

Construction Program Analysis
Federal Highway Administration
Alaska Division
PY13- Program Analysis

Overview

The Alaska Division of the Federal Highway Administration (FHWA) in cooperation with the Alaska Department of Transportation and Public Facilities (AKDOT&PF) is revisiting the Construction Program Analysis. We utilize this tool to evaluate the health and effectiveness of the Construction Program and assess future risk. It provides important information in identifying strengths, areas of concern, opportunities, and sharing best practices to continually improve the program. The Program Analysis implements principles of risk management. Risk management is a systematic process that involves the identification, assessment, planning, and management of threats and opportunities faced by programs, processes, and projects. The program analysis identifies particular program initiatives that could be accomplished to optimize the effectiveness of the current state of the program and the vision of where that program should be in three years. In order to accomplish this, it includes the outcome of FHWA's annual Risk Assessment that is conducted to evaluate the potential exposure to loss for a particular program or process and the identification of potential countermeasures to control or reduce perceived risk. In addition, information obtained from oversight activities and performance measures/indicators will be considered when performing the analysis. The program outlines response strategies and initiatives to effectively manage risks. Response strategies include strategies of avoidance, acceptance, transference, or mitigation. Mitigation efforts may include training, program reviews, changes or updates to manuals or procedural guidance, and providing technology transfer/technical assistance.

Vision/End-state

Vision Statement: Work cooperatively and collaboratively with DOT&PF, the Metropolitan Planning Organizations (MPO), and the resource and regulatory agencies to ensure via program oversight and stewardship activities the development of high quality transportation projects, which are in substantial compliance with of all the applicable Federal and State laws, rules and regulations, and are delivered on time and within budget while protecting and enhancing the human and natural environment.

Core Elements

- Bidding/Award of Contracts
- Constructability
- Construction Program Management
- Construction Quality
- Contract Administration
- Contract Change Orders
- Innovative Contracting
- Laboratory and Personnel Qualifications
- Liquidated Damages
- Major Projects
- Material Quality
- Pavements & Materials
- Project Inspection staffing

Sub elements

There are no sub elements at this time.

Note: Sub elements will/may be added as a result of national leadership direction, reviews, observations or performance measurement trends. Sub elements may be removed when determined to be low risk.

Prior year follow-up

The prior year follow-up will cover the results of the construction inspections and work zone and program reviews.

Each year the FHWA area engineers identify construction projects within their region that will be reviewed. During the construction season of 2011 nine projects were reviewed statewide. There were no major findings in any of the reviews. A majority of the projects had no findings. The projects that did have findings did not identify systemic issues. Individual findings consisted of pavers stopping, breakdown roller too far behind the paver and difficulty in locating records.

During the 2011 construction year there were an additional fifteen construction inspections on American Reinvestment and Recovery Act (ARRA) projects. Once again a majority of the projects had no findings. Findings that were identified include gore striping that did not conform to the Manual of Uniform Traffic Control Devices (MUTCD), missing quality control plans, and sidewalk cross slopes that did not meet Americans with Disabilities Act (ADA) requirements.

The annual work zone review is conducted in one region each year with state wide participation. The 2011 work zone review looked at five projects in central region. In general the work zone review found the projects to be in substantial compliance with state and federal requirements. Issues that were identified include a night time flagging station without illumination, conformance with contract and procedural requirements to conduct night inspections and a pedestrian pathway that did not meet handicap requirements.

There were two program reviews in addition to the construction inspections and work zone reviews. They were the construction contract changes and the pavement quality review.

The construction contract changes review was completed and an action plan submitted. The action plan includes development of a periodic review process, development of checklists and revisions to the construction manual. DOT&PF has accomplished the action plan.

The pavement quality review was conducted during the 2011 construction season. The final report had not been issued prior to this analysis. Findings will be incorporated in the next analysis.

FFY11 Activities and Accomplishments			
Program Area	Risk Level	Response Strategy	Outcomes/Results
	H-M-L?	Activity to mitigate risk	Think about.... What did we find out or validate? Did outcomes reduce risk and improve the program? Was the initial response strategy appropriate? Is this a carryover activity into the next fiscal year?
Construction Quality	M	Area engineer reviews	Issues identified include gore striping that did not meet ATM requirements, pavers stopping, and difficulty in locating records.
Work Zone	L	Annual Work zone review	Findings include a night time flagging station without illumination, conformance with contract and procedural requirements to conduct night inspections and a pedestrian pathway that did not meet handicap requirements
Contract Change Orders	M	Construction changes review	Development of a periodic review process, development of checklists and revisions to the construction manual.

Performance Measures/Compliance Indicators

Performance Measures			
Measure/Indicator	Target	Current Value	Trends / Discussion
Projects Closed Out	80% closed out within the fiscal year post construction.	2008-67% 2007-60% 2006-57%	
Construction Schedule/Indicator Stewardship	Track to establish performance criteria		
Construction Cost Stewardship	Final contract amount /original Contract amount <=1.10	2008-1.09 2007-1.09 2006-1.11	The trend is flat and below the maximum level.
Contract Changes compliance (FFY)	100% compliance with the Alaska Construction Manual.	2011 42% 2010 75%	The latest data is from the contract changes review.
# of claims that have had a Contracting officers decision (FFY)	< 5% of projects have had COD written	2011 0	

Acceptance and Material Quality Assurance (FFY)	<10 % of projects with a letter of exception	2011 31%	SE 3 of 6 C 5 of 15 N 6 of 24
---	--	----------	-------------------------------------

Status of Program

(Based on the measures, results of prior year reviews, describe the current state of your program.)

The current state of the construction program is perceived to be in substantial conformance with Federal Regulations and the Alaska Construction Manual.

The FHWA division construction inspections during the 2012 season will place added emphasis on the findings from the construction reviews, program reviews and recent revisions to the construction manual. Areas of added emphasis include change order documentation, **IWA** justification, Police officer documentation, paving operations, quality control plans, letters of exception, ADA requirements and pedestrian routing in work zones.

Situation (SWOT) Analysis

Strengths and Opportunities

(Explains what is going well, what may not need to change, and identifies potential opportunities for capitalizing on/or leveraging these strengths/opportunities for the best return on investment of resources.)

Strength	Opportunity
Training in Storm Water Compliance, Worksite Traffic Safety, and Materials Quality Sampling and Testing	Train the contractors, quicker reviews by having contractors trained and fewer project delays
Mentoring new engineers, inspectors and reverse mentoring staff	Increase knowledge transfer and retention.
Concurrent and quality reviews of project documentation	Quicker close outs, ensure maximum federal participation
Quality reviews of work zones TMPs	Improved public service and safety. Builds and sustains a quality workforce.
Quality reviews storm water compliance reviews	Improved compliance with permits. Builds and sustains a quality workforce.
Monthly construction progress reports	Ensures transparency to legislators and upper management.
Regional Construction Reviews	Ensures program uniformity and compliance
Headquarters Leadership in consensus building	Provides guidance and ensures program uniformity.
Headquarters Standards development	Converting tacit knowledge to explicit knowledge
Use of innovative technologies	Improved documentation for quicker closeout, improve safety, project delivery, compliance.....
Regional Construction Engineer Collaboration	Develop and implement construction productivity teams.

Weakness/Risk Identification

(Evaluate any vulnerable areas in your program, what needs to be addressed now and in the next three years.)

Weakness	Threat
Contract Changes documentation	Loss of federal funding
Constructability Reviews of PS&E documents	Increased contract cost, excessive number of change orders, claims, time
Designers not experienced in construction	Designs that may not be the most economical or constructible
Loss of experienced staff	Loss of institutional knowledge
Overload of reporting requirements	Loss of job satisfaction decreased job performance impedes project delivery.

Evaluation of Results/ Risk Assessment Summary

Begin this section by identifying the risk response techniques for core program areas and develop the multi-year plan initiatives and schedule. Using the above SWOT analysis and Status of the Program, perform risk assessments. Include the results in the following table:

Risk Assessment Summary			
Program Area/Activity	Likelihood/Impact H-M-L	Risk Statement	Response Strategy
	H/H M/H L/L	If this happens...Then this is the effect/impact...	<ul style="list-style-type: none"> • Avoid -- to make decisions and move programs away from potential risks; • Transfer -- have another office take responsibility for a program i.e. NHTSA with the 402 program; • Accept -- that business as usual will be sufficient for dealing with a risk OR that if your risk does occur you will have a contingency plan; • Mitigate a threat by changing practices and procedures in anticipation of a risk; • Enhance an opportunity by changing practices and procedures in anticipation of a risk.
Bidding/Award of Contracts	L/L	If there continues to be a limited field of qualified bidders then the cost to construct will increase.	<ul style="list-style-type: none"> • Accept - This is a Preconstruction action item.

Constructability review	M/M	If construction is not enabled to conduct adequate constructability reviews then there is a greater potential for contract changes and contractor claims	<ul style="list-style-type: none"> • Mitigate-- Encourage DOT to develop a constructability review process that would improve the PS&E reviews.
Construction Program Management	H/M	If construction management software is not fully implemented then AKDOT&PF will not benefit from the costs savings and transparency associated with implementation.	<ul style="list-style-type: none"> • Mitigate-- Encourage each region to identify a project that will be managed using construction management software.
Construction Quality	L/H	If projects are not built per contract then there is the potential for early failure, loss of federal funding and loss of public confidence.	<ul style="list-style-type: none"> • Mitigate - Area engineers will continue to focus on construction quality during their reviews.
Contract Administration	L/H	If construction projects are not administered in compliance with Federal regulations then there is a potential to lose funding.	<ul style="list-style-type: none"> • Mitigate- Area engineers will review high profile projects and 10% of the projects that are not designated high profile for compliance with federal regulations.
Contract Changes	M/L	If Contract Changes are not done in conformance with federal and state procedures then there is a potential to lose federal funding.	<ul style="list-style-type: none"> • Mitigate- Area engineers will continue to place emphasis on contract changes documentation during their annual reviews
Contract Changes	L/M	If IWA's do not follow the revised Construction manual direction then there is the potential to lose federal funding.	<ul style="list-style-type: none"> • Mitigate - DOT&PF should provide updates at spring fling and FHWA area engineers will continue to emphasize contract changes during reviews.

Innovative Contracting	M/M	If AKDOT does not expand the use of innovative contracting then opportunities to minimize construction time and to maximize available funds will be lost.	<ul style="list-style-type: none"> • Accept- This is a Preliminary design concern.
Laboratory and Personnel Qualifications	L/M	If personnel are not properly qualified then there is a potential to have additional claims and a reduction of project quality.	<ul style="list-style-type: none"> • Mitigate– Continue to ensure personnel are adequately qualified to perform the tests they are responsible for.
Major Projects	L/M	If major projects do not develop adequate finance and management plans then there is the potential to delay projects, lose public confidence and increase the cost of the project.	<ul style="list-style-type: none"> • Accept- This is a Preliminary design concern.
Liquidated Damages	L/M	If the liquidated damage rates are not updated in a timely manner then there is the potential to lose federal funding.	<ul style="list-style-type: none"> • Accept- This is a Preliminary design concern.
Material Quality	L/M	If construction materials are not adequately tested then there is a greater potential for early failure and a loss of public confidence.	<ul style="list-style-type: none"> • Mitigate- Area engineers will continue to place emphasis on materials testing frequencies.
Pavements	L/M	If the paving quality is not per standard specification then there is the potential for early failure, loss of federal funding and loss of public confidence.	<ul style="list-style-type: none"> • Mitigate- Area engineers will continue to emphasize paving in the construction reviews.
Project inspection Staffing	L/H	If AKDOT is unable to comply with the requirements of the consent decree for storm water permitting issued under the Construction General Permit (CGP), then the consent decree will continue to be enforced.	<ul style="list-style-type: none"> • Mitigate- Increased consultants and reallocated resources.

Implementation Schedule/Multi-Year Plan (1-3 years)

(Lists any activities, by year, which would bring the program closer to the vision.

After identifying the issues and formulating solutions to meet the end-state goals, outline your multi-year plan for implementing your response strategies.)

PY13	PY14	PY15
<p>Construction program Oversight</p> <p>Update Program Analysis</p> <p>Conduct Risk Assessments</p> <p>Compile Construction review findings and observations from routine construction inspections. Encourage DOT to develop a constructability review process that would improve the PS&E reviews.</p> <p>Implement the recommendations of the Pavement quality process review.</p> <p>Convert backlog of old IWAs to change orders within the next federal fiscal year. (September 2012)</p> <p>(NL-2)EDC initiative - Identify applicable project(s) for applying CM/GC and evaluate positive and or negative impacts to project delivery costs, schedule and quality</p> <p>Identify construction projects in each region that will use construction management software.</p> <p>Conduct documented construction inspections on High Profile Projects:</p> <p>59170-Glenn Hwy Lighting - Birchwood to Eklutna (Chris)</p> <p>50816-Seward Highway Dowling to Tudor (Chris)</p> <p>53933-Huffman Road Rehab(Chris)</p> <p>61214-Dalton Hwy-197-209 (Pete)</p> <p>67018- Dalton Highway 274-289 (Pete)</p> <p>76727-Richardson Hwy 148-173 (Pete)</p> <p>69070-Hyder Causeway (Alex)</p> <p>68828- Wrangell road and utilities (Alex)</p> <p>67526- Juneau- Glacier hwy Kayak to Bessie (Alex)</p> <p>Conduct documented</p>	<p>Construction program Oversight</p> <p>Update Program Analysis</p> <p>Conduct Risk Assessments</p> <p>Conduct documented construction inspections on 6 High Profile Projects: Identify individual projects by March 2012.</p> <p>Conduct documented construction inspections on 10 Non-High Profile Projects: Identify individual projects by March 2012.</p> <p>Compile Construction review findings and observations</p> <p>EDC initiative - Identify and evaluate positive and or negative impacts to project delivery costs, schedule and quality due to the implementation of CM/GC initiative.</p>	<p>Construction program Oversight</p> <p>Update Program Analysis</p> <p>Conduct Risk Assessments</p> <p>Conduct documented construction inspections on 6 High Profile Projects: Identify individual projects by March 2013.</p> <p>Conduct documented construction inspections on 10 Non-High Profile Projects: Identify individual projects by March 2013.</p> <p>Implement and track action items</p>

construction inspections on Non-High Profile Projects: 52105- Rezanof Drive (Chris) 57057- Girdwood Street Drainage (Chris) 63379- Taylor HWY (Pete) 61870 Richardson HWY MP 228 (Pete) 76783 Richardson HWY flooding repairs (Pete) 60233-Pelican (Alex) 69568-Haines Allen Rd (Alex) 69565-Haines 2 nd Ave (Alex)		
--	--	--