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Association for the Management and Operations  
of Transportation Infrastructure Assets

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# Flexible Asset Management Services (FAMS)

*An Alternative Approach to Contracting  
for Maintenance Services*

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### **Flexible Asset Maintenance Services (FAMS)**

**Background:** Transportation agencies working with their industry partners – contractors, engineers and vendors --- have greatly advanced the state of the art in maintenance contracting over the last decade. These efforts have resulted in improved levels of maintenance service at predictable costs while providing for a safe environment for the motorists.

The experience gained by both partners has led to improvements in how maintenance is outsourced and identified areas for further advancement. Recognizing this the transportation industry through its association, AMOTIA, has contracted with an independent consulting firm KPMG to identify new and advanced contract mechanisms that can be effective across a broad spectrum of political, legislative and cultural environments. The approach KPMG used to accomplish these objectives consisted of interviews and surveys with Transportation Agencies and with AMOTIA members. A summary of findings and recommendations is provided below.

**KPMG Findings:** KPMG, through an independent market study of outsourced maintenance contracting across US state Departments of Transportation (DOTs), determined that a growing need exists for a hybrid outsourced maintenance contracting solution. In the future, outsourcing will continue to increase due to DOT funding constraints, staff constraints, and skillset constraints (primarily the growing influence of advanced assets/systems like ITS and autonomous vehicles). DOTs want flexibility in the contracting mechanism for outsourced maintenance in order to adapt the scope of services to the needs and challenges they face in their unique environments as they evolve. Ultimately, DOTs are singularly focused on efficiently and effectively achieving their target Level of Service (LOS) above preference to any specific contracting method (be it specific, directed work task orders or a broader performance specified maintenance contract).

**KPMG Recommendations:** In light of these changing demands, AMOTIA members need to look at their existing business models and consider how best to adjust to meet the needs of the DOT community. Based on extensive interviews with DOTs across the US – and in light of a shift in DOT needs towards flexible outsourced maintenance solutions – KPMG recommends AMOTIA members work with the DOT community to consider the build-out and market deployment of Flexible Asset Management Services (FAMS) as described below.

FAMS is a suite of offerings to provide DOTs with the ability to choose customized maintenance services. FAMS offerings range from fully staffed maintenance crews working under the direction of DOT managers, to comprehensive performance based maintenance programs delivering continuous performance 24/7 under a single FAMS contract. The FAMS Program enables DOTs to customize the procurement to meet their specific needs by allocating work requirements into an appropriate combination of four contracting methodologies for optimum efficiency to include:

- Lump-sum performance based maintenance services;
- Unit/cycle pricing for identified maintenance activities (be it specialized equipment or material dependent activities);
- Staff augmentation; and
- Individual Staff Hours for technical management and/or engineering services.

**FAMS Contract Approach:** The FAMS approach incorporates the successful elements of the lump sum performance based approach for the delivery of routine and preventive maintenance along with the unit price/cycle approach for owner prescribed and directed work activities for major maintenance/repair and capital maintenance; together with hourly rates for certain staffing functions and staff augmentation for the in-house workforce. This approach, as detailed in the table below, enables an agency to customize the

procurement to meet their specific needs by allocating work needs into a combination of the contracting methodologies. These services would be contracted under a single procurement (RFP) with the appropriate contract terms and conditions. A key to success is ensuring that the appropriate work activities are carefully chosen for each contracting element.

| FAMS Contracting Elements    | Unit of Measure   |
|------------------------------|---|
| <b>Performance Based</b>     | Fixed monthly payment amount for continuous delivery of performance meeting or exceeding established performance targets      |
| <b>Unit / Cycle</b>          | Production units typically measured in tons, acres, gallons, square feet, or lane miles, pricing may be per unit or per cycle |
| <b>Staff Augmentation</b>    | 2/3/4 Person Crew, including transportation to worksite   |
| <b>Individual Staff Hour</b> | Staff hour for engineering, inspection, and management personnel  |

**Performance Based Element:** It has been successfully demonstrated through a review of case studies that many routine and preventive maintenance activities can be performed under a performance based lump sum approach. Such activities typically include overall contract management, maintenance and repair for potholes, turf rutting, drainage inlet cleaning, roadway debris removal, roadside litter removal, mowing, minor striping and RPM repairs, lamp replacement, bridge joint cleaning, third party damage repair and replacement, facility maintenance, small signs and other routine and preventive maintenance activities. The performance of these maintenance activities have to adhere to key performance indicators with applicable penalties, and the overall system condition would be periodically measured with an appropriate maintenance rating program.

**Guiding Principles for Performance Based Element:**

- Should be a significant portion of the overall FAMS contract to drive efficiencies from the bundling of other elements
- Longer term contract durations (5 to 7 years) with “good performance” renewal periods are desirable to create contractual incentives for asset life-cycle approach, cost savings and to help manage risk
- Should be based on large geographic areas or long corridors, typically fence to fence
- Contractor selection should be based on both technical proposal and price (best value)
- Contractor performance is measured using established performance measures (such as: timeliness, condition, quality) on a defined periodic basis
- Procedures and policies are incorporated within contract requirements
- Contractor assumes management responsibility and direct accountability for achieving and maintaining performance targets
- Contractor’s proposal commitments are incorporated within contract terms
- Fixed lump sum price is paid in equal or specified monthly payments to the Contractor

**Key Benefits of Performance Based Element:**

- Typically results in the largest cost savings to the agency due to a larger and more efficient grouping of work
- Optimizes Agency efficiency by reducing its efforts to oversee and administer
- Transfers risk to the Contractor for determining the annual quantity of work needed to meet the established performance measures
- Assures the Contractor has a stake in the game and will act/ behave more like an Owner

The performance based activities would be paid for under a fixed lump sum amount as bid by the contractor or as preset lump sum established in the bid documents. In the latter case, the industry would partner with the owner to establish a realistic lump sum for the system.

**Unit Price/Cycle Element:** Some owners have included work activities for major maintenance/repair and capital maintenance to be performed on a prescriptive basis and paid for on a unit price basis. The kinds of activities that may typically be included are: full depth concrete repairs, resurfacing, bridge joint replacement, pile jacketing, new landscaping installations, hardscaping, mowing, major restriping, air conditioner replacements, ROW fence line replacements, large sign panel replacements and additional lifecycle replacements.

The performance of these activities would have to adhere to the owner’s prescriptive specifications and would be paid for on a unit price/cycle basis with the prices as bid by the contractor against owner established minimum quantities of work. The unit price element allows the owner complete discretion on which activities to perform and the quantity of work desired. An important consideration, however, is scheduling the work in a partnering approach to the benefit of both parties. One such successful approach to scheduling work is for the contractor to periodically survey the system to identify the work needs for presentation on a monthly/bi-monthly basis for owner review, revision and approval.

**Guiding Principles for the Unit Price/Cycle Element:**

- Agency should provide estimated quantities per year for bidders
- Contractor performance is evaluated for compliance with Agency’s prescriptive specifications including procedures and standards
- Agency is responsible for determining which items of work to perform, when to perform work, and the quantity of work to be completed
- Contractor and Agency cooperate to identify and efficiently schedule work activities
- Agency should use a minimum threshold of a single day’s workload for all task orders
- Contractor is compensated for work completed on a unit price/cycle basis in accordance with the Contractor’s bid prices on a monthly basis
- Actual Quantities performed shall be within +/-25% of estimated bid quantities or be subject to price rebalancing
- Agency becomes responsible for meeting the LOS criteria for the covered asset

**Key Benefits of the Unit Price/Cycle Element:**

- Agency retains control of decisions of what work is performed and when it is performed
- Allows an Agency flexibility to adjust work quantities to better match budget uncertainties
- Accommodates unknown work needs at time of contract development

**Staff Augmentation Element:** Some agencies may elect to augment their in-house forces with crews provided by the contractor. In this case the agency would specify the crew and equipment composition along with the estimated hours and the contractor would provide fixed rates for the crew.

**Guiding Principles for the Staff Augmentation Element:**

- Staff Augmentation shall be used when the Agency desires to fully manage parts of the work plan and wants to control means/methods of work execution
- Agency identifies crew types including staffing classifications, number of crew members, and equipment needed for each crew type
- Contractor provides a fixed hourly rate for each crew type identified
- Agency establishes a schedule of work for each crew type
- Work activities are directed by either the Agency or Contractor
- Compensation is paid to Contractor for the total number of hours utilized for each crew type on a monthly basis
- Agency should guarantee 32-40 hours per week with a minimum duration(desired minimum of 3 months)

**Key Benefits of the Staff Augmentation Element:**

- Provides supplemental or specialized resources for routine and emergency operations
- Provides flexibility to the Agency to shift in-house resources to other activities or within the Agency
- Provides full flexibility for dealing with political and public priorities

**Hourly Rate Element:** Some specialized activities, especially those where risk allocation is problematic, are more cost effectively performed on an hourly rate basis. Activities such as snow and ice control, bridge inspection and road patrols typically fit into this element. The number and type of personnel/services would be specified at the start of the contract.

**Guiding Principles for the Hourly Rate Element:**

- These services should be used when industry standard positions and/or regionally established specialty positions are required periodically and at the Agency's discretion (CEIs, master electricians, A/C technicians, crane operators, etc.)
- Agency identifies work needs and specialty resources required for completion of desired activities
- Contractor provides a fixed hourly rate for each identified activity
- Agency establishes the quarterly work plan and schedule of work
- Work activities are directed by the Agency or Contractor
- Compensation is paid to Contractor for the total number of hours utilized for each activity on a monthly basis
- Number of hours in the bid documents must be realistic, otherwise Contractors may “unbalance” their bid amounts for these bids, which will result in unfair/unbalanced bids.

**Key Benefits of the Hourly Rate Element:**

- Allows the agency to adjust the work effort based upon changing demands
- Provides specialized resources that may not be needed on a full time basis
- Allows flexibility to assign external resources to tasks when work needs exceed the availability of internal resources

**Key Implementation Considerations:** The key implementation considerations are those associated with alignment of owners’ overall program goals and objectives with structure of the FAMS contract, alignment of contract language with expectations, use of partnering, development of long term maintenance plans, and sharing of knowledge. Soliciting industry feedback and actively engaging the marketplace will help the agency refine the specific details of its maintenance service contract vehicle, helping to streamline procurement and provide both preferred solutions for the agency while providing bidders clarity and understanding of agency expectations.

FAMS serves as a “force multiplier” for agencies, allowing contractor resources to deliver services while freeing up agency resources to focus on other critical elements of the network and development of longer-range maintenance plans to address the needs of the network. Incorporating clauses on knowledge transfer can ensure that the gains achieved are sustainable for the overall maintenance program. Key areas of knowledge transfer include asset management program governance, program management, activity management, IT solutions, and specific maintenance activity capabilities and technical competencies.

**Summary of Benefits:** Implementation of a FAMS contract will provide the agency with greater flexibility especially with the ability to direct work while providing for the benefits associated with performance based work accomplishment. Other benefits that have been identified include:

- Responsive to meeting a variety of demands from a variety of stakeholders.
- Flexibility to specify performance based services as well as directed works.
- Access to and direction of supplemental maintenance crews and staffing.
- Expandable to non-traditional maintenance services such as ITS work activities.

| DOT Need   | FAMS Services Benefit   |
|--|---|
| <b>Staffing</b>  | <ul style="list-style-type: none"> <li>• DOTs are facing budgeting and staffing restraints due to an expanding network</li> <li>• Facing a wave of retirements while not fully replacing staff and the lost years of expertise</li> <li>• FAMS contracts allows DOTs to supplement crews with specialty technicians, resources for emergency response, etc.</li> </ul>  |
| <b>Flexibility</b>   | <ul style="list-style-type: none"> <li>• DOTs face a variety of demands from a variety of stakeholders</li> <li>• FAMS helps DOTs meet high priority / critical needs (safety, reliability, incident response, etc.)</li> <li>• Access to the right tools, techniques, and personnel as contracted through FAMS allows DOTs to better respond to those needs</li> </ul> |
| <b>Ability to direct work in addition to performance specification</b>                   | <ul style="list-style-type: none"> <li>• Ultimate contract flexibility for DOTs – ability to specify performance-based services as well as directed works</li> <li>• Directed use of Contractor-provided specialized equipment/materials</li> <li>• Emergency services for severe weather and other major events</li> </ul>   |
| <b>Collaboration and proactively addressing issues</b>                                   | <ul style="list-style-type: none"> <li>• Cost effective pricing, administratively efficient and responsive contracting structure</li> <li>• Refined project development and implementation</li> </ul>   |
| <b>Longer-term planning and asset management vision (less reaction)</b>                  | <ul style="list-style-type: none"> <li>• Specialized services for planning, design, construction, repair and maintenance; supervision, inspection, and field engineering; and management and administration</li> </ul>  |
| <b>Assigning the right personnel (with the right skills) to the right issue / assets</b> | <ul style="list-style-type: none"> <li>• Access to DOT directed supplemental maintenance crews</li> <li>• Access to highly skilled engineering and/or management technical resources</li> </ul>   |
| <b>Achieve Outcomes at a set price with reduced risk</b>                                 | <ul style="list-style-type: none"> <li>• Performance-based work in FAMS contracts assures outcomes and shifts risk to the Contractors</li> <li>• Also makes Contractor take “ownership” of the assets</li> </ul>  |

The FAMS contract approach as the name implies is a new flexible tool available for the transportation sector partners to utilize in the accomplishment of their mission.

**Illustrative Example:** The following example better illustrates how the FAMS Approach could be used.

Agency XYZ is outsourcing a section of rural interstate encompassing 100 centerline miles, 420 lane miles, 14 interchanges with a contract duration of seven years with an option for another seven years. The contract includes four elements:

1. A performance based element for routine and preventive maintenance to be paid on a fixed price monthly sum.
2. A unit price cycle element to include work activities for: line striping, full depth concrete repairs, ROW fence renewal, additional mowing cycles and asphalt ramp repairs.
3. A staff augmentation element to add a crew and equipment to perform structure repairs.
4. An hourly rate element for Snow Plow Trucks.

Table 3 provides a completed bid sheet for this example contract.

**Table 3 – Example Bid Sheet**

|    | Element   | Unit        | Quantity | Rate      | Extension    |
|----|---|-------------|----------|-----------|--------------|
| 1  | Performance Based Activities:<br>- Overall contract management<br>- Maintenance and repair of potholes<br>- Drainage inlet cleaning<br>- Roadway debris removal<br>- Lamp replacement<br>- Bridge joint cleaning<br>- Third party damage repair and collection<br>- Facility maintenance<br>- Sign cleaning/replacement<br>- Striping/RPM<br>- Incident response<br>- Litter and graffiti removal | Month       | 84.00    | 83,000.00 | 6,972,000.00 |
| 2  | Unit Price Activities Line  |             |          |           |              |
| 2a | Striping  | linear foot | 200,000  | 1.10      | 220,000.00   |
| 2b | Full depth concrete repair  | square yard | 2,000    | 270.00    | 540,000.00   |
| 2c | ROW fence renewal   | linear foot | 31,680   | 14.70     | 465,696.00   |
| 2d | Mowing Cycles   | cycle       | 9.00     | 65,000.00 | 585,000.00   |
| 2e | Asphalt Ramp Repair   | square yard | 3,700    | 23.50     | 86,950.00    |
| 3  | Structure Repair Crew   |             |          |           |              |
|    | Four Person Crew  | hours       | 1,560    | 105.60    | 164,736.00   |
|    | Crew Cab Pickup   | hours       | 2,300    | 19.00     | 43,700.00    |
|    | Flatbed Truck   | hours       | 780      | 33.00     | 25,740.00    |
|    | Bucket Truck w/ operator  | hours       | 780      | 133.00    | 103,740.00   |
|    | Material Markup   | Percent     | 150,000  | 10%       | 15,000.00    |
| 4  | Snow Plow Trucks (Driver with Truck)  | hours       | 1,248    | 75.00     | 93,600.00    |

Total Bid \$9,316,162.00

**Appendix: Sample FAMS Program Matrix**

| In Scope                       | Activity No. | FLEXIBLE ASSET MANAGEMENT<br>Element and Activity Matrix           | Method of Contracting |          |          |              |            |                        |
|--------------------------------|--------------|--|-----------------------|----------|----------|--------------|------------|------------------------|
|                                |              |  | Staff Augmentation    |          |          | Unit / Cycle | Staff Hour | Performance Based/Lump |
|                                |              |  | 2 Person              | 3 Person | 4 Person |              |            |                        |
| <b>ROADWAY</b>                 |              |  |                       |          |          |              |            |                        |
|                                | 101          | Asphalt Repair Manual  |                       |          |          |              |            |                        |
|                                | 102          | Asphalt Repair Mechanical  |                       |          |          |              |            |                        |
|                                | 103          | Base Repair  |                       |          |          |              |            |                        |
|                                | 104          | Concrete Pavement Joint Repair                                     |                       |          |          |              |            |                        |
|                                | 105          | Concrete Slope Pavement Joint Repair                               |                       |          |          |              |            |                        |
|                                | 106          | Concrete Pavement Surface Repair                                   |                       |          |          |              |            |                        |
| <b>ROADSIDE</b>                |              |  |                       |          |          |              |            |                        |
|                                | 201          | Non-Paved Shoulders, Front Slopes and Roadside Ditches Manual      |                       |          |          |              |            |                        |
|                                | 202          | Non-Paved Shoulders, Front Slopes, and Roadside Ditches Mechanical |                       |          |          |              |            |                        |
|                                | 203          | Concrete Repair  |                       |          |          |              |            |                        |
|                                | 204          | Concrete Sidewalk Repair   |                       |          |          |              |            |                        |
| <b>TRAFFIC SERVICES</b>        |              |  |                       |          |          |              |            |                        |
|                                | 301          | Small Ground Signs less than 30 Square Feet                        |                       |          |          |              |            |                        |
|                                | 302          | Large Ground Signs 30 Square Feet or more, Over Lane Signs         |                       |          |          |              |            |                        |
|                                | 303          | Pavement Striping  |                       |          |          |              |            |                        |
|                                | 304          | Pavement Symbols   |                       |          |          |              |            |                        |
|                                | 305          | Raised Pavement Markers (RPM)                                      |                       |          |          |              |            |                        |
|                                | 306          | Delineators and Object Markers                                     |                       |          |          |              |            |                        |
|                                | 307          | Guardrail Repair Beam  |                       |          |          |              |            |                        |
|                                | 308          | Guardrail Repair Cable   |                       |          |          |              |            |                        |
|                                | 309          | Impact Attenuator  |                       |          |          |              |            |                        |
|                                | 310          | Highway Lighting   |                       |          |          |              |            |                        |
| <b>DRAINAGE</b>                |              |  |                       |          |          |              |            |                        |
|                                | 401          | Manually Clean Drainage Structure                                  |                       |          |          |              |            |                        |
|                                | 402          | Cleaning and Reshaping Roadside Ditches                            |                       |          |          |              |            |                        |
|                                | 403          | Repair or Replace Storm Drains, Side Drains, Cross Drains          |                       |          |          |              |            |                        |
|                                | 404          | Erosion Control  |                       |          |          |              |            |                        |
|                                | 405          | Sweeping   |                       |          |          |              |            |                        |
| <b>AESTHETICS / VEGETATION</b> |              |  |                       |          |          |              |            |                        |
|                                | 501          | Sodding  |                       |          |          |              |            |                        |
|                                | 502          | Seeding, Fertilizing, Mulching                                     |                       |          |          |              |            |                        |
|                                | 503          | Large Machine Mowing   |                       |          |          |              |            |                        |
|                                | 504          | Slope Mowing   |                       |          |          |              |            |                        |
|                                | 505          | Intermediate Mowing  |                       |          |          |              |            |                        |
|                                | 506          | Small Machine Mowing   |                       |          |          |              |            |                        |
|                                | 507          | Wildflowers  |                       |          |          |              |            |                        |
|                                | 508          | Fertilizing  |                       |          |          |              |            |                        |
|                                | 509          | Chemical Weed and Grass Control Manual                             |                       |          |          |              |            |                        |
|                                | 510          | Chemical Weed and Grass Control Mechanical                         |                       |          |          |              |            |                        |
|                                | 511          | Brush and Tree Cutting   |                       |          |          |              |            |                        |
|                                | 512          | Landscape Area Maintenance   |                       |          |          |              |            |                        |
|                                | 513          | Mitigation Area Maintenance  |                       |          |          |              |            |                        |

| In Scope                             | Activity No. | FLEXIBLE ASSET MANAGEMENT<br>Element and Activity Matrix                      | Method of Contracting |          |          |              |            |                        |
|--------------------------------------|--------------|---|-----------------------|----------|----------|--------------|------------|------------------------|
|                                      |              |   | Staff Augmentation    |          |          | Unit / Cycle | Staff Hour | Performance Based/Lump |
|                                      |              |   | 2 Person              | 3 Person | 4 Person |              |            |                        |
|                                      | 514          | Litter Removal  |                       |          |          |              |            |                        |
|                                      | 515          | Graffiti Removal  |                       |          |          |              |            |                        |
|                                      | 516          | Fence Repair  |                       |          |          |              |            |                        |
| <b>BRIDGE MAINTENANCE AND REPAIR</b> |              |   |                       |          |          |              |            |                        |
|                                      | 601          | Bridge Deck Joint Minor Repair  |                       |          |          |              |            |                        |
|                                      | 602          | Bridge Deck Maintenance and Minor Repair                                      |                       |          |          |              |            |                        |
|                                      | 603          | Bridge Electrical Maintenance   |                       |          |          |              |            |                        |
|                                      | 604          | Bridge Superstructure Maintenance and Minor Repair                            |                       |          |          |              |            |                        |
|                                      | 605          | Bridge Substructure Maintenance and Minor Repair                              |                       |          |          |              |            |                        |
| <b>FACILITIES MAINTENANCE</b>        |              |   |                       |          |          |              |            |                        |
|                                      | 701          | Facilities Maintenance  |                       |          |          |              |            |                        |
| <b>INCIDENT RESPONSE</b>             |              |   |                       |          |          |              |            |                        |
|                                      | 801          | Inclement Weather Services  |                       |          |          |              |            |                        |
|                                      | 802          | Traffic Control   |                       |          |          |              |            |                        |
|                                      | 803          | Incident Response   |                       |          |          |              |            |                        |
|                                      | 804          | Emergency Management  |                       |          |          |              |            |                        |
|                                      | 805          | Road Ranger Motorist Assistance Service Patrol                                |                       |          |          |              |            |                        |
| <b>BETTERMENT</b>                    |              |   |                       |          |          |              |            |                        |
|                                      | 901          | Betterment  |                       |          |          |              |            |                        |
| <b>ENGINEERING AND MANAGEMENT</b>    |              |   |                       |          |          |              |            |                        |
|                                      | 1001         | Engineering Duties for Planning, Design, Construction, Repair and Maintenance |                       |          |          |              |            |                        |
|                                      | 1002         | Supervision, Inspection, and Field Engineering Related to Maintenance         |                       |          |          |              |            |                        |
|                                      | 1003         | Management and Administration of Maintenance Activities                       |                       |          |          |              |            |                        |
| <b>PERFORMANCE BASED PROGRAMS</b>    |              |   |                       |          |          |              |            |                        |
|                                      | 10100        | Flexible and Rigid Pavement Maintenance and Minor Repair                      |                       |          |          |              |            |                        |
|                                      | 10200        | Roadside Non-Paved Shoulders, Concrete, and Sidewalk                          |                       |          |          |              |            |                        |
|                                      | 10301        | Small Ground Signs less than 30 Square Feet                                   |                       |          |          |              |            |                        |
|                                      | 10302        | Large Ground Signs 30 Square Feet or more, Over Lane Signs                    |                       |          |          |              |            |                        |
|                                      | 10303        | Pavement Markings for Striping, Symbols, and Raised Pavement Markers (RPM)    |                       |          |          |              |            |                        |
|                                      | 10307        | Traffic Services for Guardrail and Attenuators                                |                       |          |          |              |            |                        |
|                                      | 10310        | Highway Lighting  |                       |          |          |              |            |                        |
|                                      | 10405        | Sweeping  |                       |          |          |              |            |                        |
|                                      | 10503        | Turf Management   |                       |          |          |              |            |                        |
|                                      | 10600        | Bridge Inspection, Maintenance, and Repair                                    |                       |          |          |              |            |                        |
|                                      | 10701        | Facilities Maintenance and Operation  |                       |          |          |              |            |                        |
|                                      | 10803        | Incident Response   |                       |          |          |              |            |                        |
|                                      | 10805        | Road Ranger Motorist Assistance Service Patrol                                |                       |          |          |              |            |                        |