2016

QL-PAY 6.0 User's Manual



Computer Program for Statistical Evaluation

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1. Introduction

QL-PAY is a program created to assist in the evaluation of material quality and consistency through statistical analysis. It will determine the quality level, percent within limits, and the pay factor of an item. The program also provides a data verification analysis used to compare data obtained by the contractor to data from the samples sent to the government central laboratory. The program uses the F and t statistics with a significance level of 0.01 for comparison of data samples.

	Qual	ity Level - Pay F	actor Analy	sis							- • •
	File	Sample Sets	Reports	Property Specif	ications	Test Resu	ılts Help				
S	ampl	e Set Selection									
		Imported	Contract	number	Item	Lot	Laboratory	Project	name	Project	number
l											
	Iden	tify new or exis	ting sample	set(s)							
		1									
		Selectal	Сор	y to fields	Clear	helds	Restore fields				
	Co	ntract number	Ite	m	Lot	Labora	lory				
									Specificatio	ns	
							•	-			ExitQLPAY
L						1			Test Resul	ts	

QL-PAY home screen.

2. Getting Started

- 2.1. Menu Functions
 - 2.1.1. File

🚽 Qua	lity Level - Pay F	actor Analy	sis										
File	Sample Sets	Reports	Property Spe	cifications	Test R	esults	Help						
1	Db (Data) Direct	ory											
8	Export Directory												
1	import Directory			Item	Lot	Laborat	tory	Project	name	_	Proje	ct number	_
5	Settings												
1	Property Spec. T	emplates											
1	Exit												
			_										
Iden	tify new or exis	ting sample	set(s)										
Iden	tify new or exis	ting sample	set(s) y to fields	Clea	ar fields		Restore field	s					
Iden Co	itify new or exis Select all	ting sample Cop Ite	set(s) y to fields	Clea	ar fields Labo	pratory	Restore field	s					
Iden Co	itify new or exis Select all	ting sample Cop Ite	set(s) y to fields m	 Lot	ar fields : Labo	pratory	Restore field	s			1		
iden Co	tify new or exis Select all	ting sample Cop Ite	set(s) y to fields m	Clea	ar fields Labo	pratory	Restore field	8	Speci	fications			

File menu from the home screen of QL-PAY.

- A. Db (Data) Directory
 This specifies where the sample set data is located on the hard drive.
- B. Export Directory

When exporting data from the program, a transfer file will be established in the specified directory. The data from the QL-PAY program is exported as a .XML that can be read by another user.

C. Import Directory

This specifies the default location for the transfer files to import.

Note: The directories should automatically be set up within the QL-PAY file in a default location already on the computer hard drive upon initial installation of the program. This can be located by selecting the directory the user wants to view from the "file" menu.

Quality Level - Pay Fact File Sample Sets Re Db (Data) Directory Export Directory	eports Property Specifications Test Results Help	-
Import Directory Settings Property Spec. Tem	litem Lot Laboratory Project name Project number	
Exit	P: QL-PAY data Directory Specify location of QL-PAY data C:\MyFiles\QLPAYS\Data\ Browse for path OK	
Contract number	Item Lot Laboratory Specifications Specifications Test Results ExitQLPAY	

Locating the directories in QL-PAY.

D. Settings

The settings tab allows for the Organization Name, Print Signature Box, and Quality Level Format to be adjusted.

🖳 Settings	
Organization name	Western Federal Lands Highway Division
Print signature block	
Quality Level format	
 Percent Within Limits 	
C Percent Defective	
	OK Cancel
	/

QL-PAY main settings window.

- a. Organization Name: The organization name will appear on all generated reports.
- b. Print Signature Box: When checked, a signature block will be printed on the Pay Factor Report.
- c. Quality Level Format: Depending on the box selected, Quality Level will be reported as "Percent within Limits" or as "Percent Defective."
- E. Property Specifications Templates

Prior to inputting data, property specifications will need to be provided. Users can create a custom template to aid in classifying property sets.

Property Sp	ecification Template	is					
selec	ct template					•	
currer	nt template						Delete template
Add p	roperties	Insert Prope	rties	Target S	opecs	D	elete selected rows
Property	Category (1 or 2)	Target Ty	Target Value	+, -	Low Value	High Value	Estimated # tests
Save	current template		Close				

Property specification template window.

This tab within the file menu allows new templates to be established that can be reused from the user's computer. These templates can be found when setting up projects under "Property Specifications." See *Section 3.5 Creating a New Target Specification Template* for more detailed instruction.

2.1.2. Sample Sets

A. Import



View of the sample set import menu functions.

a. Import Sample Sets

The user can import transfer files into QL-PAY using this option. The user will have an .XML file that will be placed in the "import directory" mentioned above in the "File" menu functions. When importing data sets, inconsistencies in the property specifications will be flagged by QL-PAY. The user will be notified of these inconsistencies and is able to choose to proceed or not. See *Section 5.1 Import* for more detailed instructions.

b. Clear "Import" Directory

This function provides the user with the ability to delete the .XML transfer files from the import directory.

B. Unmark Recent Imports

Upon transfer into QL-PAY, the imported sample sets are denoted with a check mark under the "Imported" column heading. The check marks will remain in the column until QL-PAY is closed, unless they are removed by the user during the session.

C. Export



View of the sample set export menu functions.

Note: In QL-PAY, a project is specified as a group of sample sets that are encompassed by an <u>identical</u> project name and project number entered by the user. When selecting a "project," all sample sets that have the corresponding project name and number will be included in the export file.

- Export all Projects
 All sample set data for every project in QL-PAY is exported to a transfer file in the export directory.
- b. Export Selected Project

This allows the user to export the sample set files associated with the selected project, thus creating a transfer file in the export directory.

- c. Export Selected Sample Set
 The function exports only sample sets selected by the user to the export directory.
- d. Clear Export Directory

This function provides the user with the ability to delete the .XML transfer files from the export directory.

D. Delete Sample Sets

The user can delete the sample sets by highlighting the appropriate sample sets. See *Section 3.4 Deleting an Existing Sample Set* for further instruction.

E. Copy to Fields

When a sample set is selected, the user can copy the Contract Number, Item, Lot, and Laboratory into the "Identify new or existing sample set" fields to minimize entering project information multiple times for the same project.

F. Clear Fields

When information has been entered in the "Identify new or existing sample set" fields, it can be cleared by selecting this option.

G. Restore Fields

The restore function will re-establish the data that was entered previously into the editable fields.

Note: Copy/Clear/Restore fields can be found in the "sample sets" menu function or they can also be located as buttons in the "Identify new or existing sample set" box in the lower portion of the home screen.

🖳 Qua	lity Level - Pay Facto	Analysis				
Samp	Import	orts Property S	pecifications Test Result	; Help		
	Export Delete Sample	sets ber	Item Lot I	aboratory	Project name	Project number
	Clear fields Restore fields					
lder	tify new or existing s	ample set(s)	Clearfields	Restore fields		
			Crout noise			
	ontract number	ltem	Lot Laborator	v	•	

Copy/Clear/Restore fields locations on the home screen.

2.1.3. Reports

The pull down menu from the "Reports" tab provides options to select various preselected report types. See *Section 4 Reports* for a detailed explanation of the report components.

🖳 Qua	ality Level - Pay F	actor Anal	lysis				
File	Sample Sets	Reports	Property Specifications	Test Results	Help		
Samp	le Set Selectio	Sho Pay	rt analysis factor				
	Imported	Con Lon Rep	itrol charts g analysis ort on Single or Paired Sam	ple sets	pratory	Project name	Project number
		List List Gran	selected Sample sets all Sample sets nd Summary				
		Ran	dom sampling				

Reports menu function on the home screen.

A. Short Analysis

The short analysis compiles the test result values with the pay factor and null hypothesis analysis. The generated report will include a listing of the test results, pay factor analysis, and null hypothesis for the selected sample set.

Reports on single or paired samples	ets 📃 🗆 🗙
Pick reports	
✓ List test results	Clear selections
Calculate pay factor	
□ Histograms	
Vull Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	
for Null hypothesis and control charts Primary Lab: Contractor Lab	
Alternate Lab: Central Lab	•
Range of sample numbers	
@ All	
C Range: to	
ОК	Cancel

Short analysis short cut report selection.

B. Pay Factor

The pay factor report will generate a report with the pay factor for the sample set.

Reports on single or paired samplesets
Pick reports
List test results Clear selections
Calculate pay factor
Histograms
Null Hypothesis
Skewness and kurtosis
Control charts
Sampleset differences
for Null hypothesis and control charts
Primary Lab: Contractor Lab
Alternate Lab: Central Lab
Range of sample numbers
⊂ All
C Range: to
OK Cancel

Pay factor short cut report selection.

C. Control Charts

Control Charts show a comparison of the test results with the specification limits.

🖷 Reports on single or paired samplesets
Pick reports
List test results Clear selections
Calculate pay factor
Histograms
Null Hypothesis
Skewness and kurtosis
Control charts
Sampleset differences
for Null hypothesis and control charts
Primary Lab: Contractor Lab
Alternate Lab: Central Lab
Range of sample numbers
с All
C Range: to
OK Cancel

Control chart short cut report selection.

D. Long Analysis

The long analysis includes a listing of the test result values, pay factor analysis, histograms, null hypothesis, skewness and kurtosis, and control charts for the selected sample set.

Reports on single or paired samplesets
Pick reports
I List test results Clear selections
I ✓ Calculate pay factor
I Histograms
Vull Hypothesis
✓ Skewness and kurtosis
Control charts
□ Sampleset differences
for Null hypothesis and control charts
Primary Lab: Contractor Lab
Alternate Lab: Central Lab
Range of sample numbers
(° All
C Range: to
OK Cancel

Long analysis short cut report selection.

Note: The previous four report selections (A-D) are a pre-selected specialized report short cut. By choosing these particular reports, a report will be generated with the data pertaining to the specific report.

- E. Report on Single or Paired Sample Sets This report option brings up the selection box to allow the user to manually select the combination of reports to run on the sample sets.
- F. List Selected Sample Sets
 This creates a list of the identifying information for the sample set that is selected.
- G. List All Sample Sets This function creates a list of the identifying information for all of the sample sets that are inputted in the QL-PAY database.
- H. Grand Summary

A report is produced that includes the summary of all of the properties in the selected sample sets, along with the option to include an analysis of the sample sets and/or histograms of the data.

I. Random Sampling

A report is generated at the user's discretion to produce random numbers using the project information of the selected sample set. The random numbers can be established by an item quantity or by roadway stationing of the project using the parameters in the report options. See *Section 6.1 Generating Random Number Reports* for specific instructions regarding random sampling.

2.1.4. Property Specifications

A "property set" is an asset of properties pertaining to a lot specified by Contract Number, Item Number, and Lot Number. This set contains one or more "Properties and Specifications" for the various items on a project that need to be tracked through QL-PAY. These property sets are applied to the different labs that are performing tests for the specific properties.

Due to the program design, the user must provide a specific project name and project number to be able to select properties. However, when any changes are made to the property set information, the changes are applied to all the labs that are connected to the particular property set.

2.1.5. Test Results

•	Quality Level - F	ay Factor Analysis							
File	e Sample Sets	Reports Property spe	ecifications Te	est Res	ults Help				
5.	mplo Sat Salad	tion							
-	Imported	Contract number	Item	Lot	Laboratory	Project name	:	Project num	ber
		DTFH70-99-D-0001	40101-1000	1	Central Lab	ASTER FALLS :	LOOKOUT ROAD	MT PRA GLAC	10(64)
►		DTFH70-99-D-0001	40101-1000	1	Contractor Lab	ASTER FALLS	LOOKOUT ROAD	MT PRA GLAC	10(64)
_				_					
	dentify new or	existing sample set(s)							
	Select all	Copy to fie	lds (Clear f	fields Res	tore fields			
	Contract numb	er Item		Lot	Laboratory				
									-
	1						Spec	ifications	
						-	Test	Results	Exit QLPAY
								in too and	┛┃

Test Results menu on the home screen.

The "Test Results" tab directs the user to a window for entering test results specific to the selected sample set. The user can choose to exclude certain samples, delete samples, and generate reports from this window. Verify the appropriate laboratory has been selected prior to entering results.

ntract Number FH70-99-D-0	er 0001	Item 40101-1000)	Lot Labo	ratory tractor Lab				
est Results Exclude	Sample	AC-m	VMA	% DEN	VOIDS	VFA	Rice-SG	1"	3/4"
	1	5.62	18.1	90.5	7.1	60.8	2.467	100	100
	2	4.89	17.2	94.5	7.8	54.7	2.495	100	100
	3	4.98	17.6	91.1	7.7	56.3	2.485		
	4	5.37	14.2	93.6	3.3	74.6	2.492		

Window for entering test results.

2.1.6. Help

🖳 ()uality Level - P	ay Factor A	Analysis				- 10	- 10		
File	Sample Sets	Reports	Property spe	cifications Te	est Res	ults Help				
						Help on n	nenus and forms			
						About QL	-PAY			
Sar	nple Set Select	ion								
	Imported	Contract	t number	Item	Lot	Laboratory	Project name		Project num	ber
		DTFH70-9	99-D-0001	40101-1000	1	Central Lab	ASTER FALLS LOO	KOUT ROAD	MT PRA GLAC	10(64)
		DTFH70-9	99-D-0001	40101-1000	1	Contractor Lab	ASTER FALLS LOO	KOUT ROAD	MT PRA GLAC	10(64)
-la	entify new or e Select all	existing sar	mple set(s) Copy to fie	lds (Clear f	ields Res	tore fields			
	Contract numb	er	Item		Lot	Laboratory				
								Spec	ifications]
							•	Test	Results	Exit QLPAY

Help drop down menu on the home screen.

A. Help on Menus and Forms

This help function will give you the basic information related to menus and forms within the QL-PAY database.

B. About QL-PAY

The version and build number of the QL-PAY program being used are displayed under this option.

3. Setting Up a Project

3.1. Using the Contract

To determine how an item will be accepted, each Section of the contract has an Acceptance Subsection and Sampling, Testing, and Acceptance Requirements Tables that will denote how the material will be evaluated. If it is stated that a particular material will be evaluated under Subsection 106.05, QL-PAY will be used for statistical analysis to determine the pay factor for the material. Generally speaking, the items governed by statistical evaluation procedures are Aggregate Courses, Treated Aggregate Courses, Asphalt Concrete, and Structural Concrete.

Example Section 301. — UNTREATED AGGREGATE COURSES

301.08 Acceptance. See Example Table 301-1 for sampling, testing, and acceptance requirements; including the category for quality characteristics.

Aggregate gradation and surface course plasticity index will be evaluated under Subsection 106.05. Other aggregate quality properties will be evaluated under Subsections 106.02 and 106.04.

Example Section 301. Untreated Aggregate Courses Acceptance subsection.

		2	ampung, .	esting, and A	cceptance Requi	rements			
Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Base course grading C, D, & E	Statistical (106.05)	Gradation 3/8 Inch (9.5 mm) No. 4 (4.75 mm) No. 200 (75 µm) Other specified sieves	I I I	AASHTO T 27 & T 11	1 per 1000 tons (900 metric tons)	From windrow or roadbed after processing	Yes	4 hours	-
		Liquid limit	-	AASHTO R 58 & T 89, Method A	1 per 1000 tons (900 metric tons)	From windrow or roadbed after processing	Yes	4 hours	-
Subbase &	Measured	Moisture- density (max density)	-	AASHTO T 180, method D ⁽¹⁾	1 per type & source of material	Stockpile or production output	,,	"	-
base course Grading A, B, C, D, & E	and tested for conformance (106.04)	Density	-	AASHTO T 310 or other approved procedures	1 per 500 tons (450 metric tons)	In-place after compaction	No	End of shift	-
		Moisture content (in-place)	-	"	"	<i>cc</i>	"	"	-

Example Table 301-1 Sampling, Testing, and Acceptance Requireme

Example Table 301-1 Sampling, Testing, and Acceptance requirements for Untreated Aggregate

Courses.

3.2. Creating a Sample Set

🖳 Qua	ality Level - Pay I	actor Analy	sis						8	- • •
File	Sample Sets	Reports	Property Specif	ications	Test Resu	ults Help				
Samp	le Set Selection									
	Imported	Contract	number	Item	Lot	Laboratory	Proje	ect name	Project	number
lde	ntify new or exis	sting sample	set(s)							
	Calastal	6		Classe	e.u.	Destan Call				
_	Selectall	Cop	y to fields	Clear	ields	Restore neios				
Co	ontract number	Ite	m	Lot	Labora	tory				
Г								Specificatio		
								эреспісацо	iis	ExitOLPAY
								Test Resul	ts	

Initial view when opening QL-PAY.

A. Enter data in the "Identify New or Existing Sample Set" fields: Contract Number, Item, Lot, and Laboratory.

Identify new or existing s	ample set(s)		
Select all	Copy to fields	Clear fields Restore fields	
Contract number	ltem	Lot Laboratory	
DTFH70-99-D-0001	40101-1000	1 Contractor Lab	
		Contractor Lab	

Completed project data entered in the sample set box.

Note: Typically, there will be a "Central Lab" and "Contractor Lab" sample set for each item. Make sure the drop down menu is not highlighted when moving on to the next step or it will not copy over to become a sample set.

a. Click on "Specifications" to proceed once all fields are completed. This window can be accessed from either the "Specifications" button on the lower right of the home screen or the menu icon stating "Property Specifications."

		. .		100 10	T . D					
le	Sample Sets	Reports	Property Sp	pecifications	l est Results	Help				
mpl	le Set Selection	1								
_	Imported	Contract	number	Item	Lot La	boratory	Project	name	Project	number
den	ntify new or exi	sting sample	set(s)				_			
den	tify new or exi	sting sample	set(s)							
den	tify new or exi Select all	sting sample	set(s) y to fields	Clear	fields	Restore fields	1			
den 	stify new or exi Select all	sting sample Cop	set(s) y to fields	Clear	fields	Restore fields]			
den Co	tify new or exi Select all Intract number	sting sample Cop Ite	set(s) y to fields m	Clear	fields Laboratory	Restore fields	J			
den Co	stify new or exi Select all Intract number 17H70-99-D-0001	sting sample Cop Ite	set(s) y to fields m 101-1000	Clear Lot	fields Laboratory Contractor Li	Restore fields		Specificat	ions	

Selecting specifications once sample set data is entered.

B. Specifications

ptions									
Project Sp	ecifications								
iojoor op	Controlation								
Co	ontract Number	DTFH70-99-D-0001	1						
	Project Name								
F	^p roject Number								
tem and L	ot Specificatio	IDS							
tom and E	40101-1000		1						
item -	40101-1000	LOL							
Property S	pecifications								
Property S	pecifications								
^p roperty S	pecifications Se	lect template ->							•
Property S	pecifications Se	lect template ->	portion		Tarmet en	909	Delate colo	rted rows	
Property S Add Pr	pecifications Se operties	lect template ->	operties		Target sp	ecs	Delete selec	cted rows	-
Property S Add Pr	pecifications Se operties	lect template ->	perties		Target sp	ecs	Delete selec	cted rows]
Property S Add Pr Property	pecifications Se operties Category (1 o	ect template -> Insert Pro	p perties Target Value	+, -	Target sp	ecs High Value	Delete select	cted rows]
Property S	pecifications Se operties Category (1 o	ect template -> Insert Pro	o perties Target Value	+	Target sp	ecs High Value	Delete select	cted rows]
Property S	pecifications Se operties Category (1 o	2) Target Ty	pperties Target Value	+	Target sp	ecs High Value	Delete select	cted rows]
Property S	pecifications Se operties Category (1 o	2) Target Ty	pperties Target Value	+, -	Target sp	ecs High Value	Delete select	cted rows]
Property S	pecifications Se operties Category (1 o	2) Target Ty	pperties Target Value	*,.	Target sp	ecs High Value	Delete select	cted rows]
Property S	pecifications Se operties Category (1 o	2) Target Ty	pperties Target Value	• ,•	Target sp	ecs High Value	Delete select	cted rows]
Add Pr Property	pecifications Se operties Category (1 o	2) Target Ty	pperties Target Value	•.•	Target sp Low Value	ecs High Value	Delete select	cted rows]
Add Pr Property	pecifications Se operties Category (1 o	2) Target Ty	pperties Target Value	•.•	Target sp	ecs High Value	Delete select	cted rows]
Property S	pecifications Se operties Category (1 o	2) Target Ty	pperties Target Value	*. •	Target sp Low Value	ecs High Value	Delete select	cted rows]
Property S	Category (1 o	<pre>elect template -> Insert Prc 2) Target Ty </pre>	Target Value	*	Target sp	ecs High Value	Delete select	cted rows]

Initial view after opening the specifications window.

a. Enter the Project Name and Number.

Contract Number DTFH70-99-D-0001	
Project Name ASTER FALLS LOOKOUT RO	AD
Project Number MT PRA GLAC 10(64)	

Entered project name and number.

Note: The project name and number must be identical for all files associated with the particular project, i.e. Item 401 and Item 301 sample sets.

b. Select the appropriate template from the drop down menu under "Property Specifications."

Property Specifications	
Select template -> FF FF Add Properties	P-14, 401- Gyratory Method (1/2 inch nominal maximum) - Control Strip P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Control Strip P-14, 401- Gyratory Method (1/2 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal Maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal Maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal Maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal Maximum) - Full Production P-14, 401- Gyratory Method (3/4 inch nominal Maximum) - Full Production P-14, 401- Gyratory Method P-14, 401- Gyratory Method (3/4 inch nominal Maximum) - Full Production P-14,
FF Property Category (1 Target Target \FF FF FF FF FF	P-14, 301 - Subbase, Grading A P-14, 301 - Subbase, Grading B P-14, 301 - Base, Grading C P-14, 301 - Base, Grading D P-14, 301 - Base, Grading E P-14, 301 - Surface Course P-14, 309 - Emulsified Asphalt-Treated Base, Grading D

Drop down menu for the property specifications template.

By selecting a template, the majority of the specification has already been entered into the program and only minor changes will need to be completed. See the next page for a view of the property specifications template.

roject S	pecifications										
	Contract Numbe	r DTFH7	099D0001								
	Project Name	e ASTER	FALLS LOO	KOUT R	OAD						
	Project Numbe	MT PR/	A GLAC 10(6	4)							
em and I	Lot Specificati	ions									
Item	40101-1000		Lot	1							
roperty	Specifications	Select tem	plate -> FF	-14, 401	- Gyratory	Method (3/	4 inch nominal ma	emum) - Fu	Il Production		
roperty : Add	Specifications Properties	Select tem	plote -> FF	-14, 401 perties	- Gyratory	Method (3/	4 inch nominal ma Target specs	ámum) - Fu	Il Production Delete selec	ted rows	•
Add	Specifications Properties Category (1	Select tem	plote -> FF Insert Pro	-14, 401 perties +, -	- Gyratory	Method (3/	4 inch nominal ma Target specs Estimated # t.	ámum) - Fu	Il Production Delete selec	sted rows	•
Add Property AC-m	Specifications Properties Category (1 1	Select tem	plote -> FF Insert Pro	-14, 401 perties +, - 0.40	- Gyratory Low Va	Method (3/	4 inch nominal ma Target specs Estimated # t	eimum) - Fu	Il Production Delete selec	cted rows	•
Add Property AC-m VMA	Properties Category (1 1 1	Select tem Target +/-dev min	plote -> FF Insert Pro Target V	P-14, 401 perties +, - 0.40	- Gyratory Low Va. 13.0	Method (3/	4 inch nominal ma Target specs Estimated # t	iimum) - Fu	Il Production Delete selec	ted rows	•
Add Property AC-m VMA % DEN	Properties Category (1 1 1	Select tem Target +/-dev min min	plote -> FF Insert Pro Target V.	-14, 401 perties +, - 0.40	- Gyratory Low Va. 13.0 91.0	Method (3/	4 inch nominal ma Target specs Estimated # t	timum) - Fu	Il Production Delete selec	cled rows	*
Add Property AC-m VMA % DEN VOIDS	Properties Category (1 1 1 1	Select tem	plote -> FF Insert Pro Target V	-14, 401 perties +, - 0.40	- Gyratory Low Va 13.0 91.0	Method (3/	4 inch nominal ma Target specs Estimated # t	emum) - Fu	Il Production	ted rows	•
Add Property AC-m VMA % DEN VOIDS VFA	Properties Category (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Select tem Target. +/-dev min min info only info only	plote -> FF Insert Pro Target V	P-14, 401 perties +, - 0.40	- Gyratory Low Va 13.0 91.0	Method (3/	4 inch nominal ma Target spacs Estimated # t	dmum) - Fu	Il Production	ted rows	•
Add Property AC-m VMA % DEN VVOIDS VFA Rice-SG	Properties Category (1 1 1 1 1 1 1	Select tem	plote -> FF Insert Pro	P-14, 401 perties +, - 0.40	- Gyratory Low Va 13.0 91.0	Method (3/	4 inch nominal ma Target specs Estimated # t	ámum) - Fu	Il Production	cled rows	•
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1*	Properties Category (1 1 1 1 1 1 1 2	Select tem Target t/-dev min min info only info only info only info only	plote -> FF Insert Pro Target V	+, - 0.40	- Gyratory Low Va 13.0 91.0	Method (3/	4 inch nominal ma Target specs Estimated # t .	simum) - Fu	I Production Detete selec	ated rows	*
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4"	Properties Category (1 1 1 1 1 1 2 2	Select tem Target #/-dev min min info only info only info only info only	plote -> FF Insert Pro Target V	+, - 0.40	- Gyratory Low Va. 13.0 91.0	Method (3/	f inch nominal ma Target specs Estimated # t	simum) - Fu	I Production Detete selec	ted rows	*
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2"	Properties Category (1 1 1 1 1 1 1 2 2 2	Select tem Target +/-dev min mino only info only info only info only info only info only info only	plote -> FF Insert Pro Target V	-14, 401 perties +, - 0.40	- Gyratory Low Va. 13.0 91.0	Method (3/	f inch nominal ma Target specs Estimated # t	simum) - Fu	Il Production	cted rows	•
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1* 3/4* 1/2* 3/8*	Specifications Properties Category (1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Select tem Target +/-dev min min min only info only info only info only info only info only info only	plote -> FF Insert Pro Target V	+, - 0.40	- Gyratory Low Va. 13.0 91.0	Method (3/	f inch nominal ma Target specs Estimated # t	emum) - Fu	I Production	cled rows	• II •

Choosing a property specifications template.

c. If there is not a template specified for the item to be evaluated, property specifications can be added manually by using the "Add Properties" tool and individually selecting the properties required for analysis from the "Select a Property" window.

puons				
Project Specifications				
Contract Number	DTFH7099D0001			
Project Name	ASTER FALLS LOOKOUT ROAD			
Project Number	MT PRA GLAC 10(64)			
Item and Lot Specification	ns			
Item 40101-1000	Lot 1	Select a Property		
Dronarty Spacifications		Bituminous Mix		
S	select template ->	AC-masphalt content by wt. of mix	=	
		AC-aasphalt content by wt. of aggr % DEN% AASHTO T 209 mix design		_
Add Properties	Insert Properties	SMOOTHpavement smoothness Mrresilient modulus	DW3	
Property Category (1	Target Target V +, - Low V	A VOIDS% air voids in compacted mix		
		VMAVoids in Mineral Aggregate VFAVoids Filled with Asphalt		
		Rice-SGMaximum Specific Gravity (RL.	-	
		OK Cano	8	
		ОК Сало	H	

Process for selecting individual properties.

d. When using templates, there may be additional properties in the property specifications templates than are shown in the sampling and testing requirements of the contract. The additional properties can be removed in two ways, either by highlighting the row to delete and select the button that states "Delete selected rows" or the user can press the delete button on the keyboard.

puons												
Project S	pecifications											
ž	Contract Number	DTFH7	099D0001									
		APTED	ENLIGIOO		010							
	Project Name	ASTER	FALLS LOOP	00116	UAD							
	Project Number	MT PR/	A GLAC 10(64	0								
lem and l	Lot Specificatio	ms										
Item	40101-1000		Lot	1								
roperty	Specifications	Select tem	plate ->									
roperty : Add	Specifications	Select tem	plate -> Insert Prop	perties			Target specs	E	Delete se	lected row	•	
Property	Specifications Properties Category (1	Select tem	plate -> Insert Prop Target V	erties +, -	 Low Va	High V	Target specs Estimated # t	E	Delete se	lected row	•	
Property Add Property AC-m	Specifications Properties Category (1 1	Select tem Target +/-dev	plate -> Insert Prop Target V	erties +, - 0.40	 Low Va	High V	Target specs Estimated # t		Delete se	lected row	5	•
Property Add Property AC-m VMA	Specifications Properties Category (1 1	Select tem Target +/-dev min	plate -> Insert Prop Target V	erties +, - 0.40	 Low Va 13.0	High V	Torget specs Estimated # t	E	Delete se	lected row	3	
Property : Add Property AC-m VMA % DEN	Specifications Properties Category (1 1 1 1 1	Select tem Target +/-dev min min	plate -> Insert Prop Target V	erties +, - 0.40	 Low Va 13.0 91.0	High V	Torget specs Estimated # t	E	Delete se	lected row	3	•
Property : Add Property AC-m VMA % DEN VOIDS	Specifications Properties Category (1 1 1	Select tem Target +/-dev min min Info only	plate -> Insert Prop Target V	xerties +, - 0.40	 Low Va 13.0 91.0	High V	Torget specs Estimated # t	E	Delete se	lected row	3	•
Property : Add Property AC-m VMA % DEN VMA % DEN VFA	Specifications Properties Category (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Select tem Target +/-dev min info only info only	plate -> Insert Prop Target V	*, - 0.40	 Low Va 13.0 91.0	High V	Torget specs Estimated # t		Delete se	lected row	•	•
Property 3 Add Property AC-m VMA % DEN VFA Rice-SG	Specifications Properties Category (1 1 1 1 1 1 1 1 1 1 1 1 1	Select tem Target +/-dev min min info only info only	plate -> Insert Prop Target V	*, - 0.40	 Low Va 13.0 91.0	High V	Target specs Estimated # t	E	Delete se	lected row	•	•
Property : Add Property AC-m VMA % DEN VFA Rice-SG 1*	Specifications S Properties Category (1 1 1 1 1 1 2	Select tem Target +/-dev min min mino only info only info only	plate -> Insert Prog	erties *, - 0.40	 Low Va 13.0 91.0	High V	Torget specs Estimated # t	E	Delete se	lected row	•	•
Property 3 Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4"	Specifications Properties Category (1 1 1 1 1 2 2	Select tem Target +/-dev min min info only info only info only info only	plote -> Insert Prop Target V	*, - 0.40	 Low Va 13.0 91.0	High V	Torget specs Estimated # t	E	Delete se	lected row	•	•
Add Property AC-m VMA % DEN VFA Rice-SG 1* 3/4* 1/2*	Specifications Properties Category (1 1 1 1 1 1 1 2 2 2 2	Select tem Target +/-dev min min min nfo only info only info only info only info only info only	plate → Insert Prog Target V	*, - 0.40	 Low Va 13.0 91.0	High V	Torget specs Estimated # t		Delete se	lected row	•	•
Property 3 Add Property AC-m VMA % DEN VFA Rice-SG 1° 3/4° 1/2° 3/8°	Specifications Properties Category (1) 1 1 1 2 2 2 2 2 2 2 2 2 2	Select tem Target +/-dev min min min info only info only info only info only info only info only info only	plate → Insert Prog	*, - 0.40	 Low Vs 13.0 91.0	High V	Torget specs Estimated # t		Delete se	lected row	•	•

Deleting highlighted property specifications.

- C. Providing Target Specifications to Match the Contract
 - a. To input specification targets, highlight the property in the lower table and click on the "Target Specs" button.

Property S	pecifications Select to	emplate -> FP	-14, 401- Gyrator	ry Method (3/4 inch nomina	el maximum) - Fr	ull Production		
Add Pr	operties	Insert Prop	perties		Target sp	ecs	Delete selec	cted rows	
Property	Category (1 or 2)	Target Ty	Target Value	+, -	Low Value	High Value	Estimated #tests		
AC-m	1	+/-dev		0.40					
VMA	1	min			13.0				E
% DEN	1	min			91.0				
VOIDS	1	info only							
VFA	1	info only							
Rice-SG	1	info only							
1"	2	info only							
3/4"	2	info only							
1/2"	2	info only							
3/8"	2	info only							-

Highlighted property prior to selecting target specs.

This will bring up a new window to enter the specifications for the particular property.

•	Target specific	ations		_ D _ X
		AC-m		
	Critica	lity Level (1 or 2) 1		
	Target Specifica	ations		
	⊙ +/- dev	Target value +/- allowable deviation	Target Value	
	C min	Minimum	Allowable Deviation	0.40
	○ max	Maximum		
	C mean	Mean as Target Value within range	Low Value	
	C info	Property is Informational Only	High Value	
	Estimated	number of tests		
		ОК	Cancel	li li

Target specification window.

- b. Select the criticality level for the target specification. The criticality level (category) defines the lowest acceptable quality level a material can reach and still receive the contract price. The category is broken into two levels which are stated in the Sampling, Testing and Acceptance Requirements Table within each section of the contract. Category I and II are based on acceptable quality levels of 95 percent and 90 percent, respectively. For additional information, see Subsection 106.05 in the specifications.
- c. Determine the testing parameters for each property and select the appropriate specification type, i.e. min, max, etc. When the appropriate button is selected, the corresponding fields on the right will be highlighted to enter data. Each field will need to be filled with data from either the sampling and testing specification, material specification or a mix design.
 - i. *+/- dev:* By selecting this option, the contract requires a target value and an allowable deviation be set for each individual property.
 - ii. *Min:* A minimum parameter is used when the contract states that a lower specification limit is required for the property.
 - iii. *Max:* The maximum value will be used when the specification specifies an upper limit for the property.
 - iv. *Mean:* When using the "mean" target specification, the program establishes the mean of the inputted data as the target value. If the mean exceeds the maximum specification limit or is lower than the minimum specification limit, the program will automatically set the target value at the maximum or minimum specification limit as appropriate.

v. *Info:* By selecting the info button, the particular property will only be displayed in the reports for informational purposes. These properties will not be used when calculating a pay factor.

🖳 Target specific	ations		
	AC-m		
Critica	lity Level (1 or 2)		
Target Specifica	ations		
⊙ +/- dev	Target value +/- allowable deviation	Target Value	4.9
Cmin	Minimum	Allowable Deviation	0.40
C max	Maximum		
C mean	Mean as Target Value within range	Low Value	
⊂ info	Property is Informational Only	High Value	
Estimated	number of tests 26		
	ОК	Cancel	

AC-m target specifications window completed.

Note: Estimate the number of tests that will be taken throughout the project and enter in the appropriate field. This number can be changed at a later date if the number of tests increases or decreases. The final number of tests taken should be reflected under each property at the completion of the item.

Note: The reports will not include a pay factor or percent within limits (PWL) if the estimated number of tests for a particular item is not entered.

d. After the target specifications are entered, click "OK" and proceed to adjusting the remainder of the properties. The completed specifications window is shown on the following page.

otions									
Project Sp	pecifications								
	Contract Number	DTFH7	099D0001						
	Project Name	ASTER	FALLS LOOP	OUT R	OAD				
	Project Number	MT PR/	A GLAC 10(64	9					
em and l	Lot Specification	ons							
Item	40101-1000		Lot	1					
roperty	Specifications	Select tem	plate ->						
roperty : Add	Specifications Properties	Select tem	plate -> Insert Prop	erties			Target specs	Delete selected rows	
Property : Add	Properties	Select tem	plate -> Insert Prop	xerties		High V	Target specs	Delete selected rows	•
Add Property	Properties Cetegory (1 1	Select tem	plate -> Insert Prop Target V 4.9	*, - 0,40	Low Va	High V	Target specs	Delete selected rows	•
Add Property AC-m VMA	Properties Category (1 1	Select tem Target +/-dev min	plote -> Insert Prop Targot V 4.9	erties +, - 0.40	 Low Va 13.0	High V	Target specs Estimated # L 26 26	Delete selected rows	•
Add Property AC-m VMA % DEN	Properties Category (1 1 1 1	Select tem Target +/-dev min min	plote -> Insert Prop Target V 4.9	erties +, - 0.40	 Low Ve 13.0 91.0	High V	Target specs Estimated # t 26 26 26	Delete selected rows	
Add Property AC-m VMA % DEN VOIDS	Properties Category (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Select tem Target +/-dev min info only	plate -> Insert Prop Target V 4.9	erties +, - 0.40	 Low Ve 13.0 91.0	High V	Target specs Estimated # t 26 26 26 26	Delete selected rows	
Add Property S AC-m VMA % DEN VOIDS VFA	Properties Category (1 1 1 1 1	Select tem Target +/-dev min min info only info only	plate -> Insert Prop Target V 4.9	erties +, - 0.40	Low Va 13.0 91.0	High V	Target specs	Delete selected rows	-
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG	Properties Category (1 1 1 1 1 1 1	Select tem Target +/-dev min min info only info only info only	Insert Prop Target V 4.9	erties +, - 0.40	 Low Va 13.0 91.0	High V	Estimated # L 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26	Delete selected rows	
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1*	Properties Category (1 1 1 1 1 1 1 2	Select tem Target +/-dev min min info only info only info only info only	Insert Prop Target V 4.9	erties + 0.40	 Low Va 13.0 91.0	High V	Target specs Estimated # t 26 26 26 26 26 26 26 26 26	Delete selected rows	
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4"	Properties Category (1 1 1 1 1 1 1 2 2	Target +/-dev min info only info only info only info only info only info only	plate -> Insert Prop Target V 4.9	* 0.40	 Low Va 13.0 91.0	High V	Estimated # t 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26	Delete selected rows	
Add Property 3 AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2"	Properties Category (1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2	Select tem Target +/-dev min info only info only info only info only info only info only info only	plate -> Insert Prop Target V 4.9	* 0.40	 Low Va 13.0 91.0	High V	Estimated # L 26 26 26 26 26 26 26 26 26 26	Delete selected rows	-
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8"	Properties Category (1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2	Select tem Target +/-dev min info only info only info only info only info only info only info only info only	plate -> Insert Prog Target V 4.9	• 0.40	 Low Va 13.0 91.0	High V	Target specs Estimated # t 26 26 26 26 26 26 26 26 26 26 26 26 26	Delete selected rows	-
Add Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8"	Properties Category (1 1 1 1 2 2 2 2 2	Select tem Target +/-dev min info only info only info only info only info only info only info only	Plate -> Insert Proj Target V 4.9	* 0.40	 Low Va 13.0 91.0	High V	Target specs Estimated # t 28 26	Delete selected rows	

Target Specifications adjusted per contract requirements.

e. When finished entering all of the properties, click "Save and Close."

Note: The specifications window has three options for leaving the window: "Save," "Save and Close," and "Quit." Each function has a separate outcome. Save: If the user selects "Save," the data that has been entered will be saved, but the specifications window will not close. Save and Close: By selecting "Save and Close," the data that has been

entered will be saved and the specifications window will close. Quit: If the user presses "Quit," none of the changes made to the specifications will be saved and it will resort back to the data that was entered prior to opening the specification set and close the window.

3.3. Creating a Secondary Lab Sample Set in the same Lot

- A. From the home screen of the QL-PAY program, press the "Clear Fields" button located in the "Identify New or Existing Sample Set(s)" box.
- B. Highlight the sample set to create a secondary lab and select the "Copy to Fields" button. This will copy the project information to be used for the new sample set.

	Quality Level - P	ay Factor Ar	nalysis											_ 0	X
File	Sample Sets	Reports F	Property spe	cifications Te	est Res	ults Help									
San	nple Set Select	ion													
	Imported	Contract	number	Item	Lot	Laboratory		Project	name	2		Project	number	:	
•		DTFH70-99	-D-0001	40101-1000	1	Contractor	Lab	ASTER F	ALLS	LOOKOUT	ROAD	MT PRA	GLAC 10	(64)	
	ontify now or a	winting com	nlo cot(a)												
	lentiny new or e		pie seu(s)												
	Select all		Copy to fie	lds 1 _ (Clear f	ields	Res	tore fields	5						
	<u> </u>								٦.						
	Contract numb	er	Item		Lot	Laboratory			2						
	DTFH70-99-D-0	0001	40101-100	0	1	Contractor La	b		12		Sner	ifications	1		
							_				opec	Sations			
						1			•		Test	Results		Exit	

After selecting Copy to Fields, the sample set information is transferred.

C. In the "Laboratory" drop down menu, choose "Central Lab."

Identify new or existing s	ample set(s)	
Select all	Copy to fields	Clear fields Restore fields
Contract number	ltem	Lot Laboratory
DTFH70-99-D-0001	40101-1000	1 Central Lab
		Central Lab

View after selecting copy to fields and the Central Lab.

D. Click on "Specifications." The specifications should be identical to the original sample set. Select "Save and Close" once the property specifications have been reviewed for accuracy.

3.4. Deleting an Existing Sample Set

To delete a sample set, highlight the sample set to delete and click on the "Sample Sets" drop down menu.

File	Sample Sets Reports Prope	rty Specificati	ons Te	est Results Help			
Samp	Import Unmark recent imports Export						
	export	them.	Lat	Laboratory	Project name	Project	
	Delete Cample cete	Len		moorgoorj	ered con man	number	
-	Delete Sample sets	0101-1000	1	Contractor Lab	ASTER FALLS LOOKOUT ROAD	MT PRA GLA	
	Delete Sample sets Copy to fields	0101-1000 0410-7257	1	Contractor Lab	ASTER FALLS LOOKOUT ROAD	number MT PRA GLA QLPAY 1(1)	

Deleting an existing sample set.

From there, select "Delete Sample sets" \rightarrow "Yes."

QLPAY		X
2	Delete samp	le set(s)?
	Yes	No

Deletion confirmation.

3.5. Creating a New Target Specification Template

A. Go to "File" \rightarrow "Property Spec. Templates."

Qua											
File	Sample Sets	Reports	Property Sp	ecification	s Test R	tesults Help					
	Db (Data) Directe	ory									
	Export Directory			1							
	Import Directory			Item	Lot	Laboratory	Projec	t name	P	roject number	_
۰.	Settings										
l	Property Spec. T	emplates									
	Exit										
_			_								
Ide	ntify new or exis	ting sample	set(s)								
Ide	ntify new or exis	ting sample	set(s)					1			
Ide	ntify new or exis Select all	ting sample Cop	set(s)	ci	earfields	Resto	refields]			
-Ider	ntify new or exis	ting sample	set(s) y to fields		ear fields	Resto	re fields				
-Ider Co	ntify new or exis Select all	ting sample Cop Ite	set(s) y to fields	CI L	ear fields ot Labe	Resto	re fields				
-Ider Ca	ntify new or exis Select all ontract numb er	ting sample Cop Ite	set(s) y to fields m	 	ear fields ot Labe	Resto	re fields	Specificat	ions		
lder Cu	ntify new or exis Select all	ting sample Cop Ite	set(s) y to fields m	 	ear fields ot Labe	Resto	re fields	Specificat	ions	E HOLDER	

Selecting the property specification template function.

B. Under the "Current Template" field, type the title the new template will be named.

selec	t template					•	
curren	nt template 30101-20	100 BASE GRA	DING D				Delete template
Add p	roperties	Insert Prope	ties	Target S	pecs	D	elete selected rows
Property	Category (1 or 2)	Target Ty	Target Value	+, -	Low Value	High Value	Estimated #tests

Creating a new template.

C. Select "Add Properties." Highlight the properties to be included in the template and click "OK."

Select a	Property		
Property	Description		ר
600µm	600 μm sieve		
425µm	425 µm sieve	Ξ	
300µm	300 µm sieve		
180µm	180 µm sieve		
150µm	150 µm sieve		
75µm	75 µm sieve		
LL	liquid limit		
PI	plastic index		
SE	sand equivalent		
SE/P	sand equivalent/p75 index		
% FRAC	percent fracture		
% COMP	% compaction of soils or aggr	-	
	OK	I	.4

Selecting a property.

D. To rearrange the order of the properties within the new template, drag and drop the property in the desired location.

E. When all properties and locations have been set in the template, select "Save Current Template" and then "Close."

ser	ect template						•			
current template 30101-2000 BASE, GRADING D										
Add p	property	Properties.		Target	specs		Delete s	selected rows		
Property	Category (1 or 2)	Target Type	Target Value	+ -	Low Value	High Value	Estimated # tests			
		rangerijpe	raiget raide	· · ·	2011 Faide	r ight falao	2001101000 10010			
#4	1									
#4 #200	1									
#4 #200 LL	1 1 1									
#4 #200 LL 3/8"	1 1 1 1									
#4 #200 LL 3/8" % COMP	1 1 1 1 1									

Steps to save and close the property specification template.

- F. The template will now be available to select under the specifications window, when creating a new sample set.
- G. This process can also be used to edit existing templates by selecting a template on the "Property Spec. Templates" page instead of creating a new one.

Note: Templates that are created by the user are only stored on the user's computer and will not transfer to another user.

3.6. Inputting Test Results

A. Highlight the sample set that the user has test results for.

File	Quality Level - Pay Factor Analysis Carlos Constraints Const											
San	Sample Set Selection											
	Imported Contract number Item			Lot	Laboratory	Project name	e	Project numb	ber			
		DTFH70-99-D-0001	40101-1000	1	Central Lab	ASTER FALLS	LOOKOUT ROAD	MT PRA GLAC	10(64)			
•		DTFH70-99-D-0001	40101-1000	1	Contractor Lab	ASTER FALLS	LOOKOUT ROAD	MT PRA GLAC	10(64)			
	lentify new or Select all Contract numl	existing sample set(s) Copy to fie per Item	ilds (Clear f	fields Res	tore fields	Spec	cifications t Results	Exit QLPAY			

Highlighted sample set.

B. The test results can be accessed from two locations on the home screen. The user can either select the "Test Results" button at the lower right of the window or use the "Test Results" menu drop down.

· 🖳 🔿	🖁 Quality Level - Pay Factor Analysis 📃 💷 🔀												
File	File Sample Sets Reports Property specifications Test Results Help												
Sample Set Selection													
	Imported Contract number			Item	Lot	Laboratory	Project nam	e	P	rojec	t numk	ber	
		DTFH70-9	99-D-0001	40101-1000	1	Central Lab	ASTER FALLS	LOOKOUT ROA	AD M	T PRA	GLAC	10(64)	
•		DTFH70-9	99-D-0001	40101-1000	1	Contractor Lab	ASTER FALLS	LOOKOUT ROA	AD M	T PRA	GLAC	10(64)	
					_				_	_	_		
_ Id	entify new or o	existing sar	nple set(s)										
	0-1	1	0										
	Select all		Copy to fie		Lieari	ieids Res	tore fields						
	Contract numb	er	ltem		Lot	Laboratory							
Η.	Contract numb					Laboratory							
								5	necifir	rations		1	
										Sationo .			1
						Tes			Test Results Exit QLPAY				

Options to access the test results screen.

C. Begin entering the test result data, starting with Sample #1. Make sure to include consecutive sample numbers when entering in the test result data, i.e. 1,2,3,4, etc. and <u>do not</u> skip lines.

Note: Three test results are needed before a statistical analysis can be computed.

a. When entering test results, review the testing requirements for the appropriate number of decimal places to record.

🖳 Sai	mple Test F	Results								
Form	Test Resu	ults Repor	ts							
Contract Number Item Lot Laboratory										
DTFH70-99-D-0001 40101-1000 1 Contractor Lab										
Test	t Results									
	Exclude	Sample	AC-m	VMA	% DEN	VOIDS	VFA	Rice-SG		
		1	5.62	18.1	90.5	7.1	60.8	2.467		
		2	4.89	17.2	94.5	7.8	54.7	2.495		
./		3								
*										
•								Þ		
Cle	ear Checks	Delete	e selected rov	vs	Save	Save and	d Close	Quit		

View of consecutive test results being entered.

b. Select the "Exclude" box, if there are test results for a sample number that the user does not want to include in the analysis.

Note: When entering a verifying lab's test results, make certain to enter the appropriate sample number which correlates to the contractor's sample, i.e. 3 and 3. This will allow QL-PAY to compare corresponding sample splits throughout the analysis process.

4. Reports

QL-PAY has the option to generate a combination of reports comparing the test results that have been entered for the project sample sets. The report selection can be accessed from two places within the program. From the home screen of QL-PAY, the reports can be obtained through the drop down menu under "Reports."

🖳 Quality Level -	Pay Factor Analysis	
File Sample Sets	Reports Property specifications Test Results Help	
Sample Set Selec	Short analysis Pay factor Control charts Long analysis Report on Single or Paired Sample Sets	ry Project name Project number Lab ASTER FALLS LOOKOUT ROAD MT FRA GLAC 10(64)
	List Selected Sample Sets List All Sample Sets Grand Summary Random Sampling	or lab ASTER FALLS LOOKOUT ROAD MT FRA GLAC 10(64)
Identify new or Select all Contract num	existing sample set(s) Copy to fields Clear fields Per Item Lot Laborato	Restore fields y Specifications

Selecting the reports menu from the home screen.

If the user is in the test results screen, the reports can be obtained by selecting the "Reports" drop down menu.

🖳 San	nple Test F	Resul	ts			5				_ 🗆 🗙
Form	Test Resu	Ilts	Reports							
Contra DTFH	act Number 170-99-D-00	01	Repo Long Shor	Reports (general) Long analysis Short analysis Day foster			Laboratory Contractor Lab			
Test	Results		Cont	rol charts						
	Exclude	Sa.					DEN	VOIDS	VFA	Rice-SG
		1	5	.62	18.1	90	.5	7.1	60.8	2.467
		2	4	.89	17.2	94	.5	7.8	54.7	2.495
		3	4	.98	17.6	91	.1	7.7	56.3	2.485
•		4	5	.37	14.2	93	.6	3.3	74.6	2.492
*										
				1						
Clei	ar Checks		Delete sel	ected rows		Save		Save and	l Close	Quit

Selecting the reports menu from the test results screen.

Once the reports function has been chosen, the following is the main screen that will be used to generate an array of reports covering the sample set data that has been selected.

Reports on single or paired samples	ets 📃 🗆 🗙									
Pick reports										
List test results	Clear selections									
Calculate pay factor	Calculate pay factor									
☐ Histograms										
☐ Null Hypothesis										
Skewness and kurtosis										
Control charts										
Sampleset differences										
for Null hypothesis and control charts — Primary Lab: Contractor Lab Alternate Lab: Central Lab										
Range of sample numbers										
@ All										
C Range: to										
ОК	Cancel									

Report selections.

4.1. List Test Results

By selecting "list test results" in a report, QL-PAY will format all of the test results entered within the sample set into a legible list.

Pick reports	
 List test results 	Clear selections
Calculate pay factor	
Histograms	
Null Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	

Selection of list test results report.

This report allows the user to review the entered data for accuracy and any discrepancies. See below for a sample printout of the listed test results report.

SAMPLE SET LISTING												
Project Nam Project Num Project ID:	Project Name: ASTER FALLS LOOKOUT ROAD Item Number: 40101-1000 Project Number: MT PRA GLAC 10(64) Lot Number: 1 Project ID: DTFH7099D0001 Lab: Contractor Lab											
** ACCEPTANCE PARAMETERS **												
Quality Characteristic:												
~ •	AC-m	VMA	% DEN	VOIDS	VFA	Rice-SG	1"	3/4"	1/2"			
Target Type:	+/-dev	min	min	info	info	info	info	info	info			
Target Value:	4.9	13.0	91.0									
Allowable Deviation:	0.40											
Est. No. Tests:	9	9	9	9	9	9	9	9	9			
Category:	1	1	1	1	1	1	2	2	2			
Actual No. Samples:	9	9	9	9	9	9	9	9	9			
			** 5	TEST RESU	LTS **							
Sample Number	AC-m	VMA	% DEN	VOIDS	VFA	Rice-SG	1"	3/4"	1/2"			
1 2 3 4 5 6 7 8 9	5.42 4.89 4.73 5.21 4.92 5.11 4.98 5.10 4.93	18.1 17.2 15.6 15.5 14.7 15.9 17.3 14.5 15.0	90.5 94.0 92.3 94.1 91.2 92.3 91.7 92.6 93.4	7.1 7.8 3.9 4.6 5.8 7.0 6.4 3.8 4.9	60.8 54.7 66.4 70.0 59.4 62.3 68.7 56.4 69.3	2.467 2.495 2.483 2.492 2.473 2.478 2.478 2.488 2.477 2.481	100 100 100 100 100 100 100 100	100 100 100 100 100 100 100 100	85.2 82.1 85.6 80.1 83.2 84.1 82.6 81.7 84.3			

Listed test results from QL-PAY report.

Note: An asterisk (*) will be displayed adjacent to the sample number for any test result that has been excluded from the analysis. The user must save the file prior to running the report for the exclusion not to be considered in the analysis.

4.2. Calculate Pay Factor

The pay factor report will list the Percent Within Limits (PWL) and pay factor for each property that is being evaluated in the sample set.

Diale servede	
Pick reports	
List test results	Clear selections
Calculate pay factor	
☐ Histograms	
Null Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	

Selection of calculate pay factor report.

Throughout the testing, the report will produce a projected final pay factor based on the current quality level and the estimated number of tests. A final pay factor will be reported when the number of inputted test results equals the estimated number of tests.

QUALITY LEVEL ANALYSIS & PAY FACTOR COMPUTATIONS												
Project Name: ASTER FALLS LOOKOUT ROAD Item Number: 40101-1000 Project Number: MT PRA GLAC 10(64) Lot Number: 1 Project ID: DTFH7099D0001 Lab: Contractor Lab												
	Quality Levels and Pay Factors											
Quality Charac- teristic	Actual Target Value			Mean	Standard Deviation	PWL	Pay Factor					
AC-m	4.90	+,-	0.40	5.03	0.203	91	1.02					
VMA	13.00	min		15.98	1.270	100	1.05					
% DEN	91.00	min		92.46	1.226	88	1.00					
VOIDS	info			5.70	1.469							
VFA	info			63.11	5.738							
Rice-SG	info			2.482	0.009							
1"	info			100.00	0.000							
3/4"	info			100.00	0.000							
1/2"	info			83.21	1.775							
3/8"	info											
#4	info											
#8	info											
#16	info											
#30	info											
#50	info											
#200	info											
			TESTING	COMPLETED	00							
			FINAL PA	I PACTOR: 1								

Quality levels and pay factors QL-PAY report.

4.3. Histograms

A histogram shows where the data resides and how many results lie between specific values.

Pick reports		
List test results	Clear selections	
Calculate pay factor		
✓ Histograms		
Null Hypothesis		
Skewness and kurtosis		
Control charts		
Sampleset differences		

Selection of histogram report.

These charts allow for easier viewing of data in a graphical manner.



Plotted histogram for #8 sieve in the sample set.

4.4. Null Hypothesis

The null hypothesis can only be used when two labs are being compared.

Reports on single or paired samplesets			
Pick reports			
List test results	Clear selections		
Calculate pay factor			
Histograms			
✓ Null Hypothesis			
☐ Skewness and kurtosis			
Control charts			
Sampleset differences			
for Null hypothesis and control charts Primary Lab: Contractor Lab			
Alternate Lab: Central Lab	•		
Range of sample numbers			
C Range: to			
ок	Cancel		

Selection for generating the Null Hypothesis report.

When comparing the contractor lab to the central lab, the results should be similar but not identical. The null hypothesis is computed at a 0.01 significance level.

The null hypothesis generates two analyses: independent and paired. An independent analysis compares the contractor's test results that do not have corresponding government results with the results that have been recorded to date from the central lab. A paired analysis compares the corresponding contractor and government test results. The t statistic is used as a comparison of the mean values of the individual properties within the sample sets. The F statistic is used to analyze the variance of the data. Computed F and t values based on the inputted data are compared to critical F and t values that have been established using standard statistical methods.

Two key questions to ask when reviewing the null hypothesis report are:

- 1) Are the Means similar?
 - a. This is answered using the t statistic.
- 2) Are the variances similar?
 - a. This is answered using the F statistic.

NULL HYPOTHESIS TEST (0.01 SIGNIFICANCE LEVEL)				
	Contractor Lab vs. Central Lab			
	PAIRED T-STATISTIC			
	Critical t-value	Computed t-value		
AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	3.355 3.355 3.355 3.355 3.355 3.355 3.355 3.355 3.355 3.355 3.355 3.355 3.355 3.355	1.120 0.800 0.359 0.000 0.686 0.229 0.000 0.359 0.610 0.512 1.000 2.000	Results within acceptable limits Results within acceptable limits Results within acceptable limits Results within acceptable limits Results within acceptable limits (Unable to calculate) (Unable to calculate) (Unable to calculate) Results within acceptable limits Results within acceptable limits	
#50 #200	3.355 3.355	0.147 1.955	Results within acceptable limits Results within acceptable limits	

Null hypothesis report from QL-PAY.

4.5. Skewness and Kurtosis

Skewness and Kurtosis are parameters used to determine if the data is normally distributed.

-Pick reports	
Пектерона	
List test results	Clear selections
Calculate pay factor	
Histograms	
Null Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	

Selection of Skewness and Kurtosis report.

The following is an example of how a skewness and kurtosis report would appear in QL-PAY.

		Skewness and Kurtosis Statistics
Quality Charac- teristic	Skewness	Kurtosis
AC-m	0.6064	0.5768
VMA	0.5720	-1.0671
% DEN	0.1454	-1.2004
VOIDS	0.0006	-1.5912
VFA	-0.1593	-1.5898
Rice-SG	-0.0021	-0.6570
1"		
3/4"		
1/2"	-0.3353	-0.5033
3/8"	-0.3703	-1.2872
#4	-0.3393	-1.3181
#8	-1.1107	2.2004
#16	-0.8745	1.7391
#30	0.5002	1.0148
#50	0.1231	-1.2780
#200	0.9807	0.3766

Skewness and kurtosis report from QL-PAY.
4.6. Control Charts

The set of control charts produced by QL-PAY depicts the data in relation to the specification limits. If an alternate lab has been selected, both sets of data will be plotted.

Reports on single or paired sampleset	ts 🗆 🗆 🗙
Pick reports	
List test results	Clear selections
Calculate pay factor	
☐ Histograms	
Null Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	
for Null hypothesis and control charts	
Primary Lab: Contractor Lab	
Alternate Lab: Central Lab	•
Range of sample numbers	
C Range: to	
ОК	Cancel

Selection for generating a control chart report.

These charts are beneficial in evaluating the consistency between the two labs and can assist in evaluating the data if a bias exists. These charts are also valuable to use as production charts to help in visually assessing the consistency of the specific product or process.



Control chart from a QL-PAY report.

4.7. Sample Set Differences

The sample set differences report shows the actual difference between the contractor and the central lab value on a sample by sample basis. The report will show differences for only those samples where a contractor and a central lab value exist. This report can only be used if a primary <u>and</u> an alternate lab are selected.

Reports on single or paired samplesets
Pick reports
List test results Clear selections
Calculate pay factor
Histograms
Null Hypothesis
☐ Skewness and kurtosis
Control charts
✓ Sampleset differences
for Null hypothesis and control charts Primary Lab: Contractor Lab Alternate Lab: Central Lab
Range of sample numbers
♂ All
C Range: to
OK Cancel

Selection showing the sample set differences report.

The +/- shows the numerical representation of the data viewed in the control charts if the two labs are selected. A sample of the printout for the sample set differences report is shown on the next page.

			SAI ** ACC	MPLE SET	DIFFE	RENCES	*				
Quality Characteristic: AC-m VMA % DEN											
Target Type:	+/-dev			min	n min						
Target Value:	5.2			13.0			91.0				
Allowable Deviation:	0.40										
Est. No. Tests:	10			10			10				
Category:	1			1			1				
Actual No. Samples:	10, 3			10, 3			10, 5				
				** TEST RE	SULT	S **					
Sample Number	AC-m		DIFF	VMA		DIFF	% DEN		DIFF		
1 2 3 4 5 6 7 8 9 10	5.62 - 4.89 - 4.98 - 5.37 - 5.15 - 5.18 - 4.65 - 4.55 - 4.63 - 4.66	5.25 4.58 5.02	+ 0.370 + 0.310 - 0.040	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	15.4 15.3 15.9	+ 2.700 + 1.900 + 1.700	90.5 - 94.5 - 91.1 - 93.6 - 93.8 - 91.1 - 92.3 - 94.7 - 93.7 - 91.6 -	90.9 94.5 91.9 93.8 93.9	- 0.400 0.000 - 0.800 - 0.200 - 0.100		

Report showing the sample set differences.

4.8. Primary and Alternate Lab Selection

QL-PAY allows for the test results from the contractor's lab to be compared with the results from an alternate lab. An alternate lab selection is mandatory if the "null hypothesis" or "sampleset differences" report options are selected.

Reports on single or paired samplese	ets 📃 🗖 🗙
Pick reports	
List test results	Clear selections
Calculate pay factor	
Histograms	
Null Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	
-for Null hypothesis and control shorts	
Primary Lab: Contractor Lab	
Alternate Lab: Central Lab	•
Range of sample numbers	
• All	
C Range: 1 to]
ОК	Cancel

Report specifications for lab comparison.

The primary lab will be affiliated with the sample set selected prior to selecting the reports function. Most times, the primary lab will be established as the contractor lab and the alternate lab will be the central lab for comparison purposes.

4.9. Range of Sample Numbers

When using any of the report functions, the user can choose to use the entire set of test results in the sample set or select a range of data values to include in the analysis. The report selection page is automatically set to include all of the test results. If the user wants to generate a report including a range of test results, the "Range" button must be selected and the appropriate range entered in the fields.

Reports on single or paired samplesets
Pick reports
List test results Clear selections
Calculate pay factor
□ Histograms
Null Hypothesis
□ Skewness and kurtosis
Control charts
□ Sampleset differences
for Null hypothesis and control charts Primary Lab: Contractor Lab Alternate Lab: Central Lab
Range of sample numbers
C All
© Range: 12 to 43
OK Cancel

Specifying a range of sample numbers.

5. Importing/Exporting

When importing or exporting data files from QL-PAY, each file has a specific number sequence associated with the day it was created. The file name format is qlpf+YY+mm+dd+nnn.xml. For example, the file below would look like qlpf+12+01+26+001.xml; therefore, it was the first file created on January 26, 2012.



5.1. Import

A. Find the location the imported files are being pulled from by looking in the "Imported Files Directory."

Handred Files Directory			
Specify location of imported files			
C:\MyFiles\QLPAY5\Import\			
Browse for path			
	ОК	Cancel	



- B. Save the file to be imported in the above file directory.
- C. Go to "Sample Sets" \rightarrow "Import" \rightarrow "Import Sample Sets." A window will open showing the files available to be imported.

e Sa	ample Sets Re	ports Pro	perty Sp	pecifications	Test Resu	ults Help							
	Import		•	Import sam	ple sets .								
	Unmark rece	nt imports		Clear 'Impo	rt' direct	tory							
	Export		• [Item	Lot	Laboratory	Proje	ct nam	e		Proje	ct nur	nber
	Delete Samp	le sets		40101-1000	1	Central Lab	ASTER	FALLS	LOOKOUT	ROAD	MT PRA	A GLAC	10(6
	Copy to field	ls		40101-1000	1	Contractor Lab	ASTER	FALLS	LOOKOUT	ROAD	MT PR	A GLAC	10(6
	Clear fields												
	Restore fields	s	- 8										
dentify	v new or existing	g sample se	t(s)										
Jentify Se	y new or existing	g sample se Copy to	t(s) fields	Clear fi	elds	Restore fields]						
Jentify Se Contr	y new or existing elect all act number	g sample se Copy to Item	t(s) fields	Clear fi	elds Labora	Restore fields							
Jentify Se Contr	y new or existing elect all act number	g sample se Copy to Item	t(s) fields	Clear fi Lot	elds Labora	Restore fields		S	pecification	Ş			

Importing a sample set.

D. Select the file(s) to be imported and select "Open." A screen shot is shown on the following page.

🖳 Open				X
Compute	er DENB112074 (C:) MyFiles	QLPAY5 Import	✓ Searce	h Import 🔎
Organize New folde	er			· · · ·
☆ Favorites	Name	Date modified	Туре	
E Desktop	glpf120126001	1/26/2012 1:30 PM	XML Document	
Skecent Places	🧖 qlpf120224001	2/24/2012 10:25 A	XML Document	
Ξ	🧖 qlpf120306002	3/6/2012 10:13 AM	XML Document	
🞇 Libraries	🧖 qlpf120426001	4/26/2012 10:27 A	XML Document	
Documents				Select a file to
I Music				preview.
Sectores				
JUDE Videos				
💐 Computer				
😂 DENB112074 (C:) 👻	•	III	4	
File nan	me: glpf120426001		 import dat 	a files (*.dat;*.xml 🔻
			Open	Cancel

Selecting files to import from the file directory.

- E. QL-PAY will analyze the existing and new lot(s) to be imported. This import process can be time consuming.
 - a. Existing Lots: A lot that has different test results than the existing lot in the user's database. When importing an existing lot, the test results in the file being imported will overwrite the results already in the QL-PAY database. QL-Pay will not warn the user prior to overwriting the results.

If the properties of existing lots do not match the lots to be imported, QL-PAY will notify the user during the import process. A new version of a lot with more properties than the home lot cannot be imported. The home lot is the lot that exists in the user's QL-PAY database at the time of importing. A screen shot of the user notification in the import window is shown on the following page.

QL-PAY Import Files progress	
Reading Input files. This may take awhile	
Checking Lot "DTFH/099D0001": "40101-1000": "1"	
Checking Property: "AC-m"	
Checking Property: "VMA"	
Checking Property: "% DEN"	
Checking Property: "VOIDS"	
Checking Property: "VFA"	
Checking Property: "Rice-SG"	
Checking Property: "1""	
Checking Property: "3/4""	
Checking Property: "1/2""	
Checking Property: "3/8""	
Checking Property: "#4"	
Checking Property: "#8"	
Checking Property: "#16"	
Checking Property: "#30"	
Checking Property: "#50"	
Checking Property: "#200"	
Checking Property: "DSRorg"	
Checking Property: "DSRres"	
Checking Property: "DSRpay"	
Checking Property: "BBB s"	
Import Property "BBR s" is new.	
Import Property "BBR s" is new. Checking Property "BBR m"	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m"	
Import Property "BBR s" is new. <u>Checking Property "BBR m"</u> <u>Import Property "BBR m" is new.</u> 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" is new. 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property" "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR 8" is new. Checking Property "BBR m" Import Property "BBR m" Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. <u>Checking Property "BBR m"</u> <u>Import Property "BBR m"</u> 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. <u>Checking Property "BBR m"</u> <u>Import Property "BBR m" is new.</u> 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" is new. 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. <u>Checking Property "BBR m"</u> Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property" BBR m" is new. 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR et" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property" BBR m" is new. 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR 8" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot	
Import Property "BBR s" is new. Checking Property "BBR m" Import Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot have properties for this Lot have properties not in the Home version. This Lot cannot be imported. Continue	with next Lot, or Cancel Import session?
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 1 Import Version of this Lot has Properties not in the Home version. This Lot cannot be imported Continue	with next Lot, or Cancel Import session?
Import Property "BBR m" is new. Checking Property "BBR m" Import Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot	with next Lot, or Cancel Import session?
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 7 Import Properties have no corresponding Home Properties for this Lot The Import version of this Lot has Properties not in the Home version. This Lot cannot be imported Continue	with next Lot, or Cancel Import session?
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no correspond have no	with next Lot, or Cancel Import session?
Import Property "BBR s" is new. Checking Property "BBR m" Import Property "BBR m" 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot The Import version of this Lot has Properties not in the Home version. This Lot cannot be imported. Continue	with next Lot, or Cancel Import session?
Import Property "BBR st" is new. Checking Property "BBR m" Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot (The Import version of this Lot has Properties not in the Home version. This Lot cannot be imported Continue Continue with next Lot	with next Lot, or Cancel Import session?
Import Property "BBR s" is new. Checking Property "BBR m" Import Properties BBR m" 2 Import Properties have no corresponding Home Properties for this Lot 2 Import Properties have no corresponding Home Properties for this Lot The Import version of this Lot has Properties not in the Home version. This Lot cannot be imported Continue The Import version of this Lot has Properties not in the Home version. This Lot cannot be imported Continue Continue with next Lot	with next Lot, or Cancel Import session? Cancel Import Session

User notification of import lot with properties not in home lot.

In this case, the user will need to cancel the import session and either add the properties boxed in red to the home lot, or delete the entire home lot and then import the new version of the lot again.

The user will also be notified when property specifications do not match between the home lot and the new version of the lot to be imported. QL PAY will use home values for the conflicting property specifications if the lot is imported. See the screen shot on the following page.

QL-PAY Import Files progress	_	Х
Reading Inputfiles. This may take awhile Checking Ptopetry "ACm" Checking Propetry. "XOIDS" Checking Propetry. "VOIDS" Checking Propetry. "VOIDS" Checking Propetry. "YFA" Checking Propetry. "TA" Checking Propetry. "I?" Checking Propetry. "12" Checking Propetry. "12" Checking Propetry. "12" Checking Propetry. "12" Checking Propetry. "14" Checking Propetry. "14" Checking Propetry. "14" Checking Propetry. "14" Checking Propetry. "81" Checking Propetry. "81" Checking Propetry. "810" Checking Propetry. "80" Checking Propetry. "820" Checking Propetry. "820" Checking Propetry. "50" Checking Propetry. "50" Checking Propetry. "50" Checking Propetry. "50" Checking Propetry. "50" Checking Propetry. "05Rorg" Attribute "Target Type" Conflict Import "info only". Home: "min" Attribute "Low Value" Conflict Import "info only". Home: "min" Checking Propetry. "DSRpav		
Import this Lot Skip this Lot		
Do this for all conflicts of Lot properties		

User notification of import version with property specification conflicts.

b. New Lots: A lot that does not already exist in the user's database. QL-PAY will prompt the user to Import or Skip each new lot in the file. If all new lots need to be imported, check the "Import All New Lots" (box 1 below). If the user does not want to import a specific lot, select "Skip this Lot" (box 3 below).

■ QL-PAY Import Files progress
Reading Input files. This may take awhile Checking Lot "dtfh70-10-c-000018": "30410 L-02": "1" Import Lot is new
If you proceed, a new Import Lot will be added to the database.Import this Lot, Skip this lot, or Cancel Import session?
Import this Lot 2 Skip this Lot 3

Importing lot selection window.

F. The sample sets will have been brought into the QL-PAY viewing window and will be seen with a check-mark in the imported column.

San	Sample Set Selection									
	Imported	Contract number	Item	Lot	Laboratory	Project name	Project number			
•	~	DTFH68-10-C-00018	40201-4700	1	Central Lab	Mammoth Scenic Loop	CA PFH 138-1(1)			
	v	DTFH68-10-C-00018	40201-4700	1	Contractor Lab	Mammoth Scenic Loop	CA PFH 138-1(1)			
		DTFH70-99-D-0001	40101-1000	1	Central Lab	ASTER FALLS LOOKOUT ROAD	MT PRA GLAC 10(64)			
		DTFH70-99-D-0001	40101-1000	1	Contractor Lab	ASTER FALLS LOOKOUT ROAD	MT PRA GLAC 10(64)			

Recently imported sample sets showing the imported check-marks.

When the user ends the current session in the program, the imported files will no longer be check-marked. To remove the check-marks prior to ending the session, go to "Sample Sets" \rightarrow "Unmark recent imports."

🖳 Qua	ality Level - Pa	y Factor Anal	ysis			
File	Sample Set	s Reports	Proper	ty Specificati	ons Te	est Results H
	Import		+			
Samp	Unmarl	crecent impo	rts			
	Export		•	t-om	Lot	Laboratory
	Delete Sample sets				100	haborator
	Copy to	fields		0101-1000	1	Central La
	Cloar fi	olda		0101-1000	1	Contractor
	Clear fields			0107м	1	Central La
	Restore	e fields		0107м	1	Contractor
	v	OMAD18(27)	3	0107N	1	Central La
	V	OMAD18(27)	3	0107N	1	Contractor

Selection for unmarking recent imports.

5.2. Export

Sample sets can be exported from QL-PAY in three separate ways: by the selected project, all projects, or selected sample sets.

- a. Selected Project: This will export all sample sets associated with the project that is currently highlighted.
- b. All Projects: This option will export all projects in the QL-PAY database.
- c. Selected Sample Sets: This will only export the individual sample set(s) the user has selected.
- A. Select the appropriate exporting function needed by going to "Sample Sets" \rightarrow "Export" \rightarrow "Export _____." A screen shot of the export menu is shown on the following page.

ile	Sample Sets Re	ports Property	Specifications Test Results Help					
ampl	Import Unmark rece	• nt imports						
	Export	•	Export all projects		Project nam	ne	Projec	t number
_	Delete Sampl	e sets	Export selected project		ASTER FALLS	LOOKOUT ROAD	MT PRA	GLAC 10(6
	Copy to field	s	Export selected sample sets	Lab	ASTER FALLS	LOOKOUT ROAD	MT PRA	GLAC 10(6
	Clear fields		Clear Export directory		1		1	
	Restore fields							
			,					
Ideni	tify new or existing Select all	g sample set(s)	s Clear fields Rest	ore fields				
Ident	tify new or existing Select all ntract number) sample set(s) Copy to field Item	s Clear fields Rest Lot Laboratory	ore fields				
Ident	tify new or existing Select all	y sample set(s) Copy to field Item	s Clear fields Rest Lot Laboratory	ore fields	S	pecifications		

Exporting sample set functions.

B. The data set(s) will be saved in a single file and sent to the export directory. This file can now be stored on the computer or sent electronically to be used by others.



Exported file directory.

Note: Even if multiple sample sets are exported at one time, there will only be one file created. Files will accumulate in the export directory until removed by the user.

6. Random Sampling

The random sampling function of QL-PAY is used to generate random numbers by quantity and stationing for use on the project. The contract requires certain items to be sampled at a specific frequency, thus calling for random sample numbers to be generated. QL-PAY is set up with stratified random sampling. This results in the random numbers being distributed throughout the entire sample section rather than constrained to a small portion of the sample area.

6.1. Generating Random Number Reports

6.1.1. By Quantity

- A. Select the "Sample Set" the user wants to generate a "Random Number Report" for.
- B. Open the Random Sampling function by selecting "Reports" and then "Random Sampling."

🖳 Quality Level -	Pay Factor Analysis		
File Sample Set	Reports Property specifications Test Results Help		
Sample Set Sele	Short analysis Pay factor Control charts		
Imported	Long analysis Report on Single or Paired Sample Sets	ry Project name or Lab ASTER FALLS LOO	Project number DKOUT ROAD MT FRA GLAC 10(64)
□ Identify new or	List Selected Sample Sets List All Sample Sets Grand Summary	Lab ASTER FALLS LOC	KOUT ROAD MT FRA GLAC 10(64)
Select al	Random Sampling	Restore fields	
	ber Item Lot Laborato	y ib v	Specifications Test Results Exit QLPAY

Process to open the random sampling function.

- C. Select the Interval Type as "By Quantity."
- D. Enter the appropriate data from the contract documents into the open fields. For this example, the contract calls for 18,000 tons of 401 Asphalt Concrete Pavement, Gyratory mix with a sampling frequency of 1 per 700 tons, thus 26 random numbers would be needed. The random sampling window is shown on the following page.

🖳 Random Sampling	- • •
Contract number DTFH70-99-D-0001	
Project name ASTER FALLS LOOKOUT ROAD	
Item number 40101-1000	
Interval type	
By quantity By quantity A second se	
Item units Tons	
Item quantity 18000	
Sample interval 700	
C By roadway station (kilometes+meters)	
C By roadway station (hundred feet+feet)	
Beginning station Width	C Left
Ending station Lift position	C Right
Sample interval	Full width
Generate Cancel	
	///

View of random sampling data entry.

E. Select "Generate." A PDF report will appear with the generated random numbers. An example report is shown below.

Project Na Project Na Sample Ind	ame: ASTER FALLS umber: DTFH7099D0 terval: 700	LOOKOUT ROAD 001	Item Item Item	Number: 4010 Units: Tons Quantity: 18	1-1000 000
Copies of th should not obtained in	his information SHALL NO be given to the contractor the presence of the engin	T be given to the co until just prior to th neer or other FHW/	ntractor. The random sam le time when he is to obta A personnel.	pling time and locat in the sample. All s	ion for any sample amples should be
Sample Number 1 2 3 4 5 6 7 8 9 10 11 12	Randomized Quantity 65 991 1959 2711 3244 4162 4271 5084 6081 6848 7415 8239	Sample Number	Randomized Quantity	Sample Number	Randomized Quantity

Generated random number report.

Note: QL-Pay may generate reports not totaling the number of tests needed per the specifications. If this happens, adjustments may need to be made to the sample interval to generate the appropriate number of samples.

F. The report can be saved by using the "save as" function in the generated PDF file.

🔁 RS160210001.pdf - Adobe Acrobat Pro					
File Edit View Window Help					×
<u>Open</u> Ctrl+0				Customize	- J
Open From Acrobat.com					1
🔂 Create			Tools	Fill & Sign	Comment
Save Ctrl+	5				
Save <u>A</u> s Shift+Ctrl+					
Save As Ot <u>h</u> er		2022	N 1 10101 1000		
Save <u>T</u> o Acrobat.com	: DTFH7099D0001	ROAD Item Item	Units: Tons		
🖂 Send File	1: 700	Item	Quantity: 18000		
Revert					
<u>C</u> lose Ctrl+V					
Prop <u>e</u> rties Ctrl+I	mation SHALL NOT be given to	the contractor. The random san	npling time and location for any s	ample	
🖶 Print Ctrl+	sence of the engineer or other	or to the time when he is to obt • FHWA personnel.	ain the sample. All samples sho	uld be	
1 I:\2015 pleasant vald Test Results.pdf	°	•			
2 C:\Russian River_PLA5% MC comments.pdf					
3 C:\Russian River_PLA5% MC comments.pdf	andomized Sampl	e Randomized	Sample Rando	omized	
4 c:\MT BEAVERHEAD 273 Road 70% SCRs.pdf	Quantity Numbe	r Quantity	Number Qua	ntity	=
5 c:\MT_Beaverhead_273ans_01-19-2016.pdf	65				
Exit Ctrl+0	1959				
4	2711				
5	3244				

Menu functions in Adobe Acrobat to save the random number report.

6.1.2. By Roadway Station

- A. Select the "Sample Set" the user wants to generate a "Random Number Report" for.
- B. Open the Random Sampling function by selecting "Reports" and then "Random Sampling."

🖳 Quality Level - P	ay Factor Analysis		
File Sample Sets	Reports Property specifications Test Results Help		
Sample Set Select	Short analysis Pay factor Control charts		
Imported	Long analysis Report on Single or Paired Sample Sets	ry Project name or Lab ASTER FALLS LOOKOUT	Project number ROAD MT PRA GLAC 10(64)
	List Selected Sample Sets List All Sample Sets	Lab ASTER FALLS LOOKOUT	ROAD MT PRA GLAC 10(64)
-Identify new or e	Grand Summary		
Select all	Random Sampling Copy to news	Restore fields	
Contract numb	er Item Lot Laborate	ry	
	Central L	ab 🗸	Specifications Test Results Exit QLPAY

Process to open the random sampling function.

- C. Select the Interval Type as "By Roadway Station" using the appropriate project units.
- D. Enter the appropriate data from the contract documents. For this example, the contract calls for 18,000 tons of 401 Asphalt Concrete Pavement, Gyratory mix with a sampling frequency of 1 per 700 tons, thus 26 random numbers will be needed.
 - a. Generally, projects will be paved in two lanes and two lifts. To ensure that samples are taken from each lane and lift, there will be four reports

generated with an equally distributed combination of bottom/top and left/right.

The random sample data entry window for roadway stationing is shown on the next page.

🖳 Random Sampling	- • •
Contract number DTFH70-99-D-0001	
Project name ASTER FALLS LOOKOUT ROAD	
Item number 40101-1000	
Interval type	
C By quantity	
Item units	
Item quantity	
Sample interval	
C By roadway station (kilometes+meters)	
By roadway station (hundred feet+feet)	
Beginning station 1415+65 Width 11	-Lane
Ending station 1525+43 Lift position Bottom	C Right
Sample interval 1830	C Full width
Generate Cancel	11

Random sampling data entry for roadway station.

Note: When entering the data in the fields, make sure to specify which lane the random numbers are generated for.

E. Select "Generate." A PDF report will appear with the generated random numbers.

Project Project Sample Beginni Ending	Name: ASTE Number: D Interval: 1 ng Station: Station: 15	ER FALLS I FFH7099D00 1830 : 1415+65 525+43	LOOKOUT RO DO1	DAD	Item Item Lane Widt Lift	Number: Units: f : Left h: 11 Position	40101-1000 eet : Bottom	
Copies of should r obtained	of this informatio not be given to th d in the presence	n SHALL NOT ne contractor e of the engin	T be given to th until just prior eer or other F	e contractor. Th to the time whe HWA personne	ne random san en he is to obt el.	npling time and ain the sample	l location for an e. All samples s	y sample hould be
Sample Number 2 3 4 5	Roadway Station 1421+63 1450+82 1469+00 1471+53 1490+29	Offset Left 7 6 6 7	Sample Number	Roadway Station	Offset Left	Sample Number	Roadway Station	Offset Left

Generated random number report.

Note: QL-Pay may generate reports not totaling the number of tests needed per the specifications. If this happens, adjustments may need to be made to the sample interval to generate the appropriate number of samples.

F. The report can be saved by using the "save as" function in the generated PDF file.

📜 R\$160210004.pdf - Adobe Acrobat	Pro									- 0	×
File Edit View Window Help											×
🔁 <u>O</u> pen		Ctrl+0	0 😡 🕞	🗟 🖪 🎲					Customiz		
Open From Acrobat.com									1		-
🔁 Create		F						Tools	Fill & Sign	Commer	nt
🖹 Şave		Ctrl+S									1
Save <u>A</u> s	St	iift+ Ctrl+ S									Ш
Save As Other		•									ш
Save To Acrobat.com											ш
🖂 Send File											ш
Regert											ш
⊆lose		Ctrl+W	ASTER FAL	LS LOOKOUT	ROAD	Item	Number:	40101-1000			ш
Propgrties		Ctrl+D	: DTFH709	9D0001		Item	Units: f	eet			Ш
🖨 Brint		Ctrl+P	ion: 1415	+65		Widt	h: 11				Ш
1 C:\Temp\\WFLCellphoneStamp	p.pdf		: 1525+43			Lift	Position	: Bottom			L.
2 E\2015 pleasant vald Test Res	ults.pdf										11
3 C:\Russian River_PLA5% MC of	comments.pd	f .									ш
4 C:\Russian River_PLA5% MC of	comments.pd	r	mation SHALL	NOT be given to	the contractor. T	he random san	npling time an	d location for any	sample		ш
5 c:\MT BEAVERHEAD 273 Road	d 70% SCRs.pd	ff	n to the contra	ctor until just pr	ior to the time wh	en he is to obt	ain the sampl	e. All samples sì	hould be		ш
Egit		Ctrl+Q	sence of the e	ingineer or othe	r FHWA personn	el.					Ш
											ш
Sa	ample	Roadv	ay Offs	et Sample	e Roadway	Offset	Sample	Roadway	Offset		ш
Nu	umber	Stati	on Lef	t Number	Station	Left	Number	Station	Left		ш
	1	1421+6	3	7							ш
	2	1450+8	12	7							Į.
	3	1469+0	00	5							1
	4	1471+5	3	5							1
	5	1490+2	9	7							1
	6	1523+7	5 1)							
	-			-	-			_			

Menu functions in Adobe Acrobat to save the random number report.

7. Examples

This section will take the user through five different examples:

7.1.	Section 301 Aggregate Courses Example52
7.2.	Section 401 Asphalt Concrete Pavement by Gyratory Mix Design Method – Control Strip Example
7.3.	Section 401 Asphalt Concrete Pavement by Gyratory Mix Design Method – Full Production Example
7.4.	Section 552 Structural Concrete Example104
7.5.	Exporting Data Example117

The contract pages used for the QL-PAY setup examples are not specific to any project and should only be used for the following examples.

7.1. Section 301 Aggregate Courses Example

7.1. Section 301 Aggregate Courses Example

This example will go through the process of setting up the sample set for 301 Aggregate Base Grading D.

TASK ORDER AWARD	Contract No. DTFH70-99-D-0001
	River Contractors, Inc.
Solicitation No. DTFH70-08-R-00021	P.O. Box 223
	West Glacier, MT 59936
MT PRA GLAC 10(64)	
ASTER FALLS LOOKOUT ROAD	AWARD DATE: March 10, 2015

Pay Item No.	Item	Quantity	Unit	Unit Price	Amount
30101-2000	Aggregate Base Grading D	10,000	TON	\$30.00	\$300,000.00

Example Section 301. — UNTRE	ATED AGGREGATE COURSES
Material	
301.02 Conform to the following Subsections:	
Subbase, base, and surface course aggregate Water	703.05 725.01(c)
301.08 Acceptance. See Example Table 301-1 for sampling the category for quality characteristics.	g, testing, and acceptance requirements; including
Aggregate gradation and surface course plasticity index will	l be evaluated under Subsection 106.05. Other
(a) Aggregate gradation. The upper and lower specificatest results plus or minus the allowable deviations shown 3, except as follows:	ation limits are equal to the calculated mean of all in Example Table 703-2 and Example Table 703-
(1) If the calculated mean value for a tested sieve Example Table 703-2 or 703-3, the upper specificate the allowable deviation, and the lower specification the allowable deviation.	exceeds the maximum gradation value shown in ion is equal to the maximum gradation value plus is equal to the maximum gradation value minus
(2) If the calculated mean value for a tested sieve is Example Table 703-2 or 703-3, the upper specificat the allowable deviation and the lower specification the allowable deviation.	less than the minimum gradation value shown in ion is equal to the minimum gradation value plus is equal to the minimum gradation value minus

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Base course grading C, D, & E	Statistical (106.05)	Gradation 3/8 Inch (9.5 mm) No. 4 (4.75 mm) No. 200 (75 µm) Other specified sieves	I I I II	AASHTO T 27 & T 11	l per 1000 tons (900 metric tons)	From windrow or roadbed after processing	Yes	4 hours	-
		Liquid limit	-	AASHTO R 58 & T 89, Method A	1 per 1000 tons (900 metric tons)	From windrow or roadbed after processing	Yes	4 hours	-
Subbase & base	Measured and tested for	Moisture-density (max density)	-	AASHTO T 180, method D ⁽¹⁾	1 per type & source of material	Stockpile or production output	,,	**	-
course Grading A, B, C, D, & E	conformance (106.04)	Density	-	AASHTO T 310 or other approved procedures	1 per 500 tons (450 metric tons)	In-place after compaction	No	End of shift	-
		Moisture content (in-place)	-	"	"	"	"	"	-

Example Table 301-1 Sampling, Testing, and Acceptance Requirements

703.05 Subbase, Base, and Surface Course Aggregate.

(a) General. Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

	(1) Los Angeles abrasion, AASHTO T 96	50 percent max.
	(2) Soundness of aggregate using sodium sulfate, AASHTO T 104 (5 cycles)	12 percent loss max.
	(3) Durability index (coarse), AASHTO T 210	35 min.
	(4) Durability index (fine), AASHTO T 210	35 min.
	(5) Fractured faces, ASTM D5821	50 percent min.
	(6) Without organic matter and lumps or balls of clay	,
(b)	Subbase or base aggregate. In addition to Subsection	n 703.05(a), conform to the following:
	(1) Gradation	Example Table 703-2
	(2) Liquid limit, AASHTO T 89	25 max.

	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)										
Sieve Size	Grading Designation										
	A (Subbase)	B (Subbase)	C (Base)	D (Base)	E (Base)						
2 ¹ / ₂ inch (63 mm)	100										
2 inch (50 mm)	97 - 100	100	100								
1 ¹ / ₂ inch (37.5 mm)		97 - 100									
1 inch (25 mm)	65 - 79 (6)		80 - 100 (6)	100							
³ / ₄ inch (19 mm)			64 – 94 (6)	86 - 100 (6)	100						
¹ / ₂ inch (12.5 mm)	45 - 59 (7)										
3/8 inch (9.5mm)			40 - 69 (6)	51 - 82 (6)	62 – 90 (6)						
No. 4 (4.75 mm)	28 - 42 (6)	40 - 60 (8)	31 – 54 (6)	36 - 64 (6)	36 – 74 (6)						
No. 40 (425 µm)	9 – 17 (4)			12 – 26 (4)	12 – 26 (4)						
No. 200 (75 µm)	4.0 - 8.0 (3)	4.0 - 12.0 (4)	4.0 - 7.0 (3)	4.0 - 7.0 (3)	4.0 - 7.0 (3)						

Example Table 703-2 Target Value Ranges for Subbase and Base Gradation

() The value in the parentheses is the allowable deviation (\pm) from the target values.

🖳 Q	uality Level - Pay l	Factor Analy	sis							- • ×
File	e Sample Sets	Reports	Property Specif	ications	Test Resu	ilts Help				
Sam	nple Set Selection	I.								
	Imported	Contract	number	Item	Lot	Laboratory	Proje	ect name	Project	number
	_	_	_	_			_	_	_	
_ Id	entify new or exi	sting sample	set(s)							
	Select all	Cor	y to fields	Clear	fields	Restore fields				
	Contract number	Ite	m	Lot	Laborat	ory				
ſ								Constituents		
				,			-	opecificatio	///s	ExitOLDAY
					1	-	1	Test Resu	lts	

Initial view when opening QL-PAY.

- A. Enter data in the "Identify New or Existing Sample Set" fields
 - a. Contract Number: This can be found on the front cover of the contract. For this example it is DTFH70-99-D-0001.
 - b. Item: Place the Item Number in this field. This example will begin with 301 Aggregate Base Grading D (30101-2000).
 - c. Lot: Generally speaking, there is only one lot for each item; therefore, the sample sets will always begin with Lot "1."
 - d. Lab: Determine the lab the user will be using for the test results. Typically, there will be a "Central Lab" and "Contractor Lab" sample set for each item.

-Identify new or existing s	sample set(s)	
Select all	Copy to fields	Clear fields Restore fields
Contract number	ltem	Lot Laboratory
DTFH70-99-D-0001	30101-2000	1 Contractor Lab
		Contractor Lab

View after entering data into the sample set box.

B. Specifications

a. Click on "Specifications."

🖳 Qu	ality Level - Pay F	Factor Analysis				- • •
File	Sample Sets	Reports Property Spe	cifications	est Results Help		
Samp	le Set Selection					
	Imported	Contract number	Item L	Lot Laboratory	Project name	Project numb
•					1	Þ
					I	
lde	ntify new or exis	sting sample set(s)				
	Select all	Copy to fields	Clearfie	elds Restore fields		
C	ontract number	Item	Lot	Laboratory		
D	TFH70-99-D-0001	30101-2000	1	Contractor Lab	Specifications	
				Contractor Lab		ExitQLPAY
					Test Results	

Selecting property specifications.

b. Enter the Project Name and Number from the contract cover page into the corresponding fields.

Project Specification	IS
Contract Number	DTFH70-99-D-0001
Project Name	ASTER FALLS LOOKOUT ROAD
Project Number	MT PRA GLAC 10(64)

Project Name and Number under the specifications window.

c. Select the appropriate template from the drop down menu under "Property Specifications." For this example, choose FP-14, 301- Base, Grading D. By selecting this template, the majority of the specification has already been entered into the program and only minor changes will need to be completed.

	ations							
ptions								
Project Spe	cifications							
Cor	ntract Number DTFH70)-99-D-0001						
	,							
	Project Name ASTER	FALLS LOOKOUT	ROAD	-				
	. ,							
Pr	roject Number MT PRA	A GLAC 10(64)		-				
tem and Lo	t Specifications							
_								
Item 3	0101-2000	Lot 1						
Property Sp	pecifications							
	Select temp	plate -> FP-14, 30	1- Base, Grading D)				•
	Select tem	plate -> FP-14, 30	1- Base, Grading D)	1		1	•
Add prop	Select temp	plate -> FP-14, 30	1- Base, Grading D) getspec	s	Delete se	ected rows	•
Add prop	Select temp	plate -> FP-14, 30	1-Base, Grading D) get spec	s	Delete se	ected rows	•
Add prop	Select temperty Property Category (1 or 2)	plate -> FP-14, 30 rties Target Type	1- Base, Grading D) get spec	s Low Value	Delete se	Estimated # tests	•
Add prop	Select temperty Proper	plate -> FP-14, 30 rties Target Type info only	1- Base, Grading D) get spec +, -	s	Delete se	Estimated # tests	
Add prop Property 1" 3/4"	Select temperature Category (1 or 2) 2	rties Target Type info only mean	1- Base, Grading D) get spec +, - 6.0	s Low Value 86.0	Delete sel	Estimated # tests	.
Add prop Property 1" 3/4" 1/2"	Select temperature Category (1 or 2) 2 2 2	plate -> FP-14, 30 rties Target Type info only mean info only	1- Base, Grading D	get spec +, - 6.0	s	Delete se	Estimated # tests	_
Add prop Property 1" 3/4" 1/2" 3/8"	Select temp Proper Category (1 or 2) 2 2 2 1	plate -> FP-14, 30 rties Target Type info only mean info only mean	1- Base, Grading D	get spec +, - 6.0 6.0	s	Delete se High Value 100.0 82.0	Estimated # tests	• •
Add prop Property 1" 3/4" 1/2" 3/8" #4	Select temperature Category (1 or 2) 2 2 2 1 1	plate -> FP-14, 30 rties Target Type info only mean info only mean mean	1- Base, Grading [Tar	get spec +, - 6.0 6.0 6.0 6.0	s	Delete sel	Estimated # tests	-
Add prop Property 1" 3/4" 1/2" 3/8" #4 #40	Select temperature Category (1 or 2) 2 2 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2	plate -> FP-14, 30 rties Target Type info only mean info only mean mean mean	1- Base, Grading D	get spec +, - 6.0 6.0 6.0 4.0	s Low Value 86.0 51.0 36.0 12.0	Delete sel High Value 100.0 82.0 64.0 26.0	Estimated # tests	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200	Select temp Proper Category (1 or 2) 2 2 2 1 1 2 1 1 2 1	plate -> FP-14, 30 rties Target Type info only mean info only mean mean mean mean	1-Base, Grading [Tar	get spec +, - 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200 SE	Select temperature Category (1 or 2) 2 2 2 1 1 2 1 1 2 1 1 1 1	plate -> FP-14, 30 rties Target Type info only mean info only mean mean mean info only	1-Base, Grading [Tar	get spec +, - 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests	•
Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200 SE SE/P	Select temperature Category (1 or 2) 2 2 2 1 1 2 1 1 1 1 1 1	plate -> FP-14, 30 rties Target Type info only mean info only mean mean info only	1- Base, Grading [Tar	get spec +, - 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests	_
Add prop Propety 1'' 3/4'' 1/2'' 3/8'' #4 #40 #200 SE SE/P	Select temperature Category (1 or 2) 2 2 1 1 2 1 2 1 1 1 1 1	plate -> FP-14, 30 rties Target Type info only mean info only mean mean mean info only info only info only info only	1- Base, Grading D	get spec +, - 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests	_
Add prop Property 1" 3/4" 1/2" 3/8" #4 #200 SE SE/P	Select temp Proper Category (1 or 2) 2 2 2 1 1 2 1 1 1 1 1	plate -> FP-14, 30 rties Target Type info only mean mean mean info only info only info only info only	1- Base, Grading [Tar	get spec +, - 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sei High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests	•
Add prop Property 1" 3/4" 1/2" 3/8" #4 #200 SE SE/P	Select temperature of the select temperature of temper	plate -> FP-14, 30 rties Target Type info only mean mean mean info only info only info only info only	1- Base, Grading [Tar Target Value	get spec + 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sei High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests	•
Add prop Property 1" 3/4" 1/2" 3/8" #40 #200 SE SE/P	Select temperature select temper	plate -> FP-14, 30 rties Target Type info only mean mean mean info only info only info only	1- Base, Grading [Tar	get spec + 6.0 6.0 6.0 4.0 3.0	s	Delete sel	Estimated # tests	•

View after entering project name and number and selecting the template.

- C. Adjusting Property Specifications to Match Contract
 - After opening the specifications dialog box and selecting a template, the Sampling, Testing, and Acceptance Requirements will be needed to finish inputting the correct data.
 - b. To adjust the properties, highlight the property in the lower table to adjust and click on the "Target Specs" button.

Select template -> FP-14, 301- Base, Grading D											
Add property Prope		ties	s Target specs		s	Delete se	lected rows				
Property	Category (1 or 2)	Target Type	Target Value	+,+	Low Value	High Value	Estimated # tests				
1"	2	info only									
3/4"	2	mean 🖉		6.0	86.0	100.0					
1/2"	2	info only									
3/8"	1	mean		6.0	51.0	82.0					
#4	1	mean		6.0	36.0	64.0					
#40	2	mean		4.0	12.0	26.0					
#200	1	mean		3.0	4.0	7.0					
SE	1	info only									
SE/P	1	info only									

Highlight the property and select Target Specs.

This will bring up a new window to enter the testing parameters for the particular property. Determine the testing parameters for each property and select the appropriate target specifications, i.e. min, max, etc.

In this example, highlight the "3/4 inch" property in the lower table and select "Target Specs." Each field that is not grayed out will need to be filled in with data from either the sampling and testing specification, material specification or the mix design.

Target specifie	cations			
		3/4"		
Critica	ality Level (1 or 2)	2		
Target Specific	ations			
C +/- dev	Target value +	- allowable deviation	Target Value	
C min	Minimum		Allowable Deviation	6.0
C max	Maximum		Allowable Deviation	
• mean	Mean as Targe	t Value within range	Low Value	86.0
⊂ info	Property is Info	ormational Only	High Value	100.0
Estimate	d number of tests			
		ок	Cancel	//

View of the Target Specifications window.

- i. The criticality level is found in Example Table 301-1 under category. The ¾" sieve is a category 2.
- ii. The target specification for the ¾" sieve is the mean. This is found in the Acceptance Subsection of 301 Untreated Aggregate Courses. The allowable deviation and the low/high value can be found under Example Table 703-2 Target Value Ranges for Subbase and Base Gradation. The values have already been entered in to the fields as part of the template but the user should verify that the values correlate with the specifications in the contract.
- c. The estimated number of tests needs to be the actual number of tests that will be taken throughout the project. This number can be changed at a later date if the number of tests increases or decreases, but the final number of tests taken should be reflected under each property at the completion of the item. To determine the number of tests, divide the contract quantity for the item by the sampling frequency and use that value for all of the estimated number of tests. For this example, the contract requires 10,000 tons and the sampling frequency is 1 per 1000 tons (from Example Table 301-1); therefore, the estimated number will be 10 tests for this project.

Target specific	ations		
	3/4"		
Critica	lity Level (1 or 2) 2		
Target Specifica	ations		
○ +/- dev	Target value +/- allowable deviation	Target Value	
⊂ min	Minimum	Allowable Deviation	6.0
C max	Maximum		
• mean	Mean as Target Value within range	Low Value	86.0
⊂ info	Property is Informational Only	High Value	100.0
Estimated	number of tests 10		
	ОК	Cancel	la l

¾" sieve entered target specs.

- d. After the target specifications are entered, click "OK" and proceed to adjusting the remainder of the properties.
- e. Due to using the template, there are additional properties in the property specifications than are called for in the sampling and testing requirements. The additional properties can be removed in two ways, either by selecting the row to delete and select the button that states "Delete selected rows" or the user can press the "delete" key on the keyboard.

Add prop	erty Proper	ties	Tar	get spec	s	Delete sel	ected rows	
Property	Category (1 or 2)	Target Type	Target Value	+, -	Low Value	High Value	Estimated # tests	
1"	2	info only					10	
3/4"	2	mean		6.0	86.0	100.0	10	
1/2"	2	info only					10	
3/8"	1	mean		6.0	51.0	82.0	10	
#4	1	mean		6.0	36.0	64.0	10	
#40	2	mean		4.0	12.0	26.0	10	
#200	1	mean		3.0	4.0	7.0	10	
SE	1	info only						

Deleting the selected property specification.

For this example remove the SE and SE/P property specifications.

f. When finished entering all of the properties, click "Save and Close." This is shown on the following page.

ptions								
Project Spec	cifications							
Con	tract Number DTFH70	-99-D-0001						
F	Project Name ASTER F	FALLS LOOKOUT	ROAD					
Pro	oject Number MT PRA	GLAC 10(64)						
tem and Lot	Specifications							
Item 30	0101-2000	Lot 1						
,								
Property Sp	ecifications							
Property Sp	ecifications							
Property Sp	ecifications Select temp	plate -> FP-14, 30	1- Base, Grading [)				•
Property Sp	ecifications Select temp	olate -> FP-14, 30	1- Base, Grading [)				•
Property Sp Add prop	ecifications Select temp erty Proper	olate -> FP-14, 30	11- Base, Grading [) get spec	s	Delete se	lected rows	•
Property Sp Add prop	ecifications Select temp erty Proper	blate -> FP-14, 30	11- Base, Grading [Tar) get spec	s	Delete se	lected rows	<u>•</u>
Add property	ecifications Select temp erty Category (1 or 2)	ties	11- Base, Grading [Tar	get spec	s	Delete se	lected rows	<u>-</u>
Add property Property 1"	ecifications Select temp erty Category (1 or 2) 2	ties	11- Base, Grading D) get spec +, -	s	Delete se	Estimated # tests	×
Add property Sp Property Property 1" 3/4"	ecifications Select temp erty Proper Category (1 or 2) 2 2	ties	11- Base, Grading D	get spec +, - 6,0	s Low Value 86.0	Delete se	Estimated # tests	•
Add property Sp Add property 1" 3/4" 1/2"	ecifications Select temp erty Proper Category (1 or 2) 2 2 2	ties Target Type info only mean info only	11- Base, Grading D	get spec +, - 6.0	s	Delete se High Value	Estimated # tests 10 10 10 10	-
Property Sp Add property 1" 3/4" 1/2" 3/8"	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1	Ities FP-14, 30	1- Base, Grading [Tar) get spec (+, - 6.0 6.0	s	Delete set	Estimated # tests 10 10 10 10 10 10 10	
Add property Sp Add property Property 1" 3/4" 1/2" 3/8" #4	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 2 1 1	ties FP-14, 30	11- Base, Grading [Tar	get spec +, - 6.0 6.0 6.0	s	Delete sel High Value 100.0 82.0 64.0	Estimated # tests 10 10 10 10 10 10 10 10 10	•
Add property Sp Add property 1" 3/4" 1/2" 3/8" #4 #40	ecifications Select temp enty Proper Category (1 or 2) 2 2 2 1 1 1 2	ties FP-14, 30 ties Target Type info only mean mean mean mean	11- Base, Grading [Tar	get spec (+, - 6.0 6.0 6.0 4.0	s Low Value 86.0 51.0 36.0 12.0	Delete se High Value 100.0 82.0 64.0 26.0	lected rows Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10	<u>-</u>
Property Sp Add property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 2 1 1 1 2 1 1 2 1	ties FP-14, 30 ties Info only info only mean mean mean mean mean	11-Base, Grading [Tar	get spec 6.0 6.0 6.0 4.0 3.0	s	Delete sel High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10	<u>-</u>
Add property Sp Property Sp Property 1" 3/4" 1/2" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 2 2 2 2 1 1 2 2 2 2	ties FP-14, 30 ties Target Type info only mean mean mean mean	11-Base, Grading D	get spec +, - 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10 1	•
Add property Sp Property Sp Property 1" 1" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 2 1 1 2 2 1 2 1 2 2	ties FP-14, 30 ties If any type info only mean mean mean mean mean	11- Base, Grading [Tar	get spec + 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests Estimated # tests	<u>-</u>
Add property Sp Property Property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 2 1 1 1 1 1	ties FP-14, 30 ties Target Type info only mean mean mean mean mean	11- Base, Grading [Tar	get spec + 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests 0 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	<u>-</u>
Add property Sp Property Sp Property 17" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 2 1 2 1	ties FP-14, 30 ties Target Type info only mean mean mean	11- Base, Grading D	get spec 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10 1	•
Add property Sp Property Sp Property 1" 3/4" 1.2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 2 1 2 1	ties FP-14, 30 ties Target Type info only mean mean mean mean mean	11-Base, Grading [Tar Target Value	get spec 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	<u>-</u>
Add property Sp Property Sp Property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 1 2 1	ties FP-14, 30 ties If any only mean info only mean mean mean mean	11- Base, Grading [Tar	get spec + 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete se High Value 100.0 82.0 64.0 26.0 7.0	lected rows Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10	<u>-</u>

View of completed target specifications prior to selecting Save & Close.

Note: If the user presses "Quit," none of the changes made to the specifications will be saved and it will resort back to the data that was entered prior to opening the specification set.

- D. Creating a Secondary Lab Sample Set in the same Lot
 - a. From the home screen of the QL-PAY program, press the "Clear Fields" button located in the "Identify New or Existing Sample Set(s)" box or in the Sample Sets drop down menu. This is shown on the following page.

🖳 Q	uality Level - Pay Factor A	Analysis			100		1.0	- 100			X
File	Sample Sets Reports	Property spe	ecifications T	est Res	ults Help						
	Import										
	Export										
Sam	Delete samplesets										
	Copy to fields	r	Item	Lot	Laboratory	Proje	ct name	2	Project numb	er	
	Clear fields	01	30101-2000	1	Contractor La	b ASTER	FALLS	LOOKOUT ROAD	MT PRA GLAC	10(64)	
	Restore fields										
lde	entify new or existing sar	nple set(s)									
	Select all	Copy to fie	lds	Clearf	fields F	Restore fie	ds				
(Contract number	Item		Lot	Laboratory						
	DTFH70-99-D-0001	30101-20	00	1	Contractor Lab			Spec	cifications	1	
					Contractor Lab		•	Test	t Results	Exit C	QLPAY
		_	-	-			_				

Operating the clear fields function.

b. Highlight the sample set to create a secondary lab and select the "Copy to Fields" button.
 This will copy the project information to be used for the new sample set.

🖳 🤇	Quality Level - Pay Factor	Analysis			100		20	- 15				
File	Sample Sets Reports	Property sp	ecifications Te	st Res	ults Help							
	Import	+										
	Export											
San	Delete samplesets											
<u> </u>	Copy to fields	:r	Item	Lot	Laboratory		Project name	e		Project	number	
•	Clear fields	01	30101-2000	1	Contractor	Lab	ASTER FALLS	LOOKOUT	ROAD	MT PRA	GLAC 10(64	<u>})</u>
	Restore fields	- 81										
10	ientity new or existing sa	mpie set(s)					1					
	Select all	Copy to fi	elds (Clear f	ields	Res	tore fields					
	Contract number	ltem		Lot	Laboratory							
1												
									Spec	ifications		
					Contractor La	b	•		Test	t Results		Exit QLPAY

Selecting copy to fields after highlighting sample set.

c. In the "Laboratory" drop down menu, choose "Central Lab."

Identify new or existing s	ample set(s)	
Select all	Copy to fields	Clear fields Restore fields
Contract number	ltem	Lot Laboratory
DTFH70-99-D-0001	30101-2000	1 Central Lab
		Central Lab

View after selecting copying fields and Central Lab.

d. Click on "Specifications." The specifications should be identical to the original sample set. Once the property specifications have been reviewed for accuracy, select "Save and Close."

Lot Specifica	tions							
ptions								
Project Spec	cifications							
Con	tract Number DTFH70	-99-D-0001						
F	Project Name ASTER I	FALLS LOOKOUT	ROAD	Ī				
Pro	oject Number MT PRA	GLAC 10(64)]				
Item and Lot	Specifications							
Item 30	0101-2000	Lot 1						
Property Sp	ecifications							
Property Sp	ecifications Select temp	olate ->						•
Property Sp	Select temp	olate ->						•
Property Sp Add prop	ecifications Select temp entyProper	ties	Tar	get spec	s	Delete sel	ected rows	×
Property Sp Add prop	ecifications Select temp erty Proper	ties	Tar Target Value	get spec	s Low Value	Delete sel	ected rows	•
Property Sp Add prop Property 1"	ecifications Select temp erty Proper Category (1 or 2) 2	ties	Tar Target Value	get spec	s	Delete sel	ected rows Estimated # tests 10	•
Property Sp Add prop Property 1" 3/4"	ecifications Select temp erty Proper Category (1 or 2) 2 2	ties Target Type info only mean	Tar Target Value	get spec	s Low Value 86.0	Delete sel	ected rows Estimated # tests 10	•
Property Sp Add property 1" 3/4" 1/2"	ecifications Select temp erty Proper Category (1 or 2) 2 2 2	ties Target Type info only mean info only	Tar Target Value	get spec	s	Delete sel	Estimated # tests	·
Property Sp Add property 1" 3/4" 1/2" 3/8"	ecifications Select temp enty Proper Category (1 or 2) 2 2 2 1 1	ties Target Type info only mean info only mean	Tar Target Value	get spec	s Low Value 86.0 51.0	Delete sel	Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10	_
Property Sp Add property 1" 3/4" 1/2" 3/8" #40	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 1 2	ties Target Type info only mean info only mean mean mean	Tar	get spec +, - 6.0 6.0 4.0	s Low Value 86.0 51.0 36.0 12.0	Delete sel High Value 100.0 82.0 64.0 26.0	Estimated # tests 10 10 10 10 10 10 10 10 10 10 10 10 10	_
Property Sp Add property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 2 1 1 1 2 1 2 1	ties Target Type info only mean info only mean mean mean mean	Tar	get spec	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests Estimated # tests	_
Property Sp Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 2 1 1 1 2 1	ties Target Type info only mean info only mean mean mean mean	Tar Target Value	get spec +, - 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests Estimated # tests	•
Property Sp Add property 1" 3/4" 1/2" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	ties Target Type info only mean info only mean mean mean mean	Target Value	get spec	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests Estimated # tests	•
Property Sp Add property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1	ties Target Type info only mean info only mean mean mean mean	Tar Target Value	get spec + 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel	Estimated # tests Estimated # tests	•
Property Sp Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp enty Proper Category (1 or 2) 2 2 2 2 2 1 1 2 1 2 1	ties Target Type info only mean info only mean mean mean mean	Tar	get spec + 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel	Estimated # tests Estimated # tests	_
Property Sp Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp enty Proper Category (1 or 2) 2 2 2 1 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 2 1	ties Target Type info only mean info only mean mean mean mean	Tar Target Value	get spec + 6.0 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel	Estimated # tests Estimated # tests 10 10 10 10 10 10 10 10 10 1	•
Property Sp Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1	ties Target Type info only mean info only mean mean mean mean mean	Tar Target Value	get spec	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel	Estimated # tests Estimated # tests 10 10 10 10 10 10 10 10 10 1	•
Property Sp Add prop Property 1" 3/4" 1/2" 3/8" #4 #40 #200 Sa	ecifications Select temp erty Proper Category (1 or 2) 2 2 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1	ties Target Type info only mean mean mean mean mean mean mean	Tar Target Value	get spec + 6.0 6.0 4.0 3.0	s Low Value 86.0 51.0 36.0 12.0 4.0	Delete sel High Value 100.0 82.0 64.0 26.0 7.0	Estimated # tests Estimated # tests	_

View of copied target specifications for the Central Lab.

e. QL-PAY is now set up to handle all of the 30101 sampling and testing for the project.

- E. Entering Test Results
 - a. Highlight the sample set that the user has test results for.
 - b. Select the "Test Results" button at the lower right of the window or the "Test Results" drop down menu.

🦳 Q	uality Level - P	ay Factor Analysis								X
File	Sample Sets	Reports Property sp	ecifications Te	est Resi	ults Help					
_		-								
San	ple Set Select	ion						1		
	Imported	Contract number	Item	Lot	Laboratory	Project na	me	Project	number	
		DTFH70-99-D-0001	30101-2000	1	Contractor Lab	ASTER FALLS	5 LOOKOUT ROAD	MT PRA G	LAC 10(64)	
		DTFH70-99-D-0001	30101-2000	1	Central Lab	ASTER FALLS	5 LOOKOUT ROAD	MT PRA G	LAC 10(64)	
∣∣∣d	entify new or e	existing sample set(s)								
		1				1				
	Select all	Copy to fie	elds (Clear f	elds Res	tore fields				
	Contract numb	er Item		Lot	Laboratory					
l r										
		I			1		Spec	cifications		
							·			
					Central Lab	–	Tes	t Results	Exit	QLPAY

Locations that can be selected to enter test results.

c. Begin entering the test result data, starting with Sample #1. Make sure to include consecutive sample numbers when entering in the test result data, i.e. 1,2,3,4, etc.

ontra	act Number		Item		Lot La	boratory				
DTFH	170-99-D-00	001	30101-2000		1 Co	ontractor Lab				
Test	Results									
	Exclude	Sample	4 1 "	3/4"	1/2"	3/8"	#4	#40	#200	Remark
		1	100.0	90.5	78.2	51.4	42.6	22.5	4.1	
		2	100.0	94.5	68.1	40.7	48.9	25.8	4.3	
		3	100.0	91.1	71.0	41.0	36.0	23.4	4.2	
		4	100.0	93.6	79.1	49.9	52.0	21.0	7.1	
		5	100.0	93.8	75.0	48.3	38.9	28.0	6.9	
		6	100.0	91.1	70.2	52.0	41.2	20.9	5.8	
		7	100.0	92.3	66.6	40.8	45.9	21.8	5.2	
		8	100.0	94.7	65.0	53.0	48.0	22.8	4.9	
		9	100.0	93.7	62.0	51.2	46.7	21.3	5.0	
I		10								
*										

View of consecutive test results being entered.

d. Three test results are needed before a statistical analysis can be computed.

- e. When entering test results for the central lab on split samples, make sure the test numbers match the corresponding contractor test result sample number or the analysis will not be valid.
- f. Select "Save and Close" when all of the test results have been entered into the program.
- F. Calculating Pay Factor
 - a. Highlight the sample set for the contractor's lab and select the "Pay factor" under the reports drop down menu.

🖳 Quality Level - Pa	ay Factor Analysis			20					_ 0	X
File Sample Sets	Reports Property specification	ons Test Results Help)							
	Short analysis									
	Pay factor									
Sample Set Select	Control charts Long analysis								_	
Imported	Report on Single or Paire	ry Proj or Lab ASTE	ect nam R FALLS	LOOKOUT	ROAD	MT PRA	GLAC 1	r D(64)		
	List Selected Sample Sets List All Sample Sets Grand Summary			R FALLS	LOOKOUT	ROAD	MT PRA	GLAC 1	0(64)	l
Identify new or e	Random Sampling									
Select all	Copy to fields	Clear fields	Restore f	ields						
Contract number	er Item	Lot Laborat	огу							
	Central			•		Spec Tes	t Results		Exit	QLPA

Selecting the pay factor report for the contractor's lab.

b. The reports menu will appear. By selecting the "Pay factor" report, the "Calculate pay factor" button should already be checked. If not, select only the pay factor button and then select "OK."

Reports on single or paired samplesets	J
Pick reports	
List test results Clear selections	
Calculate pay factor	
Histograms	
Null Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	
For Null hypothesis and control charts	
Primary Lab: Contractor Lab	
Alternate Lab: Central Lab 💌	
Range of sample numbers	
← All	
C Range: to	
OK Cancel	

Pay factor report selection.

c. QL-PAY will produce a PDF report calculating the pay factor for the test results that have been entered under the sample set. When the estimated number of tests have been completed, QL-PAY will note that the testing has been completed and the final pay factor value.

The view below shows the final pay factor for Aster Falls Lookout Road. When using the "mean" property specification, QL-PAY will adjust the target value to the mean of the samples unless the target value falls outside of the range in the contract specifications. This is shown when comparing the "Actual target value" column to the "Mean" column.

Western Federal Lands Highway Division									
QUALITY LEVEL ANALYSIS & PAY FACTOR COMPUTATIONS									
Project Name: ASTER FALLS LOOKOUT ROAD Project Number: MT PRA GLAC 10(64) Project ID: DTFH70-99-D-0001				Item Number: 30101-2000 Lot Number: 1 Lab: Contractor Lab					
Quality Levels and Pay Factors									
Quality Charac- teristic	Actual Target Value		Mean	Standard Deviation	PWL	Pay Factor			
1"	info		100.00	0.000					
3/4"	91.50	+,- 6.0	91.50	0.721	100	1.00			
1/2"	info		70.80	5.595					
3/8"	51.00	+,- 6.0	47.39	4.974	66	0.88			
#4	43.82	+,- 6.0	43.82	2.249	100	1.05			
#40	22.93	+,- 4.0	22.93	2.295	94	1.00			
#200	5.45	+,- 3.0	5.45	0.832	100	1.05			
TESTING COMPLETED FINAL PAY FACTOR: 0.88									
Lot Terminated: Corrective Action Required									

Pay factor report printout with 3/8" sieve out of specification limit.

When reviewing the 3/8" sieve, the contract specifications state the range for the target value is between 51.0 and 82.0. After all of the sampling was completed, the mean for the 3/8" sieve was 47.39. This value is outside of the property specification; therefore, QL-PAY automatically sets the target value to the lowest value (51.00) within the specification range. This change can be seen highlighted in red in the above QL-PAY report.

Note: The "Calculate Pay Factor" report was selected for example purposes only. For more information on other available reports see **Section 4 Reports.**

7.2. Section 401 Asphalt Concrete Pavement by Gyratory Mix Design Method – Control Strip Example

7.2. Section 401 Asphalt Concrete Pavement by Gyratory Mix Design Method –Control Strip Example

This example will go through the process of setting up the sample sets for the control strip of 401 Asphalt Concrete Pavement, Gyratory Mix.

TASK ORDER AWARD	Contract No. DTFH70-99-D-0001
Solicitation No. DTFH70-08-R-00021	River Contractors, Inc. P.O. Box 223
	West Glacier, MT 59936
WIT PRA GLAC TU(64)	
ASTER FALLS LOOKOUT ROAD	AWARD DATE: March 10, 2015

Pay Item No.	Item	Quantity	Unit	Unit Price	Amount
40101-1000	Asphalt Concrete Pavement, Gyratory Mix, ¾" Nominal Max. Size Aggregate, 0.3 to < 3 Million ESAL	18,000	TON	\$138.00	\$2,484,000.00

Example Section 401. — ASPHALT CONCRETE PAVEMENT BY GYRATORY MIX DESIGN METHOD

Material

401.02 Conform to the following Subsections:

Antistrip additive	702.05
Asphalt binder	702.01
Asphalt concrete aggregate	703.07
Mineral filler	725.05

401.12 Production Start-Up Procedures.

(b) Control strip. Provide 7 days notice before beginning production of an asphalt concrete mix.

On the first day of production, produce sufficient asphalt concrete mix to construct a 1000-foot (300-meter) long control strip, one-lane wide, and at the designated lift thickness. Construct the control strip on the project at an approved location.

Construct the control strip using asphalt concrete mix production, lay-down, and compaction procedures intended for the entire mix. Cease production after construction of the control strip until the asphalt concrete mix and the control strip are evaluated for acceptance.

(1) **Mixture.** Take and test at least three control strip asphalt concrete mix samples and evaluate according to Subsection 401.17. The asphalt concrete mix is acceptable if all test results are within specification limits for asphalt content and VMA; and the calculated pay factor for asphalt content, VMA, and gradation is 0.90 or greater.

(2) Compaction. Compact according to Subsection 401.14. Take nuclear gauge density readings behind each roller pass to determine the roller pattern necessary to achieve required density.

Take nuclear gauge density readings and cut and test core samples according to Table 401-8. Density is acceptable if the core density pay factor is 0.90 or greater. Furnish the CO with documented nuclear gauge readings correlated to core specific gravities.

Repeat the control strip process until an acceptable control strip is produced. See Subsection 106.01 for the disposition of material in unacceptable control strips. Accepted control strips may remain in place and will be accepted and measured as a part of the completed pavement. Tests used for the control strip will not be included in the evaluation for payment according to Subsection 106.05. When a control strip is verified and accepted, full production may begin.

Use these start-up procedures when producing material from a different plant or when resuming production after a termination of production due to unsatisfactory quality according to Subsection 106.05.
Example Section 401. — ASPHALT CONCRETE PAVEMENT BY GYRATORY MIX DESIGN METHOD

401.17 Acceptance. See Table 401-8 for sampling, testing, and acceptance requirements.

Aggregate quality properties will be evaluated under Subsections 106.02 and 106.04.

Mineral filler, antistrip additives, and WMA additives will be evaluated under Subsections 106.02 and 106.03.

Asphalt content, VMA, and core density will be evaluated under Subsection 106.05. Pavement roughness will be evaluated under Subsection 106.04. Asphalt binder will be evaluated under Subsections 106.03 and 106.04. Evaluations will consider the following:

(a) Asphalt content. The upper and lower specification limits are the approved JMF target value plus or minus 0.4 percent;

(b) VMA. The lower specification limit is the value shown in Example Table 401-1. After the JMF has been verified according to Subsections 401.03 and 401.12, use the Contractor's combined coarse and fine bulk specific gravity of aggregate G_{sb} values to calculate VMA on field produced asphalt concrete mix samples;

(c) **Density** (core). The lower specification limit is 91.0 percent of the maximum specific gravity (density) determined according to AASHTO T 166 and T 209.

The percent compaction will be determined using the average maximum specific gravity (AASHTO T 209) from all samples tested each day;

(d) **Pavement roughness.** The evaluation for pavement will be made after all defective areas are addressed. See Subsection 401.16(g); and

(e) Asphalt binder. The pay factor is determined from Table 401-7.

Construction of the HMA or WMA pavement course will be evaluated under Subsections 106.02 and 106.04.

Design ESAL (Million) Gyratory Compaction Level (% Theoretical Maximum Specific Gravity, G _{nm}) AASHTO T 312 N _{initial} N _{design} N _{max}				Minimu Nominal M	m Voids-in-t Iaximum Siz	he Mineral A e Aggregate ⁽	Voids Filled with Asphalt	Dust-to- Binder	Minimum Tensile Strength Ratio,		
				1 inch (25mm)	³ ⁄ ₄ inch (19mm)	¹ / ₂ inch (12.5mm)	³ / ₈ inch (9.5mm)	#4 sieve (4.75 mm)	(VFA), %	Kano	AASHTO T 283
< 0.3	6 (≤91.5%)	50 (96.0%)	75 (≤98.0%)					-	70.0 - 80.0		
0.3 to < 3	7 (≤90.5%)	75 (96.0%)	115 (≤98.0%)	12.0– 15.0	13.0-16.0	14.0-17.0	15.0-18.0		65.0 - 78.0	0.8 -1.6	0.80
3 to 30	8 (≤89.0%)	100 (96.0%)	160 (≤98.0%)						65.0 - 78.0		0.80
-	6 (≤91.5%)	50 (96.0%)	75 (≤98.0%)	-	-	-	-	16.0 -19.0	76.0 - 80.0	0.6 - 2.0	

Example Table 401-1 Gyratory Asphalt Concrete Mix Design Requirements, AASHTO R 35

Example Table 401–8 Sampling, Testing and Acceptance Requirements Test Method

Material or Product	Type of	Characteristic	Category	Test Method Specifications	Sampling	Point of	Split	Reporting	Remarks
(Subsection)	(Subsection)	Characteristic	Category	Specifications	Frequency	Sampling	Sample	Time	
	· · ·			Produ	ction Start-up (cont	rol strip)			
\frown									
<u>Asphalt</u> <u>concrete</u>	Statistical (106.05)	Gradation		AASHTO T 30	3 minimum	Behind the paver before compaction	Yes	6 hours	-
pavement		No. 4 (4.75 mm)	Ι						
		No. 30 (600 µm)	Ι						
		No. 200 (75 µm)	Ι						
		Other specified sieves	Π						
		Asphalt content	Ι	AASHTO T 308	"	**	"	**	-
		VMA	Ι	AASHTO R 35	"	"	"	"	-
		Density	Ι	AASHTO T 166	5 minimum	In-place after compacting	"	24 hours	Deliver cores to CO after determining specific gravity and compaction
	Measured and tested for conformance (106.04)	Mix temperature	_	-	3 minimum	Hauling vehicle before dumping or windrow before pickup	No	Immediately upon completion of test	-
		Maximum specific gravity	-	AASHTO T 209	First load and as determined by CO thereafter	Behind the paver before compaction	Yes	24 hours	-



🖌 English 📃 Metric

Is RAP included in Mix Design? 📃 Yes 🖌 No

WORKSHEET FOR SUPERPAVE ASPHALT CONCRETE MIX DESIGN AASHTO R 35

Project: MT PRA GLAC 10(64)	Date: 3/15/2015				
Contractor: River Contractors, Inc.	Nominal Maximum Aggregate Size, in :3/4"				
Asphalt supplier: Hot Rock Asphalt	Grade of asphalt: 58-34				
Sources for: Aggregates: Snow Pack Quarry	Mineral filler: Graymont Lime				
Testing laboratory name: Slate Testing	Phone:				
Testing performed by: Mya Mixer					
Testing reported by: Mya Mixer					

SUMMARY OF THE PROPOSED JOB-MIX-FORMULA

1. Number of gyrations (N $_{\rm inb}/$ N $_{\rm dee}/$ N $_{\rm max}$	7/75/115	Specific gravity o
2. Percent binder by mass of total mix $(\mathbb{P}_b)^1$	4.90	11. Recommended pla
3. Percent binder by mass of aggregate	5.14	(Attach Tempera
4. Air voids (V _a) at N _{des}	4.0	Percent compacti
5. Voids in mineral aggregate (VMA) at N _{des}	13.4	 Hveem stabilome
6. Voids filled with asphalt (VFA) at N _{des}	70.4	Moisture Suscept
7. Maximum unit mass (G _{nm})	2.508	 Dry strengtl
8. Effective specific gravity of aggregate (G _w)	2.710	 Wet strengtl
9. Dust-to-Binder Ratio (DP)	1.6	c. Index of Re

 Specific gravity of binder (G_b) 	1.024
 Recommended plant mixing temperature,°F (Attach Temperature Viscosity Curve) 	309-324
2. Percent compaction at N _{max}	97.9
Hveem stabilometer value (If specified)	
4. Moisture Susceptibility:	AASHTO T 283
 Moisture Susceptibility: a. Dry strength, psi 	AASHTO T 283 485.4
 Moisture Susceptibility: a. Dry strength, psi b. Wet strength, psi 	AASHTO T 283 485.4 438.0

		GRADATION TARGE ALLOWABLE D	T VAI EVIAT	LUES AND TONS		SPECIFIC (GRAVITY AND AB	SORPTION
Sieve Size	s	Job Mix Formula Target Value ²		Allowable Deviation ³ %		Fine Aggregate (AASHTO T 84)	Coarse Aggregate (AASHTO T 85)	Combined Aggregate
3/4 inch	-	99.5						
1/2 inch	-	83.0		4	Bulk SG (G ₄₅)	2.608	2.669	2.643
3/8 inch	-	68.8		5				
No. 4	•	42.1		6	Bulk SSD SG	2.629	2.692	2.665
No. 8	-	25.2		4				
No. 16	-	20.0		3	Apparent SG(G _{ab})	2.662	2.732	2.703
No. 30	-	13.3		3]			
No. 50	•	10.1		3	Absorption	0.80 %	0.90 %	0.86 %
No. 200	-	6.3		2]			
	_]			

Example 401 Superpave Hot Asphalt Concrete Mix Design.

🖳 Qu	ality Level - Pay I	Factor Analy	sis							- • •
File	Sample Sets	Reports	Property Speci	ifications	Test Resul	lts Help				
Samp	le Set Selection	l.								
	Imported	Contract	number	Item	Lot	Laboratory	Proje	rt name	Project	number
Ida	ntifu now or oxi	ting approach	oct(a)							
Ide	nuty new of exa	sung sample	5645)							
	Select all	Сор	y to fields	Clear	fields	Restore fields				
С	ontract number	lte	m	Lot	Laborate	жу				
								Specificati	ons	
							1			ExitQLPAY
					1			Test Resi	ilts	

Initial view when opening QL-PAY.

- A. Enter data in the "Identify New or Existing Sample Set" fields
 - a. Contract Number: This can be found on the front cover of the contract. For this example it is DTFH70-99-D-0001.
 - b. Item: Place the Item Number in this field. This example will begin with 401 Asphalt Concrete Pavement, Gyratory Mix (40101-1000).
 - c. Lot: To distinguish between production testing and the control strip, set the Lot as "TS1," for test strip 1. By labeling the Lot as "TS1," the user has the opportunity to create a sequence of additional sample sets if multiple test strips are required.
 - d. Laboratory: Select "Contractor Lab" in the drop down menu. The "Contractor Lab" is typically used for a control strip, due to the testing being completed on-site.

Identify new or existing s	sample set(s)	
Select all	Copy to fields	Clear fields Restore fields
Contract number	ltem	Lot Laboratory
DTFH70-99-D-0001	40101-1000	TS1 Contractor Lab
		Contractor Lab

View after entering data into the sample set box.

B. Specifications

a. Click on "Specifications."

🖳 Quality Level - Pay	/ Factor Analys	is						
File Sample Sets	Reports Prop	erty specificatio	ons Test Res	sults Help				
Sample Set Selectio	n							
Imported Con	tract numbe	r Item	Lot La	aboratory	Project name	Proje	ct number	
-Identify new or ev	isting comple	et/a)						
Identity new of ex	sung sample :	eus			1			
Select all	Cop	oy to fields	Clear	fields	Restore fields			
Contract number	lte	m	Lot	Laboratory				
ртни0-99-D-00	01 40	101-1000	1151	Contractor La	ab	S	pecifications] ,
				Contractor La	ab 💌		Foet Poeulte	Exit QLPAY
							reat meaultă	

Selecting property specifications.

b. Enter the Project Name and Number from the contract cover page into the corresponding fields.

Project Specification	IS
Contract Number	DTFH70-99-D-0001
Project Name	ASTER FALLS LOOKOUT ROAD
Project Number	MT PRA GLAC 10(64)

Project Name and Number under the specifications window.

c. Select the appropriate template from the drop down menu under "Property Specifications." For this example, choose FP-14, 401 – Gyratory Method (3/4 inch nominal maximum) – Control Strip. By selecting this template, the majority of the specification has already been entered into the program and only minor changes will need to be completed. The screen view of the template selection is shown on the following page.

ot Specifica								
ptions								
Project Spe	cifications							
Cor	tract Number DTFH70	-99-D-0001						
	,							
	Project Name ASTER		ROAD	-				
	rojectivanie profizici		none					
D,		GLAC 10/64)		-				
E I	ojectivumber jimi Priv	(GLAC 10(04)						
tem and Lot	Specifications							
Itom 40	101,1000	Lot TS1						
item [40	101-1000							
Property Sp	ecifications							
	<u> </u>	L	1.0.1.11.1	1.00.00 - 1				
	Select temp	olate -> FP-14, 40	1- Gyratory Metho	d (3/4 inch	n nominal maxim	um) - Control St	rip	-
	Select temp	olate -> FP-14, 40	1- Gyratory Metho	d (3/4 incł	n nominal maxim	um) - Control St	rip	•
Addaros	Select temp	olate -> FP-14, 40	1- Gyratory Methor	d (3/4 inch	nominal maxim	um) - Control Sti	rip	•
Add prop	Select temp	olate -> FP-14, 40	1- Gyratory Methor	d (3/4 inch get spec	n nominal maxim	um) - Control Sti Delete sel	ected rows	<u>•</u>
Add prop	Select temp	olate -> FP-14, 40	1- Gyratory Methor	d (3/4 inch get spec	n nominal maxim	um) - Control St Delete sel	rip	•
Add prop	Select temp erty Proper Category (1 or 2)	olate -> FP-14, 40	1- Gyratory Method Tar Tar	d (3/4 inch get spec: +, -	s nominal maxim	Delete sel	ected rows	
Add prop	Select temp erty Proper Category (1 or 2) 2	olate -> FP-14, 40 nties Target Type info only	1- Gyratory Method Tar Tar Target Value	d (3/4 inch rget spec: +, -	s Low Value	um) - Control St Delete sel	ected rows Estimated # tests 3	
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Add prop Property 1" 3/4" 1/2" 3/8" #4 #8	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2 2 2 2 2 2 2	tites Target Type info only +/dev +/dev +/dev +/dev	1- Gyratory Methon	d (3/4 inch rget spec: +, -	s Low Value	um) - Control St Delete sel	lected rows Estimated # tests 3 3 3 3 3 3 3 3 3	
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Add prop Property 1" 3/4" 1/2" 3/8" #4 #50 #16 #30 #50 #200 AC-m VMA VEA	Category (1 or 2) 2 2 2 2 1 1 1 1	ties Target Type info only info only info only i/dev +/dev i/fo only info only info only info only info only	Gyratory Methor Tar Target Value	d (3/4 inch get spec: +, -	s Low Value	um) - Control St Delete sel	lected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #200 AC-m VMA VFA VFA VFA	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 1 2 2 1 2 1 2 1 1 1 1 1 1	hties Target Type info only info only info only +/dev min info only min	Gyratory Methor Tar Target Value	d (3/4 inch get spec: +, -	s Low Value	Uum) - Control St Delete sel	lected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #50 #50 AC·m VMA VFA % DEN % DEN % DEN	Category (1 or 2) 2 2 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	hate -> FP-14, 40 rties Target Type info only info only +/dev +	Gyratory Methor Tar Target Value	d (3/4 inch get spece +, -	s Low Value 13.0 91.0	um) - Control St Delete sel	lected rows	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #30 #50 #50 #200 AC·m VMA VFA VFA VFA Vice SG VOIDS	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 1 1 2 2 1 1 1 1 1 1 1 1 1 1	httes Target Type info only info only info only info only i/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev min info only min info only info o	Gyratory Methor Tar Target Value	d (3/4 inch get spec: + 0.40	s low Value 13.0 91.0	um) - Control St Delete sel	ip Estimated # tests	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #200 AC-m VMA VFA % DEN Rice-SG VOIDS	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 1 1 2 2 1 1 2 1 1 1 1 1 1	hties Target Type info only info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev min info only info only info only info only info only	Gyratory Methor Tar Target Value	d (3/4 inch get spec: +, -	s Low Value 13.0 91.0	Um) - Control St Delete sel	ip ected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #200 AC-m VMA VFA % DEN Rice-SG VOIDS	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 1 2 1 2 1 1 1 1	ties Target Type info only info only +/dev +	Gyratory Methor Tar Target Value	d (3/4 inch rget spec: +	s Low Value 13.0 91.0	Um) - Control St Delete sel	lected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #200 AC-m VMA VFA VFA % DEN Rice-SG VOIDS	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2 1 2 1 1 1 1 1 1	ties Target Type info only info only info only info only info ev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev info only min info only min info only	Gyratory Methor Tar Target Value	d (3/4 inch rget spec: +, -	s Low Value 13.0 91.0	Um) - Control St Delete sel	ip lected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	

View after entering project name and number and selecting the template.

- C. Adjusting Property Specifications to Match Contract
 - a. After opening the specifications dialog box and selecting a template, the Sampling, Testing, and Acceptance Requirements along with information from the asphalt mix design will be needed to finish inputting the correct data.
 - b. To adjust the properties, highlight the property in the lower table to adjust and click on the "Target Specs" button. This will bring up a new window to enter the testing parameters for the particular property. Determine the testing parameters for each property and select the appropriate target specifications, i.e. min, max, etc. This is shown on the following page.

Select template -> FP-14, 401- Gyratory Method (3/4 inch nominal maximum) - Control Strip										
Add prope	erty Proper	Properties		Target specs			Delete selected rows			
Property	Category (1 or 2)	Target Type	Jarget Value	+ -	Low Value	High Value	Estimated #tests			
"	2	info only	/				3			
3/4"	2	info only					3			
/2"	2	+/-dev					3			
3/8"	2	+/-dev					3			
<i>t</i> 4	1	+/-dev					3			
#8	2	+/-dev					3			
#16	2	+/-dev					3			
#30	1	+/-dev					3			
<i>‡</i> 50	2	+/-dev					3			
#200	1	+/-dev					3			
\C-m	1	+/-dev		0.40			3			
/MA	1	min			13.0		3			
/FA	1	info only					3			
6 DEN	1	min			91.0		5			
Rice-SG	1	info only					3			
/OIDS	1	info only					3			

Highlight the property and selecting Target Specs.

In this example, highlight the "1/2" property in the lower table and select "Target Specs." Each field that is not grayed out will need to be filled in with data from either the sampling and testing specification, material specification or the mix design.

🖳 Target specifi	ications		
	1/2"		
Critical	ity Level (1 or 2) 2		
Target Specif	fications		
· +/-	Target value +/- allowable deviation	Target Value	
C min	Minimum		
Стах	Maximum	Allowable Deviation	
O mean	Mean as Target Value within range	Low Value	
⊂ info	Property is Informational Only	High Value	
Estimated	I number of tests 3		
ОК	Cancel		li

View of the target specifications window.

- i. The criticality level is found in Example Table 401-2 under category. ½ inch gradation is a category 2.
- ii. The target specification for ½ inch gradation is +/- dev. The allowable deviation can be found in the Section 703. For this example, the values stated in the mix design will be assumed to be accurate. The target value will be the value stated in the mix design. In this case, using the mix design, the target value is 83.0 and the allowable deviation is 4.

c. The estimated number of tests is established in the specifications for the construction of the control strip. For a control strip, the specifications state there will be 3 mix samples and 5 core samples taken for evaluation.

ptions								
Project Sne	cifications							
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~		00.0.0001						
Cor	ntract Number DTFH/0	-99-D-0001						
				_				
	Project Name ASTER F	FALLS LOOKOUT I	ROAD					
_				-				
Pr	oject Number MT PRA	GLAC 10(64)						
tem and Lo	t Specifications							
Item 4	0101-1000	Lot [IS1						
Property Sp	ecifications							
	Select temp	Iste -> FP-14 40	1. Gyratony Metho	d (3//Linch	nominal mavim	um) - Control St	rin.	-
	Select temp	olate -> FP-14, 40	1-Gyratory Metho	d (3/4 inch	n nominal maxim	um) - Control St	trip	•
	Select temp	late -> FP-14, 40	1- Gyratory Metho	d (3/4 inch	n nominal maxim	um) - Control St	rip	-
Add prop	Select temp	late -> FP-14, 40	1- Gyratory Methor	d (3/4 inch	n nominal maxim	um) - Control St Delete se	lected rows	•
Add prop	Select temp	olate -> FP-14, 40	1- Gyratory Methon	d (3/4 inch	n nominal maxim	um) - Control St Delete se	lected rows	•
Add prop	Select temp Proper Category (1 or 2)	ties	1- Gyratory Methon	d (3/4 inch	s	um) - Control St Delete se	lected rows	•
Add prop Property 1"	Select temp Proper Category (1 or 2) 2	ties	1- Gyratory Methor	d (3/4 inch get spec: +, -	s Low Value	um) - Control St Delete se	Iected rows Estimated # tests 3	•
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Add prop Property 1" 3/4" 1/2"	Select temp Proper Category (1 or 2) 2 2 2	ties Target Type info only +/dev	1- Gyratory Methou	d (3/4 inch rget spect +, -	s nominal maxim	um) - Control St Delete se l	Iected rows Estimated # tests 3 3 3	• •
Add prop Property 1" 3/4" 1/2" 3/8"	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2	ties Target Type info only info only +/dev +/dev	1- Gyratory Methou Tar Target Value 83	d (3/4 inch rget spec +, - 4	s	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3	_
Add prop Property 1" 3/4" 1/2" 3/8" #4	Select temp Proper Category (1 or 2) 2 2 2 2 2 1	Ities Target Type info only info only +/dev +/dev	1- Gyratory Method Tar Target Value 83	d (3/4 inch get spec: + 4	s I nominal maxim	um) - Control St Delete se	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	•
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Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16	Select temp Proper Category (1 or 2) 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	Ities Target Type info only +/dev +/dev +/dev +/dev +/dev +/dev	Gyratory Method Target Value 83	d (3/4 inch	s	um) - Control St Delete se	Iected rows Estimated #tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	•
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	Select temp Proper Category (1 or 2) 2 2 2 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	Ities Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev	1- Gyratory Methon Tar Target Value 83	d (3/4 inch get spec: +, - 4	s low Value	um) - Control St Delete se	Iected rows Estimated # tests	_
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50	Category (1 or 2) 2 2 2 2 2 1 2 1 2 1 2 2 1 2 2 1 2 2 2 1 2 2 2 1 2	Ities Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev	1- Gyratory Method Tar Target Value 83	get spec:	s Low Value	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	•
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #200	Select temp Proper Category (1 or 2) 2 2 2 2 2 2 1 2 2 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1	Ities Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev	1- Gyratory Methou Tar Target Value 83	get spec:	s I nominal maxim	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	• • • • • • • • • • • • • • • • • • •
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Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VMA	Select temp Proper Category (1 or 2) 2 2 2 2 2 1 2 1 2 1 2 1 1 1 1 1 1 1 1	Ities Target Type info only info only info only +/dev min	1- Gyratory Methon Tar Target Value 83	d (3/4 inch get spec: +, - 4	Low Value	um) - Control St Delete se	Iected rows Estimated # tests	•
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VMA VFA	Category (1 or 2) 2 2 2 2 2 1 2 1 2 1 1 1 1 1 1 1 1 1 1	Ities Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev	1- Gyratory Method Tar Target Value 83	d (3/4 inch get spec: +, - 4 0.40	s Low Value	um) - Control St Delete sel	Iected rows Estimated # tests	•
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #200 AC-m VMA VFA X DEN	Select temp Proper Category (1 or 2) 2 2 2 2 2 2 1 2 2 1 1 2 1 1 1 1 1 1 1	Ities Target Type info only info only info only +/dev +	Gyratory Method Tar Tar Arget Value 83	d (3/4 inch get spec: +, - 4 0.40	Low Value	um) - Control St Delete sel	rip	· · · · · · · · · · · · · · · · · · ·
Add prop Property 1" 3/4" 1/2" 3/8" #4 #50 #4 #50 #200 AC-m VMA VFA % DEN Rice-SG	Select temp erty Proper Category (1 or 2) 2 2 2 2 1 2 1 2 1 1 1 1 1	ties Target Type info only info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev info only min info only min info only	Gyratory Method Target Value 83	d (3/4 inch rget spec: +, - 4 0.40	Low Value	um) - Control St Delete sel	Iected rows Estimated # tests	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VFA % DEN % DEN % DEN % DEN % DEN % ODES	Select temp erty Proper Category (1 or 2) 2 2 2 2 1 2 1 2 1 1 1 1 1	Inter-> FP-14, 40	Target Value	d (3/4 inch get spec: +, - 4 0.40	Low Value	um) - Control St Delete sel	Estimated # tests 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m ¥200 AC-m VMA VFA % DEN Rice-SG VOIDS	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 1 2 2 1 2 1 1 2 1 1 1 1 1	ties Target Type info only info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev info only min info only min info only min info only	Gyratory Methon Tar Target Value 83	d (3/4 inch get spec: +, - 4 0.40	Low Value	um) - Control St Delete sel	Estimated # tests 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VMA AC-m VMA VFA % DEN Rice-SG VOIDS	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 1 2 1 2 1 1 2 1 1 1 1 1 1	Inter-> FP-14, 40	Gyratory Methon Tar Target Value 83	d (3/4 inch get spec: +, - 4 0.40	Low Value	um) - Control St Delete sel	Estimated # tests 3	•

1/2" entered target specs.

d. After the target specifications are entered, click "OK" and proceed to adjusting the remainder of the properties.

lot Specificat	uons							
ptions								
Project Sper	ifications							
Tojeci Spec	ancauons							
Con	tract Number DTFH70	-99-D-0001						
F	Project Name ASTER F	ALLS LOOKOUT	ROAD	-				
	· · · · · · · · · · · · · · · · · · ·							
D -		CLAC 10/C4)		-				
Pro	oject Number MTPRA	GLAC 10(64)						
tem and Lot	Specifications							
Item 40	101-1000	Lot TS1						
,		,						
Property Sp	ecifications							
	Select temp	late -> FP-14, 40	1- Gyratory Metho	d (3/4 inch	nominal maxim	um) - Control St	rip	-
	Select temp	late -> FP-14, 40	1-Gyratory Metho	d (3/4 inch	n nominal maxim	um) - Control St	rip	-
	Select temp	late -> FP-14, 40	1- Gyratory Metho	d (3/4 inch	nominal maxim	um) - Control St	rip	•
Add prope	Select temp	late -> FP-14, 40	1- Gyratory Methor	d (3/4 inch r get spec a	n nominal maxim	um) - Control St Delete se	rip lected rows	•
Add prop	Select temp	vlate -> FP-14, 40	1- Gyratory Methor	d (3/4 inch	n nominal maxim	um) - Control St Delete se	lected rows	•
Add property	Select temp erty Proper Category (1 or 2)	ties	1- Gyratory Methon	d (3/4 inch	s nominal maxim	um) - Control St Delete se	lected rows	-
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Add property Property 1" 3/4" 1/2"	Select temp erty Proper Category (1 or 2) 2 2 2 2	Ities FP-14, 40	1- Gyratory Methou Tar Target Value	d (3/4 inch	s nominal maxim	um) - Control St Delete se	Iected rows Estimated # tests 3 3 3 3	-
Add property Property 1" 3/4" 1/2" 3/8"	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Nate -> FP-14, 40 ties Target Type info only info only +//dev +//dev	1- Gyratory Methon Target Value	d (3/4 inch	s I nominal maxim	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3	-
Add property 1" 3/4" 1/2" 3/8" #4	Select temp erty Category (1 or 2) 2 2 2 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2	ties Target Type info only info only info only +/dev +/dev +/dev	1- Gyratory Method Target Value 83 68.8 42.1	d (3/4 inch rget spec: +, - 4 5 6	s I nominal maxim	um) - Control St Delete sei	ip lected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3	-
Add property 1" 3/4" 1/2" 1/2" #4 #8 #10	Select temp Proper Category (1 or 2) 2 2 2 2 1 2 2 1 2 2 2 1 2 2 2 2 2 2 2	Ities Target Type info only info only +/dev +/dev +/dev +/dev	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0	4 (3/4 inch rget spec: +, - 4 5 6 4 2	s I nominal maxim	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add property 1" 3/4" 1/2" 3/8" #4 #8 #16	Select temp erty Proper Category (1 or 2) Catego	Nate -> FP-14, 40 ties Target Type info only +/dev +/dev +/dev +/dev +/dev +/dev	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0	d (3/4 inch get spec: +, - 4 5 6 4 3 2	s Low Value	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50	Select temp Proper Category (1 or 2) 2 2 2 2 2 2 2 2 2 2 2 2 2 2 1 2 1 2 1 2 1 2	Nate -> FP-14, 40 ties Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1	d (3/4 inch get spec: +, - 4 5 6 4 3 3 2	s I nominal maxim	um) - Control St Delete sei	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200	Select temp	Ities Target Type Info only Info only Info only Info only Info eve Info	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 5.2	d (3/4 inch get spec: +, - 4 5 6 4 3 3 3 2	s I nominal maxim	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 4/200	Category (1 or 2) 2 2 2 1 2 1 2 1 2 1 2 1 2 1	Ities Target Type info only info only info only +/dev	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4 9	d (3/4 inch rget spec: 4 5 6 4 3 3 3 2 0 40	s I nominal maxim	um) - Control St Delete sel	ip lected rows	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #50 #200 AC-m VMA	Select temp etty Proper Category (1 or 2) 2 2 2 2 2 2 1 2 2 1 1 2 1 1 1 1 1 1 1	Nate -> FP-14, 40 ties Target Type info only info only +/dev	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	d (3/4 inch rget spec: 4 5 6 4 3 3 3 2 0.40	s Low Value	um) - Control St Delete sel	Iected rows Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #200 AC-m VMA VFA	Select temp enty Proper Category (1 or 2) 2 2 2 2 2 1 2 1 1 1 1 1 1	Nate -> FP-14, 40 ties Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	4 (3/4 inch get spec: +, - 4 5 6 4 3 3 3 2 0.40	s Low Value	um) - Control St Delete sei	ip Ected rows S S S S S S S S S S S S S	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #50 #50 #50 #200 ACm VMA VFA X DEN	Select temp	Nate -> FP-14, 40 ties Target Type info only info only info only +/dev +/de	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	4 (3/4 inch get spect 4 5 6 4 3 3 2 0.40	s I nominal maxim	um) - Control St Delete sel	rip	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VFA % DEN Rice-SG	Select temp arty Proper Category (1 or 2) 2 2 2 2 2 1 2 2 1 2 1 1 2 1 1 1 1 1 1	ties Target Type info only info only info only info only i/dev	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: +, - 4 5 6 4 3 3 2 0.40	Low Value	um) - Control St Delete sel	rip	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #50 #200 AC-m VMA VFA % DEN % DEN % Rice-SG VOIDS	Select temp etty Proper Category (1 or 2) 2 2 2 2 2 1 2 1 1 1 1 1 1	Vate -> FP-14, 40 ties Target Type info only info only info only +/dev +/de	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	(3/4 incl get spect (4) (4) (5) (6) (4) (3) (3) (4) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	s Low Value Low Value 13.0 91.0	um) - Control St Delete sel	rip	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #200 AC-m VMA VFA % DEN Rice-SG VOIDS	Select temp Proper Category (1 or 2) 2 2 2 2 2 1 2 1 1 1 1 1 1	Nate -> FP-14, 40 ties Target Type info only info only +/dev +	1- Gyratory Methor Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	4 (3/4 inch get spec: +, - 4 5 6 4 3 3 3 2 0.40	s Low Value	um) - Control St Delete sel	rip	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #30 #50 #50 #50 #50 #50 #50 #50 #5	Select temp arty Proper Category (1 or 2) 2 2 2 2 2 1 2 1 2 1 1 1 1	Nate -> FP-14, 40 ties Target Type info only info only info only +/dev +/de	1- Gyratory Methor Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	4 (3/4 inch get spect 4 5 6 4 3 3 3 2 0.40	Low Value	um) - Control St Delete sel	rip	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VMA VFA % DEN Rice-SG VOIDS	Category (1 or 2) 2 2 2 2 1 2 1 1 1 1 1 1 1 1 1	Nate -> FP-14, 40 ties Target Type info only info only +/dev +	1- Gyratory Method Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: (+, - 4 5 6 4 3 3 2 0.40	Low Value	um) - Control St Delete sel	rip	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #50 #200 AC-m VMA VFA % DEN Rice-SG VOIDS Sa	Select temp	Nate -> FP-14, 40 ties Target Type info only info only info only +/dev -/dev -/de	1- Gyratory Methor Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	(3/4 incl get spec: +, - 4 5 6 4 3 3 3 2 0.40	Low Value	um) - Control St Delete sel High Value	rip	

View of completed control strip target specifications.

- e. When finished entering all of the properties, click "Save and Close." If the user presses "Quit," none of the changes made to the specifications will be saved and it will resort back to the data that was entered prior to opening the specification set.
- D. Creating a Secondary Lab Sample Set in the same Lot

Note: Depending on the project circumstances and timing, it may be difficult and/or unwarranted to obtain verification from a second lab prior to starting full production.

a. From the home screen of the QL-PAY program, press the "Clear Fields" button located in the "Identify New or Existing Sample Set(s)" box or in the "Sample Sets" drop down menu. This is shown on the following page.

🖳 Quality Level - Pay Factor Analys	sis				
File Sample Sets Reports Prop. Import Export Import Import Sam Delete samplesets Import Import Copy to fields Clear fields Import Import Restore fields Restore fields Import Import	erty specifications Test f	Results Help Laboratory Contractor Lab	Project name MT PRA GLAC 10(64)	Project number ASTER FALLS LOOKOUT R	OAD
Identify new or existing sample s Select all Cop Contract number Ite DTFH70-99-D-0001 407	set(s) Dy to fields Clear Im Lot 101-1000 TS	ar fields F Laboratory Contractor Lab	testore fields	Specifications Test Results	Exit QLPAY

Operating the clear fields function.

b. Highlight the sample set to create a secondary lab and select the "Copy to Fields" button or in the "Sample Sets" drop down menu. This will copy the project information to be used for the new sample set.

🖳 Q	Quality Level - Pay Factor A	Analysis							
File	Sample Sets Reports	Propert	y specifications	Test	Results Help				
	Import	•	1						
	Export	+							
Sam	Delete samplesets								
	Copy to fields		Item	Lot	Laboratory	Project name	Project number		
•	Clear fields		40101-1000	TS1	Contractor Lab	MT PRA GLAC 10(64)	ASTER FALLS LOOKOUT	ROAD	
	Restore fields								
		_							
∣∣∣d	entify new or existing sar	nple set(s)						
	Select all	Convt	o fields	Cle	ar fields	Restore fields			
-	ociectuii	oopyt	o neitas						
	Contract number	Item		La	t Laboratory				
Г								1	
		,					Specifications		1
					Contractor Lab	-	Test Results	Exit	QLPAY

Select copy to fields after highlighting sample set.

c. In the "Laboratory" drop down menu, choose "Central Lab." This is shown on the following page.

Identify new or existing s	ample set(s)	
Select all	Copy to fields	Clear fields Restore fields
Contract number	ltem	Lot Laboratory
DTFH70-99-D-0001	40101-1000	TS1 Central Lab
		Central Lab

View after selecting Copy to fields and Central Lab.

d. Click on "Specifications." The specifications should be identical to the original sample set. Once the property specifications have been reviewed for accuracy, select "Save and Close."

Project Spec								
roject Sper								
	chications							
Con	tract Number DTFH70	-99-D-0001						
	,							
F	Project Name ASTER		ROAD	-				
	Toject Name NOTEN		none					
D-		CLAC 10(C4)		-				
FR	oject Number MT PRA	GLAC 10(64)						
tem and Lot	Specifications							
Item 40	0101-1000	Lot TS1						
		1						
	Select temp	olate ->						•
	Select temp	olate ->						•
Add prop	Select temp	tion	Tar	antenco	. 1	Delete ee		•
Add prop	Select temp erty Proper	ties	Tar	get spec:	5	Delete se	lected rows	•
Add prop	Select temp erty Proper	ties	Tar	get spec	3	Delete se	lected rows	<u>-</u>
Add prop	erty Proper	ties	Tar Target Value	get spec:	s Low Value	Delete se	Estimated # tests	<u> </u>
Add property Property 1"	Select temp erty Proper Category (1 or 2) 2	ties Target Type info only	Tar Target Value	get spec:	s	Delete se	Estimated # tests	<u>-</u>
Add property Property 1" 3/4"	Select temp erty Proper Category (1 or 2) 2 2	ties Target Type info only info only	Target Value	get spec:	s Low Value	Delete se	Estimated #tests	
Add property 1" 3/4" 1/2"	Select temp erty Proper Category (1 or 2) 2 2 2 2	ties Target Type info only info only +/dev	Target Value	get spec:	s Low Value	Delete se	Estimated # tests	
Add property Property 1" 3/4" 1/2" 3/8"	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ties Target Type info only info only +/dev +/dev	Target Value	get spec :	s	Delete se	Estimated # tests 3 3 3 3 3	
Add property Property 1" 3/4" 1/2" 3/8" #4 40	Select temp erty Proper Category (1 or 2) 2 2 2 2 1 1	ties Target Type info only info only +//dev +//dev +//dev	Target Value 83 68.8 42.1	get spec:	s	Delete se	Estimated # tests 3 3 3 3 3 3	
Add property 1" 3/4" 1/2" 3/8" #4 #8	Category (1 or 2) 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	ties Target Type info only info only +/dev +/dev +/dev +/dev	Target Value 83 68.8 42.1 25.2 25.	get spec: +, - 4 5 6 4	s	Delete se	Estimated #tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add property 1" 3/4" 1/2" 3/8" #4 #8 #16	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 1 1 2 2 2 2 2 1 2 2 2 2 2	ties Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev	Target Value 83 68.8 42.1 25.2 20.0	get spec:	s Low Value	Delete se	Estimated # tests	
Add property Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	Select temp erty Proper Category (1 or 2) 2 2 2 2 1 2 1 2 1 2 1 1 2 1 1 1 1 1 1	ties Target Type info only info only +//dev +//dev +//dev +//dev +//dev +//dev +//dev	Target Value 83 68.8 42.1 25.2 20.0 13.3	get spec: +, - 4 5 6 4 3 3	s	Delete se	Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add property Property 1/2" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2 2 2 2 2 2 2	ties Target Type info only info only +/dev	Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 Target Value	get spec: + 4 5 6 4 3 3 3 3	s	Delete se	Estimated # tests	
Add property 1" 3/4" 1/2" 3/8" #4 #6 #30 #50 #200	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2 2 2 2 2 2 2	ties Target Type info only info only +/dev	Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3	get spec:	s Low Value	Delete se	Estimated # tests Estimated # tests S S S S S S S S S S S S S	
Add property Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m	Category (1 or 2) 2 2 2 1 1	ties Target Type info only info only +//dev	Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: +, - 4 5 6 4 3 3 3 2 0.40	s Low Value	Delete se	Estimated # tests 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Add property Property 1/2" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VMA	Category (1 or 2) 2 2 2 2 1 2 1 1 1	ties Target Type info only info only +/dev min	Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: +, - 4 5 6 4 3 3 3 2 0.40	s Low Value	Delete se	Estimated # tests	
Add property 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #200 AC-m VMA VFA	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 2 2 2 2 2 2 2 2	ties Target Type info only info only +/dev min info only	Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: 4 5 6 4 3 3 2 0.40	s Low Value	Delete se	Estimated # tests Estimated # tests S S S S S S S S S S S S S	
Add prop Property 1" 3/4" 1/2" 3/8" #4 #50 #50 #50 #200 AC-m VMA VFA % DEN	Select temp erty Proper Category (1 or 2) 2 2 2 2 1 2 2 1 1 2 2 1 1 1 1 1 1 1 1	ties Target Type info only info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev min info only min	Tar Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: 4 5 6 4 3 3 2 0.40	s Low Value 13.0 91.0	Delete se	Estimated # tests Estimated # tests	
Add property Property 1" 3/4" 1/2" 3/8" #4 #50 #50 #200 AC-m VMA VFA VFA VFA Kice-SG	Select temp erty Proper Category (1 or 2) 2 2 2 2 2 1 2 2 1 1 2 1 1 1 1 1 1 1 1	ties Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev min info only min info only	Tar Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: 4 5 6 4 3 3 3 2 0.40	s Low Value 13.0 91.0	Delete se	Estimated # tests Estimated # tests	
Add property Property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VMA VFA % DEN Rice-SG VOIDS	Category (1 or 2) 2 2 2 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	ties Target Type info only info only +/dev	Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get spec: +, - 4 5 6 4 3 3 2 0.40	s Low Value	Delete se	Estimated # tests Estimated # tests	
Add property 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50 #200 AC-m VMA VFA % DEN Rice-SG VOIDS	Category (1 or 2) 2 2 2 2 2 2 1 1 1 1 1 1 1	ties Target Type info only info only +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev +/dev info only min info only info only info only	Target Value 83 68.8 42.1 25.2 20.0 13.3 10.1 6.3 4.9	get specs 4 5 6 4 3 3 3 2 0.40	s Low Value Low Value 13.0 91.0	Delete se	lected rows Estimated # tests 3	

View of copied target specifications for the Central Lab.

e. QL-PAY is now set up to handle all of the 40101 sampling and testing for the project.

- E. Entering Test Results
 - a. Highlight the sample set that the user has test results for.
 - b. Select the "Test Results" button at the lower right of the window or the "Test Results" drop down menu.

n	nple Set Sel	ection						_		
	Imported	Contract	number	Item	Lot	Laboratory	Project name	Projec	st number	
	Г	DTFH70-99	-D-0001	40101-1000	TS1	Central Lab	MT PRA GLAC 10(64)	ASTER	FALLS LOOKOUT	ROAD
1		DTFH70-99	-D-0001	40101-1000	T51	Contractor Lab	MT PRA GLAC 10(64)	ASTER	FALLS LOOKOUT	ROAD
Id	lentify new (or existing s	ample set(s)	_					
Id	lentify new Select a	or existing s	ample set(: Copy ti	s) o fields	Cle	ear fields	Restore fields			
Id	lentify new o Select o Contract nu	or existing s all	ample set(: Copy tr Item	a) o fields	Cle	ear fields nt	Restore fields			
Id	lentify new Select o Contract nu	or existing s all mber	ample set(Copy tr Item	s) o fields	Cle	aar fiekds ht 	Restore fields	56	secifications	
Id	lentify new o Select o Contract nu	or existing s all mber	ample set(Copy tr Item	a) o fields	Cle	tar fields	Rostore fields	Sţ	secifications	J

Locations that can be selected to enter test results.

c. Begin entering the test result data, starting with Sample #1. Make sure to include consecutive sample numbers when entering in the test result data, i.e. 1,2,3,4, etc.

THT THT	t Number)-99-D-000	1 4	em 10101-1000	[ot Labo TS1 Con	tractory		_										
st Re	Exclude	Sample	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#200	AC-m	VMA	VFA	% DEN	Rice-SG	VOIDS
		1	100	100	85.2	65.9	40.1	24.6	20.5	12.4	9.7	5.8	5.1	14.0	68	92.3	2.513	4.11
		2	100	100	81.9	67.5	43.2	25.3	19.9	13.5	10.2	6.0	4.7	15.2	71	91.5	2.510	4.10
		3	100	100	82.4	68.0	41.8	23.7	19.7	13.0	11.4	5.7	5.0	13.1	66	93.0	2.511	4.11
		4														91.8		
		5														92.7		

View of consecutive test results being entered.

d. Three test results are needed before a statistical analysis can be computed.

- e. When entering test results for the central lab on split samples, make sure the test numbers match the corresponding contractor test result sample number or the analysis will not be valid.
- F. Calculating Pay Factor
 - a. Highlight the sample set for the contractor's lab and select the "Pay factor" under the reports drop down menu.

🖳 Q	uality Level - Pa	y Factor	Analysis											
File	Sample Sets	Reports	Property specifica	ations Test	t Results Hel	2								
		Sho	rt analysis											
		Pay	factor											
Sam	nle Set Select	Con	trol charts											
	Imported Co	Long	Long analysis Report on Single or Paired Sample Sets					t name	10/64)	Proje	ct num	ber	DOTE	
•						Lab	MT PRA	GLAC	10(64)	ASTER	FALLS	LOOKOUT	ROAD	
		List List Grai	Selected Sample S All Sample Sets od Summany	ets										
∣ Id	entify new or e	Ran	dom Sampling			+								
	Select all		Copy to fields	Cl	ear fields	_	Restore fi	ields						
	Contract numbe	er	ltem	L	ot Laborat	ory								
										5	Specificat	ions	1	
								•			Test Res	ults		Exit QLPAY

Selecting the pay factor report for the contractor's lab.

b. The reports menu will appear. By selecting the "Pay factor" report, the "Calculate pay factor" button should already be checked. If not, select only the pay factor button and then select "OK." See the next page for the pay factor report selection.

Reports on single or paired samplese	ets 🗖 🗖 🗙
Pick reports	
List test results	Clear selections
Calculate pay factor	
Histograms	
Null Hypothesis	
Skewness and kurtosis	
Control charts	
Sampleset differences	
for Null hypothesis and control charts	
Primary Lab: Contractor Lab	
Alternate Lab: Central Lab	•
Range of sample numbers	
○ All	
C Range: to	
ОК	Cancel

Pay factor report selection.

c. QL-PAY will produce a PDF report calculating the pay factor for the test results that have been entered under the sample set. When the estimated number of tests have been completed, QL-PAY will note that the testing has been completed and the final pay factor value.

The view below shows the final pay factor for the control strip on Aster Falls Lookout Road. When multiple quality characteristics are being evaluated, the lowest pay factor of the individual characteristics is the controlling pay factor. This is shown on the following page on the pay factor printout. The quality characteristics have a 1.00 and 1.01 for the pay factors in each category, thus the 1.00 is used for the overall final pay factor for the item.

Note: The "Calculate Pay Factor" report was selected for example purposes only. For more information on other available reports see **Section 4 Reports.**

	Western Federal Lands Highway Division											
Q	UALITY LI	EVEL ANAI	YSIS & PAY F	ACTOR COMP	UTATIONS							
Project Name Project Number Project ID	:: ASTER FA :: MT PRA (): DTFH70-9	ALLS LOOK GLAC 10(64) 99-D-0001	OUT ROAD	Item Numb Lot Numb L	er: 40101-1000 er: TS1 ab: Contractor I) Lab						
		Qualit	y Levels and Pay	Factors								
Quality Charac- teristic	Actual Target Value		Mean	Standard Deviation	PWL	Pay Factor						
1"	info		100.00	0.000								
3/4"	info		100.00	0.000								
1/2"	83.00	+,- 4	83.17	1.779	100	1.00						
3/8"	68.80	+,- 5	67.13	1.097	100	1.00						
#4	42.10	+,- б	41.70	1.552	100	1.01						
#8	25.20	+,- 4	24.53	0.802	100	1.00						
#16	20.00	+,- 3	20.03	0.416	100	1.00						
#30	13.30	+,- 3	12.97	0.551	100	1.01						
#50	10.10	+,- 3	10.43	0.874	100	1.00						
#200	6.30	+,- 2	5.83	0.153	100	1.01						
AC-m	4.90	+,- 0.40	4.93	0.208	100	1.01						
VMA	13.00	min	14.10	1.054	86	1.00						
VFA	info		68.33	2.517								
% DEN	91.00	min	92.26	0.619	100	1.01						
Rice-SG	info		2.511	0.002								
VOIDS	info		4.11	0.006								
	TESTI FINA	NG COMPL L PAY FAC	ETED TOR: 1.00									

Pay factor report with item receiving contract price.

7.3. Section 401 Asphalt Concrete Pavement by Gyratory Mix Design Method – Full Production Example

7.3. Section 401 Asphalt Concrete Pavement by Gyratory Mix Design Method – Full Production Example

This example will go through the process of setting up the sample sets for the main production of 401 Asphalt Concrete Pavement, Gyratory Mix.

TASK ORDER AWARD	Contract No. DTFH70-99-D-0001
	River Contractors, Inc.
Solicitation No. DTFH70-08-R-00021	P.O. Box 223
	West Glacier, MT 59936
MT PRA GLAC 10(64)	
ASTER FALLS LOOKOUT ROAD	AWARD DATE: March 10, 2015

Pay Item No.	Item	Quantity	Unit	Unit Price	Amount
40101-1000	Asphalt Concrete Pavement, Gyratory Mix, ¾" Nominal Max. Size Aggregate, 0.3 to < 3 Million ESAL	18,000	TON	\$138.00	\$2,484,000.00

Example Section 401. — ASPHALT CONCRETE PAVEMENT BY GYRATORY MIX DESIGN METHOD

Material

401.02 Conform to the following Subsections:

702.05
702.01
703.07
725.05

401.17 Acceptance. See Table 401-8 for sampling, testing, and acceptance requirements.

Aggregate quality properties will be evaluated under Subsections 106.02 and 106.04.

Mineral filler, antistrip additives, and WMA additives will be evaluated under Subsections 106.02 and 106.03.

Asphalt content, VMA, and core density will be evaluated under Subsection 106.05. Pavement roughness will be evaluated under Subsections 106.04. Asphalt binder will be evaluated under Subsections 106.03 and 106.04. Evaluations will consider the following:

(a) Asphalt content. The upper and lower specification limits are the approved JMF target value plus or minus 0.4 percent;

(b) VMA. The lower specification limit is the value shown in Example Table 401-1. After the JMF has been verified according to Subsections 401.03 and 401.12, use the Contractor's combined coarse and fine bulk specific gravity of aggregate G_{sb} values to calculate VMA on field produced asphalt concrete mix samples;

(c) **Density(core).** The lower specification limit is 91.0 percent of the maximum specific gravity (density) determined according to AASHTO T 166 and T 209.

The percent compaction will be determined using the average maximum specific gravity (AASHTO T 209) from all samples tested each day;

(d) **Pavement roughness.** The evaluation for pavement will be made after all defective areas are addressed. See Subsection 401.16(g); and

(e) Asphalt binder. The pay factor is determined from Table 401-7.

Construction of the HMA or WMA pavement course will be evaluated under Subsections 106.02 and 106.04.

D	Gyratory Compaction Level (% Theoretical Maximum			Minim	um Voids-in-	the Mineral A	Voids	Data	Minimum Tensile		
Design ESAL (Million)	Speci A/	fic Gravity, ASHTO T 3	G _{mm}) 12		Nominal N	faximum Siz	Filled with Asphalt	Binder	Strength Ratio,		
(Million)	N _{initial}	N _{design}	N _{max}	1 inch (25mm)	³ ⁄4 inch (19mm)	¹ / ₂ inch (12.5mm)	³ / ₈ inch (9.5mm)	#4 sieve (4.75 mm)	(VFA), %	Katio	AASHTO T 283
< 0.3	6 (≤91.5%)	50 (96.0%)	75 (≤98.0%)						70.0 - 80.0		
0.3 to < 3	7 (≤90.5%)	75 (96.0%)	115 (≤98.0%)	12.0–15.0	13.0-16.0	14.0-17.0	15.0-18.0	-	65.0 - 78.0	0.8 -1.6	0.80
3 to 30	8 (≤89.0%)	100 (96.0%)	160 (≤98.0%)						65.0 - 78.0		0.80
-	6 (≤91.5%)	50 (96.0%)	75 (≤98.0%)	-	-	-	-	16.0 -19.0	76.0 - 80.0	0.6 - 2.0	

Example Table 401-1 Gyratory Asphalt Concrete Mix Design Requirements, AASHTO R 35

Example Table 401-8 Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks		
Production											
Asphalt concrete pavement		Asphalt content	Ι	AASHTO T 308	1 per 700 tons (650 metric tons)	Behind the paver before compaction	Yes	6 hours	-		
	Statistical	VMA	Ι	AASHTO R 35	"	"	"	"	-		
	(106.05)	Density	Ι	AASHTO T 166	"	In-place after compacting	"	24 hours	Deliver cores to CO after testing is completed		
	Measured and tested for conformance	Placement temperature	-	-	First load and as determined by CO thereafter	Hauling vehicle before dumping, or windrow before pickup	No	Immediately upon completion of measurement	-		
	(106.04)	Maximum specific gravity	-	AASHTO T 209	Minimum 1 per day	Behind the paver before compaction	Yes	24 hours	-		
Asphalt binder (702.01)	Measured and tested for conformance (106.04)	Quality	See Table 401-7	AASHTO M 320	1 per 2000 tons (1800 metric tons) of mix	In line between tank and mixing plant	Yes, 2 1- quart (1-liter) samples	-	Test by Government		

Example Tab	ole 401-7
Asphalt Binder Pay	Factor Table

Tests on Osisinal	Specifications	ications Pay Factor =								
Tests on Original		1.01	1.00	0.95	0.90	0.75	Reject			
Dynamic shear rheometer, kPa	≥ 1.00	≥ 1.17	1.16 - 1.00	0.99 - 0.89	0.88 - 0.77	0.76 - 0.50	< 0.50			
Tests after Rolling Thin Film Oven (RTFO)										
Dynamic shear rheometer, kPa	≥ 2.20	≥ 2.69	2.68 - 2.20	2.19 - 1.96	1.95 - 1.43	1.42 - 1.10	< 1.10			
Tests on Pressure Aging Vessel (PAV)										
Dynamic shear rheometer, kPa	<u>≤</u> 5,000	4,711 <u><</u>	4,712 - 5,000	5,001 - 5,289	5,290 - 5,578	5,579 - 5,867	> 5,867			
Bending beam rheometer, s, MPa	≤ 300	≤ 247	248 - 300	301 - 338	339 - 388	389 - 449	\geq 450			
Bending beam rheometer, m-value	≥ 0.300	≥ 0.320	0.319 - 0.300	0.299 - 0.294	0.293 - 0.278	0.277 - 0.261	< 0.261			



🖌 English 📃 Metric

WORKSHEET FOR SUPERPAVE ASPHALT CONCRETE MIX DESIGN AASHTO R 35

Project: MT PRA GLAC 10(64)	Date: 3/15/2015				
Contractor: River Contractors, Inc.	Nominal Maximum Aggregate Size, in :3/4"				
Asphalt supplier: Hot Rock Asphalt	Grade of asphalt: 58-34				
Sources for: Aggregates: Snow Pack Quarry	Mineral filler: Graymont Lime				
Testing laboratory name: Slate Testing	Phone:				
Testing performed by: Mya Mixer					
Testing reported by: Mya Mixer					

SUMMARY OF THE PROPOSED JOB-MIX-FORMULA

1. Number of gyrations ($N_{intr}/N_{deer}/N_{max}$)	7/75/115	Specific gravity of
2. Percent binder by mass of total mix $(P_b)^1$	4.90	11. Recommended pla
3. Percent binder by mass of aggregate	5.14	(Attach Tempera
4. Air voids (V _a) at N _{des}	4.0	Percent compaction
5. Voids in mineral aggregate (VMA) at N _{des}	13.4	 Hveem stabilomet
6. Voids filled with a sphalt (VFA) at $\mathrm{N}_{\mathrm{des}}$	70.4	Moisture Suscepti
7. Maximum unit mass (Gmm)	2.508	 Dry strength
8. Effective specific gravity of aggregate (G_w)	2.710	b. Wet strength
9. Dust-to-Binder Ratio (DP)	1.6	c. Index of Ret
Is RAP included in Mix Design? Yes	V No	

). Specific gravity of binder (G _b)	1.024
 Recommended plant mixing temperature,°F (Attach Temperature Viscosity Curve) 	309-324
2. Percent compaction at N _{max}	97.9
 Hveem stabilometer value (If specified) 	
 Moisture Susceptibility: 	AASHTO T 283
a. Dry strength, psi	485.4
b. Wet strength, psi	438.0
c. Index of Retained Strength, %	90.20

		G	RADATION TAR ALLOWABLE	GET E DEV	VAL IAT	UES AND IONS		SPECIFIC (GRAVITY AND AB	SORPTION	
Sieve Sizes		Job Mix Formula Target Value ²			Allowable Deviation ³ %				Fine Aggregate (AASHTO T 84)	Coarse Aggregate (AASHTO T 85)	Combined Aggregate
3/4 inch	-		99.5								
1/2 inch	-		83.0			4		Bulk SG (G _{4b})	2.608	2.669	2.643
3/8 inch	-		68.8			5					
No. 4	-		42.1			6		Bulk SSD SG	2.629	2.692	2.665
No. 8	-		25.2			4					
No. 16	-		20.0			3		Apparent SG (G _{ab})	2.662	2.732	2.703
No. 30	-		13.3			3]			
No. 50	-		10.1			3		Absorption	0.80 %	0.90 %	0.86
No. 200	-		6.3			2]			
	-										

Example 401 Superpave Hot Asphalt Concrete Mix Design.

🖳 Qua	ality Level - Pay	Factor Analy	sis							- • •
File	Sample Sets	Reports	Property Spec	ifications	Test Result	s Help				
Samp	le Set Selection	I.								
	Imported	Contract	number	Item	Lot 1	Laboratory	Project	: name	Project	number
	_	_	_	_	_		_	_	_	
lde	ntify new or exi	sting sample	set(s)							
	Select all	Cop	y to fields	Clear	fields	Restore fields				
C	ontract number	Ite	m	Lot	Laborato	у				
								Specificatio	ons	
						•		T ID	. I	ExitQLPAY
					1			l est Kesu	Its	

Initial view when opening QL-PAY.

- A. Enter data in the "Identify New or Existing Sample Set" fields
 - a. Contract Number: This can be found on the front cover of the contract. For this example it is DTFH70-99-D-0001.
 - b. Item: Place the Item Number in this field. This example will begin with 401 Asphalt Concrete Pavement, Gyratory Mix (40101-1000).
 - c. Lot: Generally speaking, there is only one lot for each item; therefore, the full production sample sets will always begin with Lot "1."
 - d. Laboratory: Determine the lab the user will be using for the test results. Typically, there will be a "Central Lab" and "Contractor Lab" sample set for each item.

-Identify new or existing s	ample set(s)		
Select all	Copy to fields	Clear fields Restore fields	
Contract number	ltem	Lot Laboratory	
DTFH70-99-D-0001	40101-1000	1 Contractor Lab	
		Contractor Lab	

View after entering data into the sample set box.

B. Specifications

a. Click on "Specifications."

	Quality Level - Pa	ay Factor	Analysis								
File	Sample Sets	Reports	Property	specifications	Test R	esults Help					
Sa	nple Set Selecti	on									
	Imported Co	ntract	number	Item	Lot 1	Laboratory	Project name	Project	number	_	
	lentify new or e	xisting sa	mple set(s	5)							
	Select all		Copy to	fields	Clea	r fields	Restore fields				
	Contract number	er	Item		Lot	Laboratory					
	DTFH70-99-D-0	001	40101	-1000	1	Contractor La	b	Snor	rifications	1	
						Contractor La	b 💌	Tes	t Results		xit QLPAY

Selecting property specifications.

b. Enter the Project Name and Number from the contract cover page into the corresponding fields.

Project Specifications	
Contract Number DTFH70-99-D-0001	
Project Name ASTER FALLS LOOKOUT ROAD	
Project Number MT PRA GLAC 10(64)	

Project Name and Number under the specifications window.

c. Select the appropriate template from the drop down menu under "Property Specifications." For this example, choose FP-14, 401 – Gyratory Method (3/4 inch nominal maximum) – Full Production. By selecting this template, the majority of the specification has already been entered into the program and only minor changes will need to be completed. The screen view of the template selection is shown below page.

Lot Specificat	tions							
ptions								
Project Spec	ifications							
		00.0.0004						
Con	tract Number DTFH70	-99-D-0001						
F	Project Name ASTER	FALLS LOOKOUT F	ROAD	-				
Dec	niect Number	GLAC 10(64)		-				
	ojectivalnoer jimititiva							
Item and Lot	Specifications							
Item 40	101-1000	Lot 1						
Property Spe	ecifications							
	C 1	L		1/0/4 - 1				
	Select temp	plate -> FP-14, 40	I- Gyratory Methor	a (3/4 incr	nominal maxim	um) - Full Produ	iction	_
		-			1			
Add prope	erty Proper	ties	Tar	get spec	s	Delete se	lected rows	
Add prope	erty Proper	ties	Tar	get spec	•	Delete se	lected rows	
Add prope	erty Proper	ties	Tar	get spec:	s	Delete sel	lected rows	
Add prope Property	Category (1 or 2)	ties	Tar	get spec:	Low Value	Delete sel	Estimated # tests	
Add property Property AC-m	Category (1 or 2)	ties Target Type +/-dev	Tar Target Value	get spec : +, - 0.40	Low Value	Delete sel	Estimated # tests	1
Add property Property AC-m VMA	Category (1 or 2)	Target Type +/-dev min	Tar Target Value	get spec +, - 0.40	Low Value	Delete sel	Estimated # tests	[
Add property Property AC-m VMA % DEN	Category (1 or 2)	ties Target Type +/-dev min min	Target Value	get spec: +, - 0.40	Low Value	Delete sel	Estimated # tests	
Add property AC-m VMA % DEN VOIDS	Category (1 or 2)	ties Target Type +/dev min min info only	Tar Target Value	get spec: +, - 0.40	Low Value 13.0 91.0	Delete sel	Estimated #tests	
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Add property AC-m VMA % DEN VOIDS VFA Rice-SG 1"	Category (1 or 2)	ties Target Type +/dev min info only info	Target Value	get spec: + 0.40	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4"	Proper Category (1 or 2) 1 1 1 1 2	ties Target Type +/-dev min min info only info only info only info only info only info only info only	Target Value	get spec: +, - 0.40	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2"	Category (1 or 2) 1 1 1 1 2 2	ties Target Type +/dev min info only info only info only info only info only info only	Target Value	get spec: + 0.40	Low Value	Delete sel	Estimated # tests	
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Add property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2" 1/2" 1/2" 1/2" 1/2" 1/2"	Proper Category (1 or 2) 1 1 1 2 2 1 2 2 1 2 2 1 2 2 2 1 2 2 1 2	ties Target Type +/dev min info only info	Target Value	get spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property AC-m VMA X, DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #8 #16	Category (1 or 2) 1 1 1 1 2 2 2 2 1 2 2 1 2 1 2 1 2 1 1	ties Target Type +/dev min min min info only info on	Target Value	rget spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" X4" 1/2" 3/4" 1/2" 3/8" #4 #8 #16 #150	Proper Category (1 or 2) 1 1 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 1 2 2 2 2 1 2 1 2 2 2 2 2 2 2 2 2 1 2 1 2 1 2 2 2 2 2 2	ties Target Type +/dev min min info only i	Target Value	get spec :	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property AC-m VMA AC-m VMA VOIDS VOIDS VOIDS VFA Rice-SG 1" 3/4" 1", 3/4" 11/2" 3/8" ## #8 #16 #130 #100 #1	Category (1 or 2) 1 1 1 1 2 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 1 2 2 1 2 2 1 2 2 1 2 1 2 2 1 2 1 2 1 2 1 2 1 2 1 2 2 2 2 2 2	ties Target Type +/dev min min min info only info on	Target Value	get spec :	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/4" #16 #30 #16 #50 #200	Proper Category (1 or 2) 1 1 1 2 2 2 2 2 1 2 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	ties Target Type +/dev min min info only i	Target Value	get spec: + 0.40	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property AC-m VMA VMA VOIDS VFA Rice-SG 1'' 3/4'' 1/2'' 3/8'' #4 #16 #30 DSRorg	Proper Category (1 or 2) 1 1 1 1 2 2 2 2 1 2 2 1 2 2 1 2 2 1 2 1 2 1 2 1 2 1	ties Target Type +/dev min min info only i	Target Value	get spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property Property AC-m VMA AC-m VVA WOIDS VFA Rice-SG 1" 3.4" 1/2" 3.4" 1/2" 3.4" #4 #4 #50 BSRorg DSRres	Proper Category (1 or 2) 1 1 1 1 2 2 2 2 2 1 2 1 1 1 1 1 1 2 2 1 2 1 1 1	ties Target Type +/dev min min info only i	Target Value	get spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add property Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 	Proper Category (1 or 2) 1 1 1 1 2 2 1 2 2 1 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1	ties Target Type +/dev min info only info	Target Value	get spec:	Low Value 13.0 91.0 1.00 2.20	Delete sel	Estimated # tests	
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Add property Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2" 3/8" Property AC-m VFA AC-m VAC-m VFA AC-m VAC-m VFA AC-m V VAC-m VAC-m VAC-m	Proper Category (1 or 2) 1 1 1 1 2 2 2 2 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	ties Target Type +/dev min min info only info mly	Target Value	get spec:	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel	Estimated # tests	
Add property AC-m VMA AC-m VMA VVIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 DSRorg DSRorg DSRorg DSRopav BBR s BBR s	Proper Category (1 or 2) 1 1 1 1 1 2 2 2 1 2 1 2 1 2 1 2 1 1 1 1 1 1 1 1 1 1 1	ties Target Type +/dev min min min info only info on	Target Value	get speca	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel	Estimated # tests	
Add property Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" #4 #50 WFA #50 DSRosy DSRpay BBR m BBR m	Proper Category (1 or 2) 1 1 1 1 2 2 2 2 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	ties Target Type +/dev min min info only info mly info m	Target Value	get spect	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel	Estimated # tests	
Add property AC-m VMA AC-m VMA WOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #16 #30 USRorg DSRorg DSRorg DSRorg DSRorg BBR s BBR m	Proper Category (1 or 2) 1 1 1 1 2 2 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ties Target Type +/dev min min min info only info on	Target Value	get spec:	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel	Estimated # tests	
Add property AC-m VWA % DEN VVOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #10 #50 #50 DSRorg DSRpay BBR m	Proper Category (1 or 2) 1 1 1 1 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ties Target Type +/dev min min info only i	Target Value	get specs	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel	Estimated # tests	

View after entering project name and number and selecting the template.

- C. Adjusting Property Specifications to Match Contract
 - After opening the specifications dialog box and selecting a template, the Sampling, Testing, and Acceptance Requirements along with information from the asphalt mix design will be needed to finish inputting the correct data.
 - b. To adjust the properties, highlight the property in the lower table to adjust and click on the "Target Specs" button. This will bring up a new window to enter the testing parameters for the particular property. Determine the testing parameters for each property and select the appropriate target specifications, i.e. min, max, etc.

				1 (37 4 11 61				
Add prop	erty Proper	rties	Tar	get spec	3	Delete sel	ected rows	
Property	Category (1 or 2)	Target Type	Target Value	+ -	Low Value	High Value	Estimated #tests	
AC-m	1	+/dev		0.40	1	1		
VMA	1	min		0.40	13.0			
% DEN	1	min			91.0			
VOIDS	1	info only						
VFA	1	info only						
Rice-SG	1	info only						
1"	2	info only						
3/4"	2	info only						
1/2"	2	info only						
3/8"	2	info only						
#4	1	info only						
#8	2	info only						
#16	2	info only						
#30	1	info only						
#50	2	info only						
#200	1	info only						
DSRorg	1	min			1.00			
DSRres	1	min			2.20			
DSRpav	1	max				5000		
BBR s	1	max				300		
BBR m	1	min			0.300			

Highlight the property and select Target Specs.

In this example, highlight the "AC-m" property in the lower table and select "Target Specs." Each field that is not grayed out will need to be filled in with data from either the sampling and testing specification, material specification or the mix design.

1 🔜	Target specifi	cations		- • •
	Critical	AC-m		
Г	Target Specif	ications		
	• +/-	Target value +/- allowable deviation	Target Value	
	○ min	Minimum	Allowable Deviation	0.40
	C max	Maximum	Allowable Deviation	10.40
	C mean	Mean as Target Value within range	Low Value	
	○ info	Property is Informational Only	High Value	
	Estimated	number of tests		
	ок	Cancel		li

View of the target specifications window.

i. The criticality level is found in Example Table 401-8 under category. Asphalt Content is a category 1.

- The target specification for asphalt content is +/- dev. The allowable deviation can be found in Subsection 401.17 Acceptance within the Asphalt Concrete Pavement by Gyratory Mix Design Method specification. The target value will be the value stated in the mix design. In this case, using the mix design and 401.17, the target value is 4.9 and the allowable deviation is 0.4.
- c. The estimated number of tests needs to be the actual number of tests that will be taken throughout the project. This number can be changed at a later date if the number of tests increases or decreases, but the final number of tests taken should be reflected under each property at the completion of the item. To determine the number of tests, divide the contract quantity for the item by the sampling frequency and use that value for all of the estimated number of tests. For this example, the contract requires 18,000 tons and the sampling frequency is 1 per 700 tons (from Example Table 401-8); therefore, the estimated number will be 26 tests for this project.

🖳 Target specific	ations		_
	AC-m		
Critica	lity Level (1 or 2)		
Target Specifica	ations		
	Target value +/- allowable deviation	Target Value	4.9
⊂ min	Minimum	Allowable Deviation	0.40
⊖ max	Maximum		
C mean	Mean as Target Value within range	Low Value	
⊖ info	Property is Informational Only	High Value	
Estimated	I number of tests 26		
	ОК	Cancel	/

AC-m entered target specs.

- d. After the target specifications are entered, click "OK" and proceed to adjusting the remainder of the properties.
- e. The Asphalt Binder is tested at a frequency of 1 per 2000 tons of mix (Example Table 401-8). For this example, the contract requires 18,000 tons; therefore, the estimated number will be 9 binder tests for this project. Once all of the properties have been adjusted for the full production, the screen should be identical to the view on the following page.

.ot Specificati	ons							
ptions								
Project Speci	fications							
Contr	ract Number	0.99.0.001						
Conu	activumber joirni	0-33-0-0001						
		FALLS LOOKOUT	0.40	-				
Pr	roject Name ASTER	FALLS LOOKOUT	ROAD					
				-				
Proj	ject Number MT PR	A GLAC 10(64)						
tem and Lot S	Specifications							
Item 401	101-1000	Lot 1						
Property Spe	cifications							
	Select terr	plate -> FP-14, 40	1- Gyratory Metho	d (3/4 inch	nominal maxim	um) - Full Produ	ction	-
		,						_
			-					
Add proper	rty Prope	erties	Tar	rget specs	•	Delete se	ected rows	
Add prope	rty Prope	erties	Tai	rget specs	•	Delete se	ected rows	
Add prope Property	rty Prope	Target Type	Tar Target Value	rget spec:	Low Value	Delete sel	Estimated # tests	
Add proper Property AC-m	rty Prope	Target Type +/-dev	Target Value 4.9	rget specs	Low Value	Delete sel	Estimated # tests	
Add prope Property AC-m VMA	rty Prope Category (1 or 2) 1 1	Target Type +/-dev min	Target Value 4.9	rget spec:	Low Value	Delete sel	Estimated # tests 26 26 26	
Add proper Property AC-m VMA % DEN	ty Prope Category (1 or 2)	Target Type +/dev min min	Target Value 4.9	rget specs	Low Value	Delete sel	Estimated # tests 26 26 26 26	
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Add proper Property AC-m VMA % DEN VOIDS VFA Rice-SG 1"	rty Prope Category (1 or 2) 1 1 1 1 1 1 1 2	rties Target Type +/dev min min info only info only info only info only	Target Value 4.9	+ , - 0.40	Low Value 13.0 91.0	Delete se	Estimated # tests 26 26 26 26 26 26 26 26 26 26 26 26 26	
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Add proper Property AC-m VMA X DEN VOIDS VFA Rice-SG 1" 3/4"	rty Prope	rties Target Type +/dev min min info only info only info only info only info only info only info only	Target Value	+ , - 0.40	Low Value	Delete sel	Estimated # tests 26 26 26 26 26 26 26 26 26 26 26 26 26 2	
Add proper Property ACm VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2"	rty Prope	rties Target Type +/dev min min info only	Target Value 4.9	+, - 0.40	s	Delete sel	Estimated # tests 26 27	
Add propet Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8"	rty Prope	Target Type +/dev min min info only info only info only info only info only info only info only info only	Target Value 4.9	rget spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests 26 26 26 26 26 26 26 26 26 26 26 26 26	
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Add prope Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #8 #16	rty Prope Category (1 or 2) 1 1 1 1 1 1 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	rties Target Type +/dev min min info only info onl	Target Value 4.9	rget spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests	
Add prope Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/8" #4 #8 #16 #30	rty Prope	Target Type +/-dev min min info only info only	Target Value	rget spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests 26 26 26 26 26 26 26 26 26 2	
Add prope Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #8 #16 #30 #50	rty Prope Category (1 or 2) 1 1 1 1 1 1 2 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	rties Target Type +/dev min min info only info onl	4.9	rget spec:	Low Value 13.0 91.0	Delete sel	Estimated # tests 26 26 26 26 26 26 26 26 26 2	
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Add prope Property AC-m VMA % DEN VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/8" #4 #50 #200 DSRong DSRong	rty Prope Category (1 or 2) 1 1 1 1 1 1 2 2 2 2 2 1 2 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	rties Target Type +/dev min min info only info onl	4.9	rget specs ↓ + 0.40	Low Value 13.0 91.0 1.00 2.22	Delete sel	Estimated # tests	
Add prope Property AC-m VMA X DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #50 #50 #50 DSRorg DSRres 2000	rty Prope Category (1 or 2) 1 1 1 1 1 1 2 2 2 2 2 1 2 2 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	Target Type +/-dev min min info only info only	Target Value 4.9	rget spec:	Low Value 13.0 91.0 1.00 2.20	Delete sel	Estimated # tests 26 27 28 29 9	
Add prope Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 USRorg DSRorg DSRorg DSRorg DSRpav	Prope Category (1 or 2) 1 1 1 1 2 2 2 2 2 2 1 2 2 1 2 1 2 1 2 1 1 1 1	rties Target Type +/dev min min info only info onl	4.9	rget spec:	Low Value 13.0 91.0 1.00 2.20	Delete sel	Estimated # tests 26 26 26 26 26 26 26 26 26 2	
Add prope Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #500 DSRres DSRres DSRpav BBR s	rty Prope Category (1 or 2) 1 1 1 1 1 1 2 2 2 2 2 2 2 2 1 2 2 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	Target Type +/-dev min min info only info only	Target Value 4.9	*,- 0.40	Low Value 13.0 91.0 1.00 2.20	Delete sel	Estimated # tests 26 27 9 9 9 9 9 9 9	
Add prope Property AC-m VMA ½ DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #50 DSRorg DSRorg DSRav BBR s BBR m	Prope 1 1 1 1 1 2 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1	rties Target Type +/dev min min info only	4.9	• +, - 0.40	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel High Value -	Estimated # tests 26 26 26 26 26 26 26 26 26 2	
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Add propet Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8" #4 #16 #30 #50 #50 DSRorg DSRorg DSRorg BBR s BBR m	rty Prope	rties Target Type +/dev min min info only info onl	4.9	(+ 0.40	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel	Estimated # tests 26 26 26 26 26 26 26 26 26 2	
Add prope Property AC-m VMA ³ DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/4" #4 #8 #16 #30 #50 DSRorg DSRorg DSRres DSRpav BBR s BBR m	rty Prope	rties Target Type +/dev min min info only info onl	Target Value 4.9	rget spec: ↓+, - 0.40	Low Value 13.0 91.0 1.00 2.20 0.300	Delete sel	Estimated # tests 26 27 9 9 9 9 9 9 9 9 9 9 9 9	

View of completed full production target specifications.

f. When finished entering all of the properties, click "Save and Close." If the user presses "Quit," none of the changes made to the specifications will be saved and it will resort back to the data that was entered prior to opening the specification set.

- D. Creating a Secondary Lab Sample Set in the same Lot
 - a. From the home screen of the QL-PAY program, press the "Clear Fields" button located in the "Identify New or Existing Sample Set(s)" box or in the Sample Sets drop down menu.

🖳 Q	uality Level - Pay Factor A	Analysis							_ 🗆 🗙
File	Sample Sets Reports	Property spec	ifications Tes	st Resu	ults Help				
	Import	•							
	Export								
San	Delete samplesets								
	Copy to fields	:r 7	Item 1	Lot	Laboratory	Project name		Project numbe	r
	Clear fields	01 4	40101-1000 1	L	Contractor Lab	ASTER FALLS LO	OKOUT ROAD	MT PRA GLAC 1	0(64)
	Restore fields								
				_					
ld	entify new or existing sar	nple set(s)					7		
	Select all	Copy to fiek	is C	lear fi	ields Res	tore fields			
	Contract number	Item	L	ot	Laboratory				
[DTFH70-99-D-0001	40101-1000) 1		Contractor Lab		Spec	ifications	
					Contractor Lab	•			Exit QLPAY
					,		Test	t Results	

Operating the clear fields function.

b. Highlight the sample set to create a secondary lab and select the "Copy to Fields" button.
 This will copy the project information to be used for the new sample set.

	uality Level - P	ay Factor Analysis							- 0 X
File	Sample Sets	Reports Property spe	ecifications Tes	st Resul	lts Help				
0	-1- 0-40-1								
Sam	Transated	ion Contract number :	Ttom	Lot 1	Laboratory	Project name		Project number	
•		DTEH70-99-D-0001	40101-1000 1		Contractor Lab	ASTER FALLS LOC	DROIT ROAD	MT PRA GLAC 10	(64)
		D1111/0 33 D 0001	10101 1000 1		Sonoracour Dab	ASIEN IADD DOC	KOAD	AL THA GIAC ID	(01)
	antifu a cour or a	visting comple cot(a)					_		
100	entity new or e	existing sample set(s)							
	Select all	Copy to fie	lds C	lear fie	elds Res	tore fields			
-									
	Contract numb	er Item		.ot	Laboratory				
(Contract numb	er Item	L	.ot	Laboratory				
((Contract numb	er Item	L	.ot	Laboratory		Spec	ifications	
(Contract numb	er Item	L	.ot	Laboratory		Spec	ifications	
(Contract numb	er Item	L	.ot	Laboratory Contractor Lab		Spec	ifications	Exit QLPAY

Select copy to fields after highlighting sample set.

c. In the "Laboratory" drop down menu, choose "Central Lab."

Identify new or existing s	ample set(s)	
Select all	Copy to fields	Clear fields Restore fields
Contract number	ltem	Lot Laboratory
DTFH70-99-D-0001	40101-1000	1 Central Lab
		Central Lab

View after selecting Copy to fields and Central Lab.

d. Click on "Specifications." The specifications should be identical to the original sample set. Once the property specifications have been reviewed for accuracy, select "Save and Close."

	T C							
roject Spe	cincations							
Con	tract Number DTFH70	-99-D-0001						
	,							
ſ	Project Name ASTER		ROAD	-				
	Notername protein	ALLS LOOKOOT	nono					
_				-				
Pr	oject Number MTPRA	GLAC 10(64)						
tom and Lat	Casifortions							
iem and Loi	specifications							
Item 4	101-1000	Lot 1						
item [40	0101-1000	Lot Ji						
^o roperty Sp	ecifications Select temp	late ->						<u>•</u>
Property Sp Add prop	ecifications Select temp erty Proper	late ->	Tar	get specs	s	Delete se	lected rows	-
Property Sp Add prop	ecifications Select temp erty Proper	late ->	Tar	get specs	3	Delete se	lected rows	
Property Sp Add prop	ecifications Select temp erty Proper Category (1 or 2)	ties	Tar Target Value	get specs	s Low Value	Delete se	lected rows	•
Property Sp Add prop Property AC-m	ecifications Select temp erty Proper Category (1 or 2)	ties Target Type +/dev	Target Value 4.9	get specs	Low Value	Delete se	Estimated # tests	
Property Sp Add prop Property AC-m VMA	ecifications Select temp erty Proper Category (1 or 2) 1 1	ties Target Type +/-dev min	Tar Target Value 4.9	get specs	Low Value	Delete se	Estimated # tests	▲
Property Sp Add prop Property AC-m VMA % DEN	ecifications Select temp erty Proper Category (1 or 2) 1 1 1	ties Target Type +/-dev min min	Tar Target Value 4.9	get specs	s Low Value 13.0 91.0	Delete se	Estimated #tests 26 26 26 26	
Property Sp Add prop Property AC-m VMA X, DEN VOIDS	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1	late -> ties Target Type +/dev min min info only	Tar Target Value 4.9	get specs (+, - 0.40	s Low Value	Delete sel	Estimated # tests 26 26 26 26 26 26	×
Property Sp Add prop Property AC-m VMA % DEN VOIDS VFA	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 1	ties Target Type +/dev min min info only info only	Tar Target Value 4.9	get specs	Low Value	Delete sei	Estimated # tests 26 26 26 26 26 26 26 26 26 26 26 26 26	×
Property Sp Add prop Property AC-m VMA % DEN VOIDS VFA Rice-SG	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ties Target Type +/dev min min info only info only info only	Tar Target Value 4.9	get specs	Low Value	Delete se	Estimated # tests Estimated # tests Contemporate Estimated # tests Contemporate Estimated # tests Esti	
Property Sp Add prop Property AC-m VMA X, DEN VOIDS VFA Rice-SG 1"	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 2	Ities Target Type +/-dev min info only info only info only info only	Tar Target Value 4.9	get specs	Low Value 13.0 91.0	Delete se	Estimated # tests 26 26 26 26 26 26 26 26 26 26 26 26 26	×
Property Sp Add prop Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4"	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 1 2 2 2	late -> Target Type +/dev min min info only info only info only info only info only info only	Tar Target Value 4.9	get specs	Low Value 13.0 91.0	Delete se	Estimated # tests 26 26 26 26 26 26 26 26 26 26 26 26 26	×
Property Sp Add prop Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2"	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 1 2 2 2 2 2	ties Target Type T/dev min min info only i	Target Value 4.9	get specs	Low Value	Delete se	Estimated # tests Estimated # tests Estimated # tests 26 26 26 26 26 26 26 26 26 2	
Property Sp Add prop Property AC-m VMA X DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/8"	ecifications Select temp enty Category (1 or 2) 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2	Ities Target Type +/-dev min info only inf	Tar Target Value 4.9	get specs	Low Value 13.0 91.0	Delete se	Estimated # tests Estimated # tests 26 26 26 26 26 26 26 26 26 2	
Property Sp Add prop Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2" 3/4"	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 2 2 2 2 2 1 1 1 1 1 1 1 1	late -> ties Target Type +/dev min min info only info only	Tar Target Value 4.9	get specs	Low Value 13.0 91.0	Delete se	Estimated # tests Estimated # tests 26 26 26 26 26 26 26 26 26 2	×
Property Sp Add prop Property AC-m VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/8" #4 #8 **********************************	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 2 2 2 2 2 1 1 2 2 2 1 2	Ities Target Type +/dev min min info only	Tar Target Value 4.9	get specs	Low Value 13.0 91.0	Delete se	Estimated # tests Estimated # tests Estimated # tests 26 26 26 26 26 26 26 26 26 2	
Add prop Property Add prop Property ACm VMA % DEN VOIDS VFA Rice-SG 1" 3/4" 1/2" 3/4" 1/2" 3/4" 1/2"	ecifications Select temp erty Proper Category (1 or 2) 1 1 1 1 1 1 1 2 2 2 2 2 1 1 2 2 2 2 2	ties Target Type +/dev min min info only i	Tar Target Value 4.9	get specs	s Low Value 13.0 91.0	Delete se	Estimated # tests Estimated # tests 26 26 26 26 26 26 26 26 26	

View of copied target specifications for the Central Lab.

e. QL-PAY is now set up to handle all of the 40101 sampling and testing for the project.

- E. Entering Test Results
 - a. Highlight the sample set that the user has test results for.
 - b. Select the "Test Results" button at the lower right of the window or the "Test Results" drop down menu.

🖳 (Quality Level - P	ay Factor Ar	nalysis											X
File	Sample Sets	Reports F	Property spe	cifications T	est Resi	ults Help								
Sar	nple Set Select	ion												
	Imported	Contract	number v	Item	Lot	Laboratory		Project nam	e		Projec	t numl	ber	
		DTFH70-99	-D-0001	40101-1000	1	Contractor I	Lab	ASTER FALLS	LOOKOUT	ROAD	MT PRA	GLAC	10(64)	
		DTFH70-99	-D-0001	40101-1000	1	Central Lab		ASTER FALLS	LOOKOUT	ROAD	MT PRA	GLAC	10(64)	
	dentify new or e	existing sam	ple set(s)											
	Select all		Copy to fiel	ds	Clear fi	elds	Res	tore fields						
	Contract numb	er	ltem		Lot	Laboratory								
	1		1			1				Spec	ifications			1
						Central Lab		-		т	Desults		Exit	
										Tes	r Results			

Locations that can be selected to enter test results.

c. Begin entering the test result data, starting with Sample #1. Make sure to include consecutive sample numbers when entering in the test result data, i.e. 1,2,3,4, etc.

trac H7	t Number 0-99-D-000)1	ltem	000	Lot	Laboratory Contractor	Lab											
t R	esults Exclude	Sample	AC-m	VMA	% DEN	VOIDS	VFA	Rice-SG	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#200
_		1	5.62	18.1	90.5	7.1	60.8	2.467	100	100	85.2	65.9	40.1	24.6	20.3	12.4	9.7	5.8
		2	4.89	17.2	94.5	7.8	54.7	2.495	100	100								

View of consecutive test results being entered.

d. Three test results are needed before a statistical analysis can be computed.

- e. When entering test results for the central lab on split samples, make sure the test numbers match the corresponding contractor test result sample number or the analysis will not be valid.
- F. Calculating Pay Factor
 - d. Highlight the sample set for the contractor's lab and select the "Pay factor" under the reports drop down menu.

🖳 Quality Level - P	ay Factor Analysis	
File Sample Sets	Reports Property specifications Test Results Help	
	Short analysis	
	Pay factor	
Sample Set Select	Control charts Long analysis Report on Single or Paired Sample Sets	ry Project name Project number br Lab ASTER FALLS LOOKOUT ROAD MT PRA GLAC 10(64)
	List Selected Sample Sets List All Sample Sets Grand Summary	Lab ASTER FALLS LOOKOUT ROAD MT FRA GLAC 10(64)
Identify new or e	Random Sampling	
Select all	Copy to fields Clear fields	Restore fields
Contract number	er Item Lot Laborato	ny
	Central La	sb Specifications Exit QLPAY Exit QLPAY

Selecting the pay factor report for the contractor's lab.

e. The reports menu will appear. By selecting the "Pay factor" report, the "Calculate pay factor" button should already be checked. If not, select only the pay factor button and then select "OK." See the next page for the pay factor report selection.

🖳 Reports on single or	paired samplese	ts 🔄	
Pick reports			
List test results		Clear select	tions
Calculate pay facto	r		
Histograms			
Null Hypothesis			
Skewness and kurt	osis		
Control charts			
Sampleset differen	ces		
for Null hypothesis and o	control charts		
Primary Lab:	Contractor Lab		
Alternate Lab:	Central Lab		•
Range of sample numbe	rs		
@ All			
C Range:	to		
ОК		Cancel	

f. QL-PAY will produce a PDF report calculating the pay factor for the test results that have been entered under the sample set. When the estimated number of tests have been completed, QL-PAY will note that the testing has been completed and the final pay factor value.

The view below shows the final pay factor for Aster Falls Lookout Road. When multiple quality characteristics are being evaluated, the lowest pay factor of the individual characteristics is the controlling pay factor. This is shown on the following page on the pay factor printout. The quality characteristics have a 1.02, 1.05, and a 1.02 for the pay factors in each category, thus the 1.02 is used for the overall final pay factor for the item.

Note: The "Calculate Pay Factor" report was selected for example purposes only. For more information on other available reports see **Section 4 Reports.**

QUALITY LEVEL ANALYSIS & PAY FACTOR COMPUTATIONS									
Project Nan Project Numb Project I	ne: ASTER FA er: MT PRA (D: DTFH70-9	ALLS LOOK GLAC 10(64) 99-D-0001	Item Numb Lot Numb L	oer: 40101-1000 oer: 1 ab: Contractor I	ab				
		Quality	y Levels and Pay	Factors					
Quality Charac- teristic	Actual Target Value		Mean	Standard Deviation	PWL	Pay Factor			
AC-m	4.90	+,- 0.40	5.03	0.203	91	1.02			
VMA	13.00	min	15.98	1.270	100	1.05			
% DEN	91.00	min	92.50	1.151	91	1.02			
VOIDS	info		5.70	1.469					
VFA	info		63.11	5.738					
Rice-SG	info		2.482	0.009					
1"	info		100.00	0.000					
3/4"	info		100.00	0.000					
1/2"	info		83.21	1.775					
3/8"	info		68.31	1.582					
#4	info		41.91	1.166					
#8	info		25.11	1.767					
#16	info		20.34	1.318					
#30	info		13.42	1.120					
#50	info		9.89	1.047					
#200	info		6.29	0.423					
	TESTI FINA	NG COMPLI L PAY FAC	ETED FOR: 1.02						

Pay factor report with item receiving a 2% bonus.

7.4. Section 552 Structural Concrete Example

7.4. Section 552 Structural Concrete Example

This example will go through the process of setting up the sample sets for the sampling of 552 Structural Concrete.

TASK ORDER AWARD	Contract No. DTFH70-99-D-0001
	River Contractors, Inc.
Solicitation No. DTFH70-08-R-00021	P.O. Box 223
	West Glacier, MT 59936
MT PRA GLAC 10(64)	
ASTER FALLS LOOKOUT ROAD	AWARD DATE: March 10, 2015

Pay Item No.	Item	Quantity	Unit	Unit Price	Amount
55201-0800	Structural Concrete, Class D (AE)	400	CUYD	\$900.00	\$360,000.00

Example Section 552. — STRUCTURAL CONCRETE

552.20 Acceptance. See Example Table 552-9 for sampling, testing and acceptance requirements and the quality characteristic category.

Material for concrete will be evaluated under Subsections 106.02 and 106.03. Furnish production certifications with each shipment cementitious material.

The concrete mixture's slump, air content, density, and temperature will be evaluated under Subsections 106.02 and 106.04.

Concrete compressive strength will be evaluated under Subsection 106.05. The lower specification limit is the minimum required compressive strength at 28 days (f_c) specified in the contract. Remove and replace concrete represented by cylinders having a compressive strength less than 90 percent of the minimum 28-day strength (f'c).

Construction (including batching, placing, finishing, and curing concrete) of concrete structures will be evaluated under Subsections 106.02 and 106.04.

Falsework and forms will be evaluated under Section 562.

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
	Measured	Density	-	AASHTO T 121	1 per load		No		-
Concrete	and tested	Air content	-	AASHTO T 152 or AASHTO T 196	after at least 0.25 wd^3	Point of	No	Upon	-
(552.09(b))	conformance	Slump	-	AASHTO T 119	(0.25 yu) (0.2m ³) is	discharge	No	tests	-
	(106.04)	Temperature	-	Field measured	discharged		No		-
Concrete (552.09(b)	Statistical (106.05)	Compressive strength (28-day)	Ш	AASHTO T 23 & T 22	1 set per 30 yd ³ (25 m ³) but not less than 1 per day and not less than 5 sets total	Discharge stream at point of placing	Yes	28 days	Deliver verification cylinders to the CO or designated laboratory for scheduled testing

Example Table 552-9 Sampling, Testing, and Acceptance Requirements

 (Quality Level	I - Pay F	actor Analy	sis						[- • ×
Fi	le Sample	e Sets	Reports	Property Specif	ications	Fest Resu	ilts Help				
Sa	mple Set Se	election									
	Impo	rted	Contract	number	Item	Lot	Laboratory	Project	; name	Project	number
	_	-	_	_	_	-		_	_	_	
LL.	dentify new	or exis	ting sample	set(s)							
	Select	all	Con	v to fields	Clearf	elds	Restore fields				
				ytoricida		Citus	Restore fields				
	Contract n	umber	Ite	m	Lot	Labora	lory				
									Specificatio	ns	
							-1	-			ExitQLPAY
						1	<u> </u>		Test Resul	ts	

Initial view when opening QL-PAY.

A. Enter data in the "Identify New or Existing Sample Set" fields.

- a. Contract Number: This can be found on the front cover of the contract. For this example it is DTFH70-99-D-0001.
- b. Item: Place the Item Number in this field. This example will begin with 552 Structural Concrete (55201-0800).
- c. Lot: Generally speaking, there is only one lot for each item; therefore, the full production sample sets will always begin with Lot "1."
- d. Laboratory: Determine the lab that will be providing the test results. Typically, there will only be one reporting laboratory for the structural concrete item. Determine from the contract who is responsible for testing the concrete cylinders for compressive strength. See Example Table 552-9 for the sampling and testing requirements.

Identify new or existing s	ample set(s)		
Select all	Copy to fields	Clear fields Restore fields	
Contract number	ltem	Lot Laboratory	
DTFH70-99-D-0001	55201-0800	1 Central Lab	
		Central Lab	

View after entering data into the sample set box.

- B. Specifications
 - a. Click on "Specifications."

🖳 Q	uality Level - P	ay Factor	Analysis							
File	Sample Sets	Reports	Property s	pecifications	Test R	esults Help				
Sam	ple Set Select	ion								
	Imported Co	ontract	number I	tem	Lot I	Laboratory	Project name	Project	number	
-Id	entify new or e Select all	existing sa	mple set(s) Copy to f	ields	Clea	r fields	Restore fields			
	Contract numb	er	ltem		Lot	Laboratory				
ļ	DTFH70-99-D-(0001	55201-0	800	1	Contractor La	ab 🚽	Spec Test	i fications t Results	Exit QLPAY

Selecting property specifications.

b. Enter the Project Name and Number from the contract cover page into the corresponding fields.

Project Specifications								
Contract Number	DTFH70-99-D-0001							
Project Name	ASTER FALLS LOOKOUT ROAD							
Project Number	MT PRA GLAC 10(64)							

Project Name and Number under the specifications window.

c. Since there is not a template created for structural concrete, click on the "add property" button under the "Property Specifications" section. See the next page for the "add property" location.

ptions								
Project Spec	ifications							
Cont	ract Number DTFH70	-99-D-0001						
P	roject Name ASTER	FALLS LOOKOUT	ROAD]				
Pro	ject Number MT PRA	GLAC 10(64)]				
Item and Lot	Specifications							
Item 55	201-0800	Lot 1						
Property Spe	cifications							
Property Spe	cifications							
Property Spe	cifications Select tem	plate ->						<u>-</u>
Property Spe Add prope	cifications Select tem rty Proper	blate ->	Tar	get specs		Delete se	lected rows	<u>.</u>
Property Spe Add prope	cifications Select temp rty Prope	olate ->	Tar	get specs		Delete se	lected rows	Ţ
Property Spe Add prope	rty Proper	olate ->	Tar	get specs	ow Value	Delete se	Estimated # tests	
Property Spe Add prope	xtifications Select temp rty Proper Category (1 or 2)	ties	Tar	get specs	ow Value	Delete se	Estimated # tests	
Property Spe Add prope	rty Proper	vlate ->	Tar	get specs	ow Value	Delete se	lected rows	<u>.</u>
Property Spe Add prope	rtifications Select tem rty Properties Category (1 or 2)	slate ->	Tar	get specs	ow Value	Delete se	lected rows	<u>.</u>
Property Spe Add prope	rty Proper Category (1 or 2)	vlate ->	Tar	get specs	ow Value	Delete se	lected rows	<u>*</u>
Property Spe Add prope	rty Proper Category (1 or 2)	tties Target Type	Tar	get specs	ow Value	Delete se	ected rows	<u>*</u>
Property Spe Add prope	scifications Select tem arty Proper Category (1 or 2)	plate ->	Tar	get specs	ow Value	Delete se	ected rows	<u> </u>
Property Spe Add prope	scifications Select tem rty Proper Category (1 or 2)	tties Target Type	Tar	get specs	ow Value	Delete se	ected rows	<u> </u>

Add property tool under property specifications.

After reviewing the "Sampling, Testing, and Acceptance Requirements from Example Table 552-9," the only property that will be evaluated for 552 Structural concrete is the compressive strength.

In the "Select a Property window," scroll to the bottom of the window, select the "28 day" compressive strength property, and click "OK."
Property	Description							
E %0D	% oil distillate							
E %RES	% residue							
E rp77	residue penetration @ 77 F							
E rd39	39residue ductility @ 39.2 F							
E rd77	residue ductility @ 77 F							
E rTUF	residue toughness							
E rTEN	residue tenacity							
E %SOL	% solubility in trichlorethylene							
E SET	settlement test							
E %POL	% polymer							
*****	****							
	Portland Cement Concrete							
% AIR	air content of plastic concrete							
SLUMP	concrete slump							
28 day	28 day compressive strength							
		•						
	1	1						

Selecting 28 day strength property.

The "28 day strength" property will now be displayed in the property specifications section.

Project Speci								
	fications							
Contr	ract Number DTEH70	-99-D-0001						
Cont		0000000						
Pr	roject Name ASTER F	FALLS LOOKOUT I	ROAD					
Proj	ject Number MT PRA	GLAC 10(64)]				
Item and Lot S	Specifications							
Item 552	201-0800	Lot 1						
Property Spe	cifications							
	Select temp	olate ->						•
Add proper	Select temp	ties	Tar	natenare	1	Delete cel	ected mus	•
Add proper	Select temp rty Proper	ties	Tar	get specs		Delete sel	ected rows	•
Add proper	rty Proper	ties	Tar	get specs	Low Value	Delete sel	ected rows Estimated # tests	•
Add proper Property 28 day	rty Proper	ties	Tar Target Value	get specs	Low Value	Delete sel	Estimated # tests	•
Add proper Property 28 day	Select temp rty Proper Category (1 or 2) 1	ties	Tar Target Value	get specs	Low Value	Delete sel	Estimated # tests	•
Add proper Property 28 day	Select temp rty Proper Category (1 or 2)	ties	Tar Target Value	get specs	Low Value	Delete sel	Estimated # tests	•
Add proper Property 28 day	Select temp rty Proper Category (1 or 2)	ties	Tar Target Value	get specs	Low Value	Delete sel	Estimated # tests	•
Add proper Property 28 day	Select temp ty Proper Category (1 or 2)	ties	Tar Target Value	get specs	Low Value	Delete sel	Estimated #tests	
Add property Property 28 day	Select temp ty Proper Category (1 or 2)	ties	Tar Target Value	get specs	Low Value	Delete sel	Estimated # tests	×
Add property Property 28 day	Select temp ty Proper Category (1 or 2) 1	ties	Tar	get specs	Low Value	Delete sel	Estimated #tests	×

View after entering project name and number and selecting the properties.

- C. Adjusting Property Specifications to Match Contract
 - a. After opening the specifications dialog box and selecting the properties, the Sampling, Testing, and Acceptance Requirements along with the concrete compressive strength from the contract will be needed to finish inputting the correct data.
 - b. To adjust the properties, highlight the property in the lower table to adjust and click on the "Target Specs" button. This will bring up a new window to enter the testing parameters for the particular property. Determine the testing parameters for the property and select the appropriate target specifications, i.e. min, max, etc.

In this example, highlight the "28 day" property in the lower table and select "Target Specs." This is shown on the following page.

Property \$	Property Specifications Select template ->												
Add prop	Propert	ies	Targe	t spec	s D	elete select	ed rows						
Property	Category (1 or 2)	Target Typ	Target Value	+, -	Low Value	High Value	Estimated # tests						
28 day	1												
_		-											
-													
-													
_													
1													

Highlight the property and select Target Specs.

Each field that is not grayed out will need to be filled in with data from either the sampling and testing specification or the contract.

🖳 Target specific	ations		
	28 day		
Critica	lity Level (1 or 2)		
Target Specifica	ations		
(€ +/- dev	Target value +/- allowable deviation	Target Value	
⊂ min	Minimum	Allowable Deviation	
⊖ max	Maximum	,	
C mean	Mean as Target Value within range	Low Value	
○ info	Property is Informational Only	High Value	
Estimated	number of tests		
	ОК	Cancel	

View of the Target Specifications window.

- i. The criticality level is found in Example Table 552-9 under category.Compressive strength is a category 2.
- The target specification for compressive strength is "min." When this button is selected the only changeable field in the target specifications subsection is the "low value." The target value will be the value stated in the contract documents. In this case, using the contract, the minimum compressive strength is 4000 psi.
- c. The estimated number of tests needs to be the actual number of tests that will be taken throughout the project. This number can be changed at a later date if the number of tests increases or decreases, but the final number of tests taken should be reflected under each property at the completion of the item. To determine the number of tests, divide the contract quantity for the item by the sampling frequency and use that value for all of the estimated number of tests. For this example, the contract requires 400 YD³ and the sampling frequency is 1 per 30 YD³ (from Example Table 552-9); therefore, the estimated number will be 13 tests for this project.

🖳 Target specific	ations		
	28 day		
Critica	lity Level (1 or 2) 2		
Target Specifica	ations		
C +/- dev	Target value +/- allowable deviation	Target Value	
☞ min	Minimum	Allowable Deviation	
O max	Maximum		
C mean	Mean as Target Value within range	Low Value	4000
⊖ info	Property is Informational Only	High Value	
Estimated	I number of tests 13		
	ОК	Cancel	

28 day entered target specifications.

- d. After the target specifications are entered, click "OK."
- e. When finished entering all of the properties, click "Save and Close." The completed property specifications window is shown on the next page.

Diptions Project Specifications Contract Number DTFH7 Project Name ASTEF Project Number MT PR Item and Lot Specifications Item [55201-0800 Property Specifications Select tem Add property Prope Property Category (1 or 2) 28 day 2	0-99-D-0001 FALLS LOOKOUT A GLAC 10(64) Lot 1 plate ->	r ROAD	get specs		Delete set	ected rows	•
Project Specifications Contract Number DTFH7 Project Name ASTEF Project Number MT PR Item and Lot Specifications Item 55201-0800 Property Specifications Select ten Add property Property Category (1 or 2) 28 day 2	0-99-D-0001 FALLS LOOKOUT A GLAC 10(64) Lot 1 plate ->	F ROAD	get specs		Delete sel	ected rows	<u>v</u>
Contract Number DTFH7 Project Name ASTEF Project Number MT PR Item and Lot Specifications Item [55201-0800 Property Specifications Select ten Add property Category (1 or 2) 28 day 2	0-99-D-0001 FALLS LOOKOUT A GLAC 10(64) Lot 1 plate ->	F ROAD	rget specs		Delete sel	ected rows	<u>v</u>
Project Name ASTEF Project Number MT PR Item and Lot Specifications Item [55201-0800 Property Specifications Select ter Add property Prope Property Category (1 or 2) 28 dey 2	FALLS LOOKOUT A GLAC 10(64) Lot 1 plate ->	T ROAD	rget specs		Delete set	ected rows	×
Project Number MT PR Item and Lot Specifications Item [55201-0800 Property Specifications Select ten Add property Prope Property Category (1 or 2) 28 day 2	A GLAC 10(64) Lot 1 plate ->	Tar	rget specs		Delete sel	ected rows	<u> </u>
Item and Lot Specifications Item [55201-0800 Property Specifications Select tem Add property Property Property Category (1 or 2) 28 day 2	Lot 1	Tar	rget specs		Delete sel	ected rows	•
Item 55201-0800 Property Specifications Select ten Add property Propert Category (1 or 2) 28 day 2	Lot 1 plate ->	Tar	rget specs		Delete sel	ected rows	•
Property Specifications Select ter Add property Prope Property Category (1 or 2) 28 day 2	plate ->	Tar	rget specs		Delete sel	ected rows	T
Add property Property Property Category (1 or 2) 28 day 2	rties	Tar	rget specs		Delete sel	ected rows	•
Add property Proper Property Category (1 or 2) 28 day 2	rties	Tar	rget specs		Delete sel	ected rows	_
Add property Property Property Category (1 or 2) 28 day 2	erties	Tar	rget specs		Delete sel	ected rows	
Property Category (1 or 2) 28 day 2		-					
Property Category (1 or 2) 28 day 2							
28 day 2	Target Type	Target Value	+,+	Low Value	High Value	Estimated # tests	
	min			4000		13	
Save							

Completed target specifications prior to selecting Save & Close.

If the user presses "Quit," none of the changes made to the specifications will be saved and it will resort back to the data that was entered prior to opening the specification set.

- f. QL-PAY is now set up to handle all of the 55201 sampling and testing for the project.
- D. Entering Test Results
 - a. Highlight the sample set that the user has test results for.
 - b. Select the "Test Results" button at the lower right of the window or the "Test Results" drop down menu.

💀 Q	Quality Level - Pay Factor Analysis												
File	Sample Sets	Reports	Property spe	ecifications Te	est Res	ults Help							
Sam	Sample Set Selection												
	Imported Contract number Item Lot Laboratory Project name Project number												
•		DTFH70-9	99-D-0001	55201-0800	1	Central Lab	A	STER FALLS	LOOKOUT I	ROAD	MT PRA GLA	: 10(64)	
	lentify new or o Select all Contract numb	existing sa	nple set(s) Copy to fie Item	lds (Clear f Lot	ields	Resto	ore fields ▼		Spec	ifications	Exi	t QLPAY

Locations that can be selected to enter test results.

c. Begin entering the test result data, starting with Sample #1. Make sure to include consecutive sample numbers when entering in the test result data, i.e. 1,2,3,4, etc.

ont	ntract Number		Item		Lot	Laboratory		
DTFH70-99-D-0001		001	55201-0800		1	Central Lab		
es	t Results							
	Exclude	Sample	28 day	Remark	¢ 👘			
		1	4800					
		2	4750					
		3	4200		- 8			
		4	4625					
		5	4250		- 8			
		6	4300		- 8			
		7	4450					
		8	4700		_			
		9	4200		_			
9		10						
					- 8			

View of consecutive test results being entered.

- d. Three test results are needed before a statistical analysis can be computed.
- F. Calculating Pay Factor
 - a. Highlight the sample set for the contractor's lab and select the "Pay factor" under the reports drop down menu.

rile	Sample Sets	Reports	Property Specificat	ions Test Results	Help				
		Sho	rt analysis						
ampl	e Set Selectio	Pay	factor						
	Imported	Con	trol charts		ratory	Project nam	e	Project num	nber
		Lon	g analysis		Table		LOOKOUT DOLD	MT 000 0700	10/00
		Rep	ort on Single or Paire	d Sample sets	ractor Lab	ASIER FALLS	LOOKOUI ROAD	MI PRA GLAC	10(64
		List	selected Sample sets						
		List	all Sample sets						
		Gran	nd Summary						
		Ran	dom sampling						
_									
Iden	tify new or exis	sting samp	le set(s)	Clear fields	Restore fields]	-	-	
lden	tify new or exis Select all ntract number	sting samp Cop It	ele set(s) by to fields	Clear fields Lot Laborato	Restore fields]			
lden Co	tify new or exis Select all ntract number	sting samp Cop It	le set(s) py to fields	Clear fields Lot Laborator	Restore fields)	pecifications		

Selecting the pay factor report for the contractor's lab.

b. The reports menu will appear. By selecting the "Pay factor" report, the "Calculate pay factor" button should already be checked. If not, select only the pay factor button and then select "OK."

Pick reports										
List test results Clear selections										
✓ Calculate pay factor										
Histograms										
Null Hypothesis										
Skewness and kurtosis										
Control charts										
☐ Sampleset differences										
for Null hypothesis and control charts										
Primary Lab: Contractor Lab										
Alternate Lab: Central Lab										
Range of sample numbers										
G All										
C Range: to										
OK Cancel										

Pay factor report selection.

c. QL-PAY will produce a PDF report calculating the pay factor for the test results that have been entered under the sample set. When the estimated number of tests have been completed, QL-PAY will note that the testing has been completed and the what the final pay factor for the item is.

The view below shows the final pay factor for Aster Falls Lookout Road. When only using a category 2 property specification, the maximum pay factor is a 1.00 when the PWL is above 90. This is shown on the following page on the final pay factor report.

Note: The "Calculate Pay Factor" report was selected for example purposes only. For more information on other available reports see **Section 4 Reports.**

	QUALITY LEVEL A	NALYSIS & PAY P	ACTOR COMPUTATI	ONS							
Project Name: ASTER FALLS LOOKOUT ROAD Item Number: 55201-0800 Project Number: MT PRA GLAC 10(64) Lot Number: 1 Project ID: DTFH7099D0001 Lab: Central Lab											
		Specification	18								
Quality Characteristic: 28 day Category: 1 Number of Tests, actual: 9; estimated: 13 (min) Minimum: 4000											
	Quality Levels and Pay Factors										
Quality Charac- teristic	Actual Target Value	Mean	Standard Deviation	PWL	Pay Factor						
28 day	4000.00 min	4475.00	246.855	99	1.04						
Projected Pa	Curren y Factor Based On Q	t Pay Factor: 1 uality Level: 1	.04								

Structural concrete pay factor resulting in a 1.00.

7.5. Exporting Data Example

7.5. Exporting Data Example

Sample sets can be exported from QL-PAY in three separate functions: by the selected project, all projects, or selected sample sets.

- 1. Selected Project: This will export any sample sets associated with the project that is currently highlighted.
- 2. All Projects: This option will export all projects within the QL-PAY window.
- 3. Selected Sample Sets: This will only export the individual sample set(s) the user has selected.
- a. Select the appropriate exporting function needed by going to "Sample Sets" → "Export "→ "Export _____."

🖳 Qua	lity Level - Pay Fac	tor Analysis							
File	Sample Sets R	eports Prop	erty Specifications	Test Results	Help				
Samp	Import	•							
	Delete Samp Copy to fiel Clear fields Restore field	ble sets ds ds	Export all pro Export select Export select Clear Export	ojects ted project ted sample sets directory	ry Dab	Project ASTER FAI	name LLS LOOKOUT ROAD	Project number MT FRA GLAC 10(64)	
Iden	tify new or existin Select all	g sample set(s) Copy to fi	elds Cle	ar fields	Restore fields	1			
Co	ntract number	Item	Lo	t Laboratory		-			
				Central Lab	▼		Specifications Test Results	Exit QLPAY	

Exporting sample set functions.

b. The data set(s) will be saved in a single file and sent to the export directory. This file can now be stored on the computer or sent electronically to be used by others.



Exported file directory.