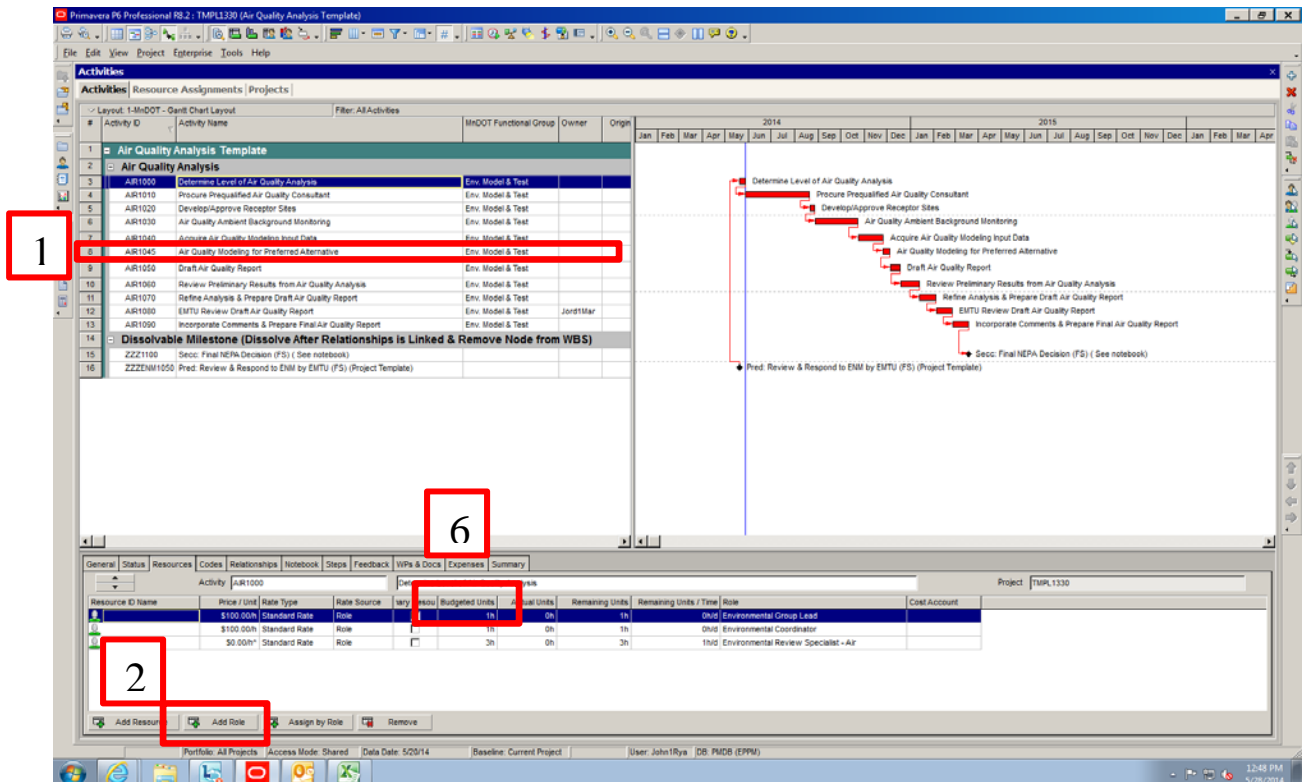
3.0 PROCESS SUMMARY (PROJECT ROLE LOADING ONLY)



4.0 APPENDIX

ROLE LOADING AN ACTIVITY

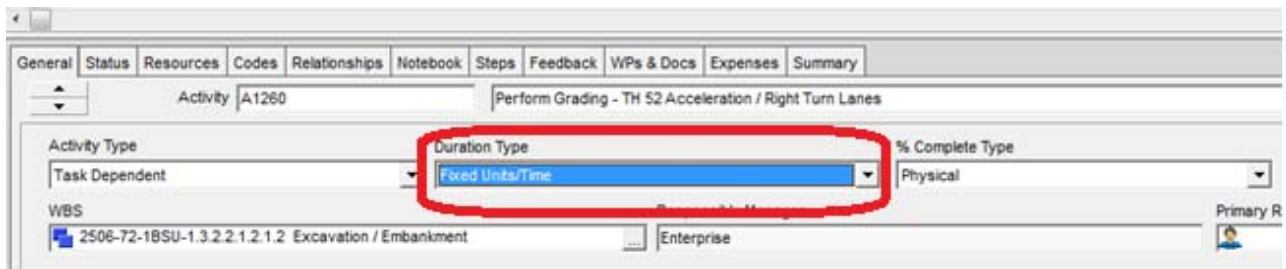
- 1.0 Select the activity to role load. Go to the Activity Details and select the Resource tab.
- 2.0 Select the add role button.
- 3.0 Change the filter to “display all roles”.
- 4.0 Select the role from the Role Tree.
- 5.0 Select the add button.
- 6.0 Adjust Budgeted Units



ROLE REVIEW PROCESS FOR SSC

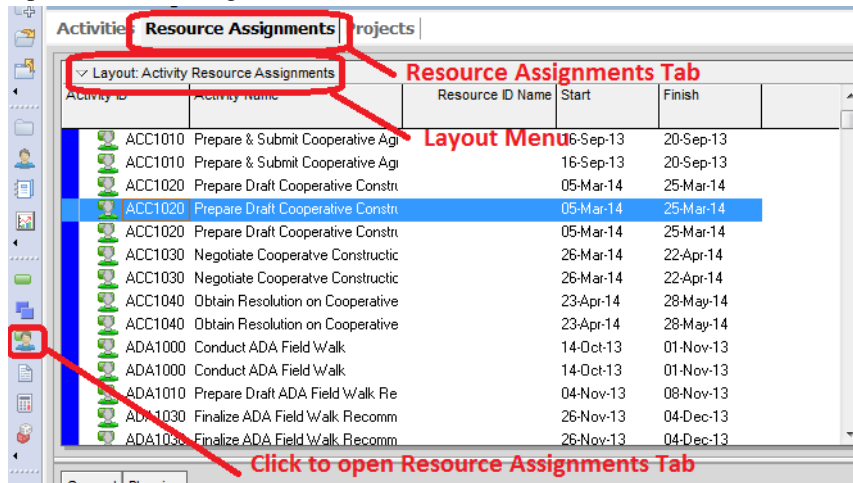
Activity Review: Review of roles will occur after the schedule activities and durations have been finalized

Note - Check Duration Type: Preloaded Role Budgeted Units (hours) will be scaled based on Original Duration modifications. All activities in schedule should have Duration Type set to Fixed Units/Time during Activity Review and modification of Original Duration review. Reset Duration Type to Fixed Duration and Units after Role Review Complete.



Role Review Reports: Produce two Reports for distribution to project managers and functional group leads.

- Open Resource Assignment Tab



- Open and print two Global Layouts
 - Role Review by Activity Layout (geared towards Project Manager)
 - Role review by Role Layout (geared towards Functional Group)
 - Note: Check print settings, exclude spreadsheet

Review Process/Report Distribution: SSC distributes Reports to Project Manager. Project Manager distributes to Functional Groups and others as needed for role and budgeted units review. Reviewer returns revisions to project manager to compile for SSC.

Edit Summary: Project Manager provides edit summary to SSC to update/remove unneeded roles and revise budgeted units per comments.

Role Revision Updates and Schedule: SSC produce two Reports for Distribution to project managers and functional group leads for approval of revisions and review of when the work will be available using the calendar spreadsheet.

- o Role Review by Activity Late Dates with spreadsheet Layout
- o Role review by Role Late Dates with spreadsheet Layout

AGENDAS FOR DISTRICT-WIDE ROLE LOADING MEETINGS



We all have a stake in **A to B**

Role Loading Review

Reviewing and modify preliminary loaded roles in a schedule

Agenda

(Meeting 1) – District Role Verification

1. Activity Review – verify activities have been reviewed

2. Role Review

- **Roles – Role Dictionary**
- **How they were assigned**
- **Estimation of budgeted units**

2.1 Identify district specific modifications to preliminary role loading

- A. Identify 2-3 key typical projects
- B. Review preliminary roles loaded on specific activities. Identify missing or needed roles from:
 - i. Role Review by Activity Layout –project management review.
 - ii. Role review by Role Layout– functional group review.
- C. Preliminarily review of budgeted units - **order of magnitude**.
- D. Return redlines to SSC for revisions; SSC to clean up systematic changes on all District schedules.



Role Loading Review

Reviewing and modify preliminary loaded roles in a schedule

Agenda

(Meeting 2) – Project or District level review

1. Role Review

Review Project(s) for specific modifications of Roles and Budgeted Units to represent the specific project (After district wide review or on new projects).

- A. Reports
 - i. Role Review by Activity Layout – recommended for project management review;
 - ii. Role review by Role Layout– recommended for functional group review.
- B. Preliminarily review of budgeted units - *order of magnitude*.
- C. Return redlines to SSC for revisions; SSC to clean up systematic changes on all District schedules.

2. Reports – Ongoing Review

- D. Project level Role Reports – review for project manager or functional group
- E. Functional Group Summary reports –workload planning.
- F. Program Level Role Reports – summary district budgeted units by to determine long term staffing and consultant needs.
- G. Resource Loading
 - i. It will be available for functional groups following role loading. It has not been resolved if it will be required.
 - ii. Planning tool – keep data current for 1 year horizon, shorter term than role loading.
 - iii. Resources have been populated in P6, metro design is using.

SAMPLE REPORTS

Two reports are available to SSC staff for assigning with the Role Loading process. These reports are available in the Resource Assignment Tab of Primavera.

22-May-14 11:32

Activity ID	Activity Name	Role	Activity Original Duration (Days)	Role Budgeted Units (Hours)
Project: SP 6216-130 MN51 At Ramsey Cty Rd E In Arden Hills-re			455	6617
WBS: 70379 F.2.2 Transportation Management Plan (TMP)			7	116
TMP1000	Prepare Transportation Management Plan (TMP)	Project Manager	7	50
TMP1000	Prepare Transportation Management Plan (TMP)	TMS Group Design & Ma	7	11
TMP1000	Prepare Transportation Management Plan (TMP)	TMS Group Architect Lee	7	11
TMP1000	Prepare Transportation Management Plan (TMP)	TMS Designer	7	11
TMP1000	Prepare Transportation Management Plan (TMP)	TMS Geographical Inform	7	11
TMP1000	Prepare Transportation Management Plan (TMP)	TMS Power Coordinator	7	11
TMP1000	Prepare Transportation Management Plan (TMP)	TMS Integrator	7	11
WBS: 70379 F.2.3 Ongoing Project Management			240	172
OPM1000	Perform Ongoing Project Management	Project Manager	240	154
OPM1000	Perform Ongoing Project Management	Deputy Project Manager	240	9
OPM1000	Perform Ongoing Project Management	Project Management Supp	240	9
WBS: 70379 F.2.4 Public Involvement			240	379
PUB1010	Perform Business Coordination	Project Manager	240	40
PUB1010	Perform Business Coordination	Project Management Supp	240	14
PUB1010	Perform Business Coordination	Public Affairs Coordinator	240	27
PUB1080	Perform City Coordination	Project Manager	240	40
PUB1080	Perform City Coordination	Project Management Supp	240	14
PUB1080	Perform City Coordination	Public Affairs Coordinator	240	27
PUB1090	Perform County Coordination	Project Manager	240	40
PUB1090	Perform County Coordination	Project Management Supp	240	14
PUB1090	Perform County Coordination	Public Affairs Coordinator	240	27
PUB1100	Perform DNR Coordination	Project Manager	240	14
PUB1100	Perform DNR Coordination	Project Management Supp	240	14
PUB1100	Perform DNR Coordination	Public Affairs Coordinator	240	27
PUB1000	Perform Resident Coordination	Project Manager	240	40
PUB1000	Perform Resident Coordination	Project Management Supp	240	14
PUB1000	Perform Resident Coordination	Public Affairs Coordinator	240	27
WBS: 70379 F.3.2.3 Wetlands			48	1600

Role Review – Grouped by Project and Activity

Contains

This report summarizes roles assigned to each activity and the associated budgeted hours for a specific project. These roles are grouped by Prime SP, WBS, and then Activity.

Likely User

Project Manager

Review (numbering correlates to red value on schedule)

1. Activity - grouped by Prime SP and WBS.
2. Role - See Role Dictionary for definition. Is this role on this activity?
3. Activity Original Duration (Working Days) – for reference, estimated length of work.
4. Budgeted Units (Hours) – Estimated hours this role will spend on the activity. Is the order of magnitude of the budgeted hours close?

MnDOT - Role Review by Role		22-May-14 11:47	
Activity ID	Activity Name	Activity Original Duration (Days)	Role Budgeted Units (Hours)
Role: Right of Way		1398	448
Role: RW Group Lead		1398	52
1003	PROJECT SCOPING	60	2
1003	PROJECT SCOPING	21	2
1093	ASBESTOS/REGULATED MATERIALS & WASTE IN BLDS/BRIDGES	25	6
1003	PROJECT SCOPING	45	6
1003	PROJECT SCOPING	50	4
1140	FINAL GEO LAYOUT (LV1)	90	4
1200	CONSTRUCTION LIMITS	90	2
1140	FINAL GEO LAYOUT LV#	30	1
1095	CONTAMIN. INVESTIG PHASE 1	26	2
1140	FINAL GEO LAYOUT (LV2)	54	1
1068	VALUE ENGINEERING	30	1
1093	ASBESTOS REVIEW/REMOVAL	21	10
1095	CONTAMINATION INVESTIGATION PHASE I	40	1
1200	CONSTRUCTION LIMITS	43	1
1240	REAL ESTATE PURCHASE	40	1
1240	REAL ESTATE PURCHASE (Orders only)	45	1
1233	CONTAMINATION INVESTIGATION PHASE II DRILLING	58	4
1240	REAL ESTATE PURCHASE(Orders Only)	60	1
1240	Real Estate Purchase - Orders Only	66	1
1113	Public Meetings	191	1
Role: RW Engineer		1398	129
1003	PROJECT SCOPING	60	2
1003	PROJECT SCOPING	21	2
1093	ASBESTOS/REGULATED MATERIALS & WASTE IN BLDS/BRIDGES	120	11
1003	PROJECT SCOPING	45	6
1003	PROJECT SCOPING	50	4
1140	FINAL GEO LAYOUT (LV1)	90	4
1200	CONSTRUCTION LIMITS	90	5

Role Review – Grouped by Role

Contains

This report summarizes roles assigned to each activity and the associated budgeted hours. Roles are grouped by role and Prime SP providing a list of activities that are directly associated with each role.

Likely User

Functional Group

Review (numbering correlates to red value on schedule)

1. Role – See Role Dictionary for definition.
2. Activity – grouped by Prime SP. Is this role on this activity?
3. Activity Original Duration (Working Days) – for reference, estimated length of work.
4. Budgeted Units (Hours) – Estimated hours this role will spend on the activity. Is the order of magnitude of the hours close?

DOCUMENTATION OF PROCESS USED TO DEVELOP ROLE LOADED PROJECT SCHEDULES

See [RD-00-10 Process used to develop role loaded templates.doc](#)