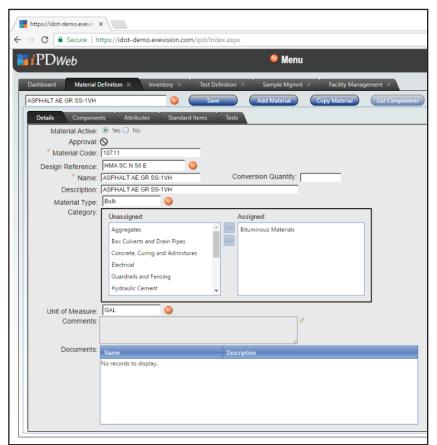# MATERIALS MANAGEMENT

The Materials Management Subsystem (MMS) is a key component of ExeVision's integrated Project Development (iPDWeb) solution and provides a robust materials testing and management solution with the added benefit of working hand-in-hand with the iPD Construction Management Subsystem (CMS) to increase project efficiency. With iPDWeb CMS tracking item placements and job site activities, the integration with MMS allows notifications to be sent when items have not met testing schedules or specifications, to prevent item exclusions from pay estimates and avoid delaying contractor payments. The interplay of MMS and CMS also creates the ability to proactively schedule tests by using reports of upcoming testing activities.

With MMS, agencies can provide contractors as much transparency as desired into the entire materials management process. Contractors have access to view missing tests, test results, upcoming test requirements, etc. The process flow design provides for the greatest amount of work to be completed in a centralized fashion, without eliminating the flexibility for authorized personnel to make exceptions and modifications on a job-by-job basis as required. This improves efficiency, accuracy and quality while still meeting the needs of a dynamic construction environment.

Materials Setup

Users define materials and material attributes, their component parts, and their relationship with contract pay items. Materials engineers also set up prequalified materials, brands, vendors, locations, and the relationships between materials and tests based on frequency, quantity or other agency specific requirements. Material inventory locations may be created and materials tracked and tested at these locations. During the contract setup process, the authorized user assigns the appropriate material to each pay item. The system makes default assignments based on the Material definition, permitting engineers to override these defaults, as is the case with other default settings in MMS. Once the material assignments are complete, the engineer sets up the required tests including assigning the parameters and passing values for each test and test frequencies or quantities.

When pay items are placed or installed, they are recorded in the CMS Ledger and the engineer selects the Material Source for that particular placement. MMS automatically tracks the date, amount and location of each placement and calculates when tests are required for each material based on the defined test frequencies or quantities. If test requirements are not met, notification is provided and rules may be configured to disallow a Ledger Entry from inclusion on a Pay

Estimate. MMS also creates pay factor/adjustments based on test results which are then included on CMS pay estimates as defined by agency business rules.

MMS is designed to work well not only in contract-centric situations but also addresses the needs of differing management approaches—agencies may manage and test materials in varying ways to match their business processes with formal approval processes tailored to the agency, established with the aid of the integrated iPD workflow engine.

In addition to managing all material-related testing and inspections, MMS keeps track of supporting information including:
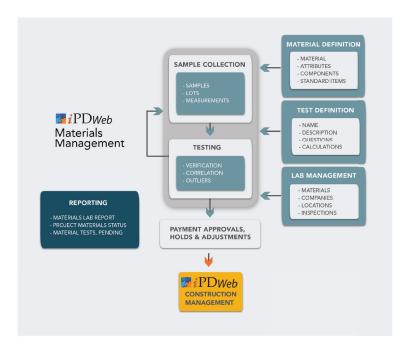
- *Testers: with current certifications, training status, and employer.*
- *Vendors: with associated products, brands, certifications, locations, etc.*
- *Locations/Plants: with products/materials produced or stored, testing and certifications, etc.*

Integrated LIMS

MMS includes a Laboratory Information System (LIMS) for defining an agency's own Material tests. Central to the LIMS is a highly flexible test definition engine that enables users to configure tests with virtually any combination of questions and answers by specifying text boxes, dropdown lists, radio buttons and checkboxes. Data validations, including valid data ranges, are then established along with required fields. Error messages and other context user interface attributes are defined by the user.

Calculations for scoring the defined material tests are created by a sophisticated calculation engine that may include applying functions to individual fields on the test form, combining and referencing multiple fields in a single computation, defining conditional calculations, grouping functions, etc. Calculations are incorporated in the tests and automatically computed when the test is performed. Test results may include "pass", "fail" or some other specified result determined by a test definition.

The LIMS system also supports definitions of Sample management pages for different types of samples. Samples can be tracked from collection to the laboratory (field or central) and include assigning testers, moving samples among laboratories, splitting samples, correlating split samples and retesting, independent verification testing, etc. Various management reports for assessing laboratory performance and managing the LIMS are available.

PDWeb Materials Management functionality includes the following:

- Define materials, vendors and locations and establish relationships
- Define material assemblies and test assembly components
- Define laboratories for off-site testing and certifications for materials production
- Track inventory including test sites
- Assign materials to bid items with item substitutions
- Create reports for materials inventory and materials testing requirements based on contractor's bid item submission
- Sample management: track location, tests, testers, results, vendor certifications, etc.
- Define tests, calculations, value ranges, etc., and maintain test libraries
- Provide agency employees or contractors access rights to log into MMS and create, conduct, and record materials tests
- Calculate pay estimate adjustments in CMS based on testing requirements and results from MMS
- Manage test schedules based on item quantities and/or test frequencies
- And much more...

About ExeVision

ExeVision, Inc., is the developer of the iPDWeb solution, a comprehensive, project development system fully integrating all functional aspects of road and bridge construction from estimate creation and electronic bidding, through final contractor payment. ExeVision is also the creator of the iCXWeb application, designed to assist contractors in the creation and submission of responsive bids and facilitate seamless bid communication between contractors and the agency. These two solutions provide substantial time and cost savings for the state transportation agencies that have implemented them. ExeVision has been developing and deploying mission critical applications for over 20 years and is a Utah based company.

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iPDWeb Materials Management

SAMPLE COLLECTION
- SAMPLES
- LOTS
- MEASUREMENTS

MATERIAL DEFINITION
- MATERIAL
- ATTRIBUTES
- COMPONENTS
- STANDARD ITEMS

TEST DEFINITION
- NAME
- DESCRIPTION
- QUESTIONS
- CALCULATIONS

TESTING
- VERIFICATION
- CORRELATION
- OUTLIERS

LAB MANAGEMENT
- MATERIALS
- COMPANIES
- LOCATIONS
- INSPECTIONS

REPORTING
- MATERIALS LAB REPORT
- PROJECT MATERIALS STATUS
- MATERIAL TESTS, PENDING

PAYMENT APPROVALS, HOLDS & ADJUSTMENTS

iPDWeb CONSTRUCTION MANAGEMENT

EXEVISION INCORPORATED