CDOT's Flood Recovery Program

LOCAL AGENCY UPDATES

September 18, 2014

AGENDA

- PR Task Order Process
- Construction DDIRs for Projects > $1 million
- Consultant DBE Goals
- Environmental Process
- Request for Reimbursement Q&A
- CDOT Flood Recovery Website
- Upcoming Trainings
- Risk and Resiliency Process

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Task Order Process

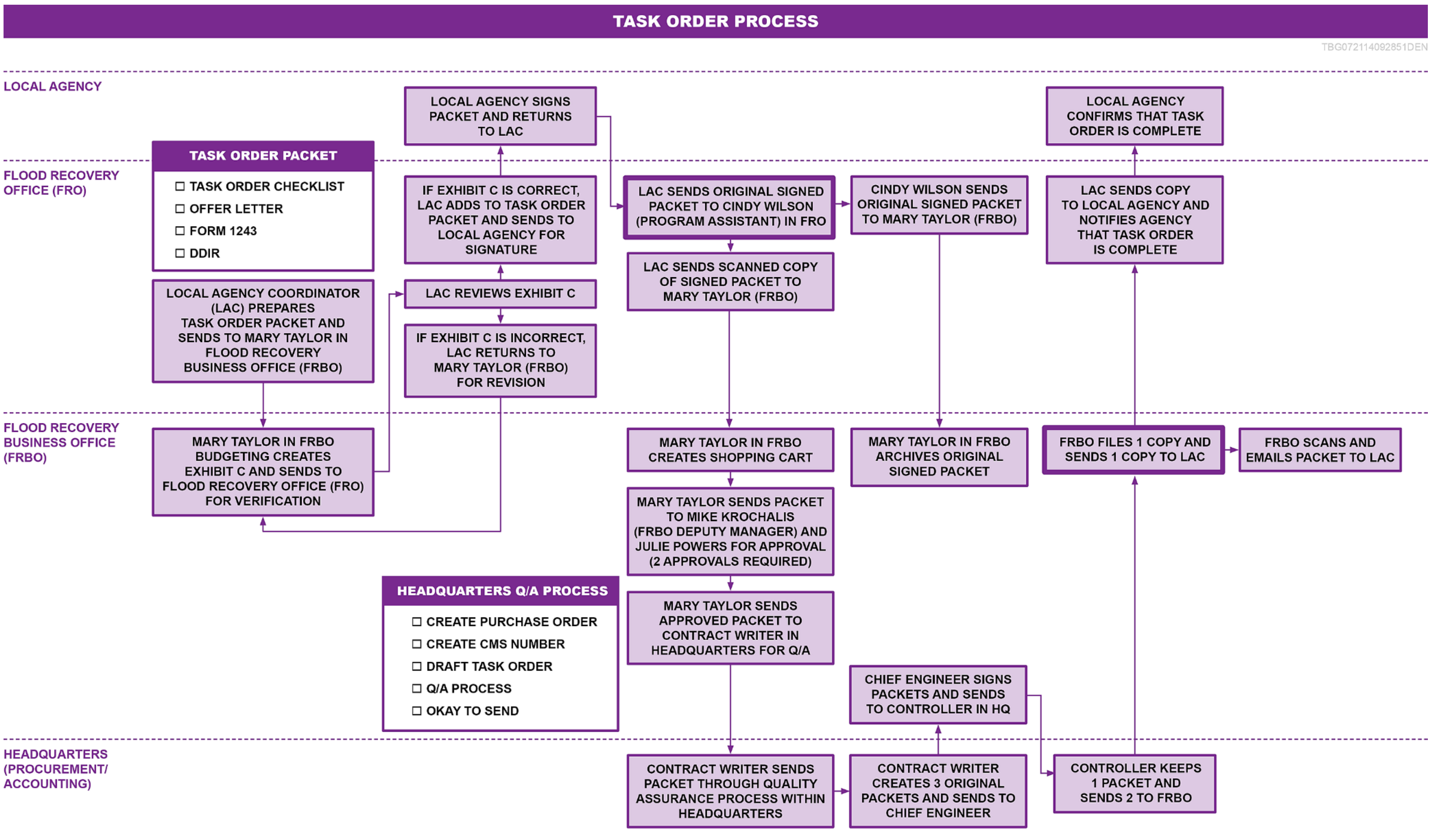
Task Orders – What are they?

- Flood projects require task orders
  - IGA covers multiple projects
  - Task orders are needed for individual projects
  - Exhibit C outlines budgets by phase and is included in the Task Order
  - Approvals required at
    - Flood Recovery Office
    - Flood Recovery Business Office
    - CDOT HQ (Chief Engineer and Controller)

TASK ORDER PACKET

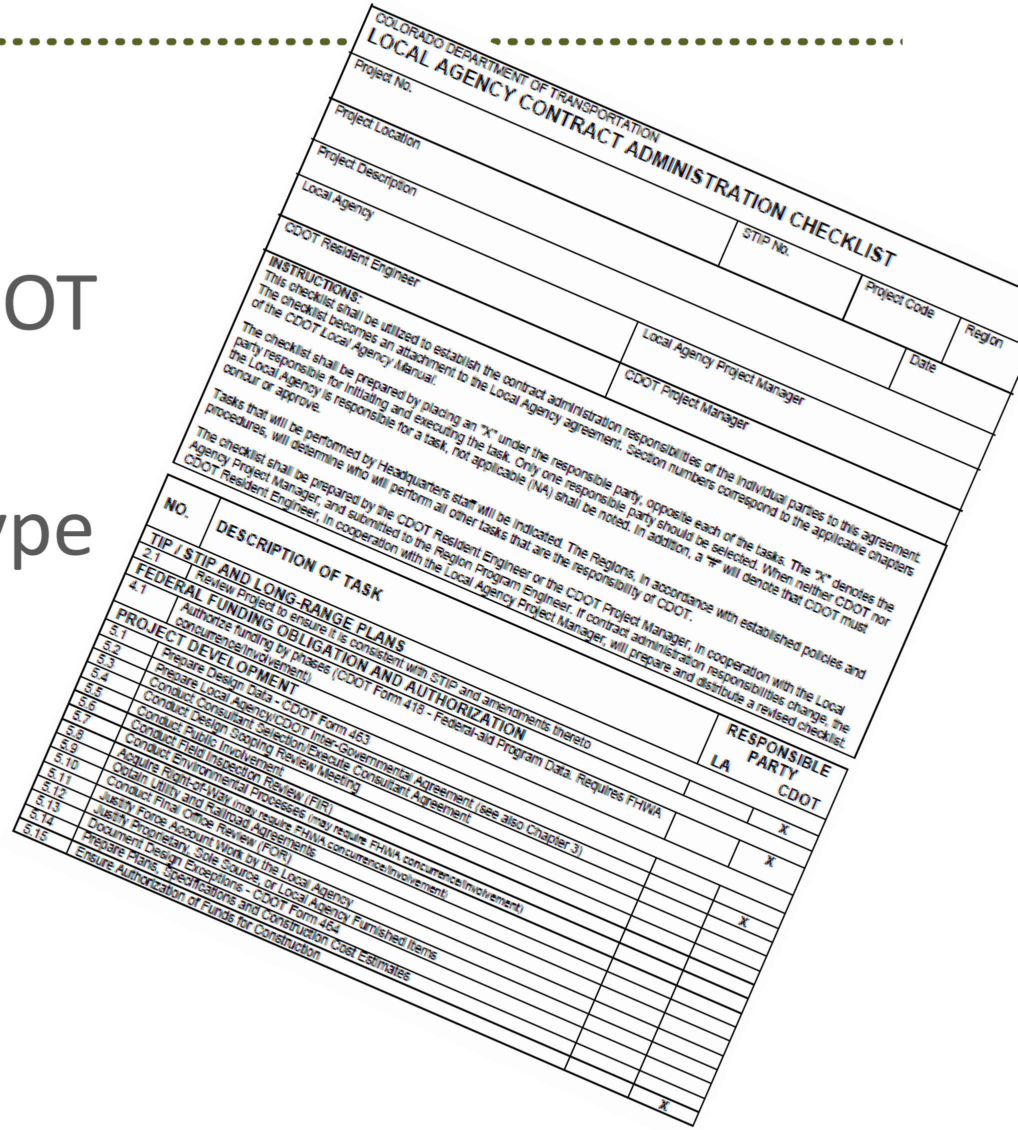
- ☐ TASK ORDER CHECKLIST
- ☐ OFFER LETTER
- ☐ FORM 1243
- ☐ DDIR

Task Order Flowchart



Form 1243

- Form 1243 defines Local Agency and CDOT responsibilities
- Determine project type & scope
- Budget needs
- CDOT requirements
- Go over LA checklist



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LOCAL AGENCY CONTRACT ADMINISTRATION CHECKLIST

Project No.	STIP No.	Project Code	Region
Project Location			
Project Description			
Local Agency	Local Agency Project Manager		Date
CDOT Resident Engineer	CDOT Project Manager		

INSTRUCTIONS:

This checklist shall be utilized to establish the contract administration responsibilities of the individual parties to this agreement. The checklist becomes an attachment to the Local Agency agreement. Section numbers correspond to the applicable chapters of the CDOT Local Agency Manual.

The checklist shall be prepared by placing an "X" under the responsible party, opposite each of the tasks. The "X" denotes the party responsible for initiating and executing the task. Only one responsible party should be selected. When neither CDOT nor the Local Agency is responsible for a task, not applicable (NA) shall be noted. In addition, a "#" will denote that CDOT must concur or approve.

Tasks that will be performed by Headquarters staff will be indicated. The Regions, in accordance with established policies and procedures, will determine who will perform all other tasks that are the responsibility of CDOT.

The checklist shall be prepared by the CDOT Resident Engineer or the CDOT Project Manager, in cooperation with the Local Agency Project Manager, and submitted to the Region Program Engineer. If contract administration responsibilities change, the CDOT Resident Engineer, in cooperation with the Local Agency Project Manager, will prepare and distribute a revised checklist.

NO.	DESCRIPTION OF TASK	RESPONSIBLE PARTY LA	CDOT
	TIP / STIP AND LONG-RANGE PLANS		
2.1	Review Project to ensure it is consistent with STIP and amendments thereto		
	FEDERAL FUNDING OBLIGATION AND AUTHORIZATION		
4.1	Authorize funding by phases (CDOT Form 418 - Federal-aid Program Data. Requires FHWA concurrence/involvement)		
	PROJECT DEVELOPMENT		
5.1	Prepare Design Data - CDOT Form 463		
5.2	Prepare Local Agency/CDOT Inter-Governmental Agreement (see also Chapter 3)		
5.3	Conduct Consultant Selection/Execute Consultant Agreement		
5.4	Conduct Design Scoping Review Meeting		
5.5	Conduct Public Involvement		
5.6	Conduct Field Inspection Review (FIR)		
5.7	Conduct Environmental Processes (may require FHWA concurrence/involvement)		
5.8	Acquire Right-of-Way (may require FHWA concurrence/involvement)		
5.9	Obtain Utility and Railroad Agreements		
5.10	Conduct Final Office Review (FOR)		
5.11	Justify Force Account Work by the Local Agency		
5.12	Justify Proprietary, Sole Source, or Local Agency Furnished Items		
5.13	Document Design Exceptions - CDOT Form 464		
5.14	Prepare Plans, Specifications and Construction Cost Estimates		
5.15	Ensure Authorization of Funds for Construction		

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Creating a Construction DDIR for Projects > $1 mil

Construction DDIR

- Only applies to projects > $1 million
- Pre-FIR meeting to discuss project – 20 percent design
  - Discuss design with Flood Recovery Office (FRO)
  - Evaluate construction cost estimate and prepare construction DDIR
- If task order is in place, amend to reflect new Construction DDIR costs
- If task order not in place, reflect updated numbers in task order

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Consultant DBE Goals and EEO Requirements

EEO Project Requirements

- Pre-Con/All Project requirements
- DBE Goals/Requirements
- OJT Goals/Requirements
- Certified Payrolls/Davis Bacon
- Project Finalization
- Miscellaneous

EEO Requirements Handout

EEO INFORMATION/REFERENCE SHEET 2014

___Invite EEO to Pre-Con-Invite EEO to your pre-construction meeting. This will allow the opportunity to ask the EEO requirements Region 4, Juliet Sheets- juliet.sheets@state.co.us (970) 350-2156.

DBE REQUIREMENTS

___DBE Goal - There is a DBE Goal with most Federally Funded projects. This goal is determined prior to the award of the project.

___1414 Form-Anticipated DBE Participation Plan (Only if Contract Goal is greater than Zero). Due at time of bid. CDOT is required to collect this data on Federal-aid contracts to use goal setting. Must list quotes from all subcontractors/suppliers/Vendors.

___1415 Form-Commitment Confirmation for each commitment listed on the 1414. Primes fill out the first half and DBE completes the 2nd half of the form. A DBE work code (NAICS code plus a descriptor found on www.coloradodbe.org)

___1416 Form-Good Faith Effort Report if commitments do not me the contract goal. Submitted to dothqdbeforms@state.co.us by close of business of the 5th day.

___1417 Form-Approved DBE Participation plan.

___1419 Form-DBE Participation Report. Must be submitted quarterly and at the end of the project. Contractor must document all participation by DBE's that will count toward the goal. Engineer signs that it appears DBE performed (NOT necessarily affirming that participation will count). Final report must list all DBE participation.

___1420 Form-DBE Participation Plan Modification Request. This form is time when the Prime feels they cannot meet the anticipated DBE require

___Commercial Useful Function Project Visit and Interviews - generally done by your Region EEO Representative on DBE is to assure the DBE work is being performed by the communicate with your EEO representative the the best time frame to visit the site.

EEO Checklist/Time Line Expectations

*The purpose of this internal document is to give our Project Engineers and Project Managers the expectations from EEO during pre-construction and construction phases. The checklist is a proactive approach.

X	ITEM/FORM	SUBMITAL PROCESS	TIME EXPECTATION
	Pre-Con Agenda	Invite EEO officer/Juliet Sheets R4	Min. 1 wk. prior to pre-con
	Form 1413	Bidders List due at time of bid (former 714)	Time of Bid
	Form 1414	Anticipated DBE Participation Plan	Time of Bid
	Form 1415	Commitment Confirmation	5 days of selection
	Form 1416	Good Faith Effort Report if commitments do not meet the contract goal.	5 days of selection
	Form 1419	DBE Participation Plan.	Quarterly and at project close
	Form 1420	DBE Modification Request. Where there is cause for termination of DBE or reduction.	Prior to reducing/replacing DBE work
	205B	Sublet Permit Application	Prior to sub-contractor work
	Form 1337	OJT Goal Sheet for entire project	Pre-Con
	OJT 838	CDOT OJT Trainee Approval Sheet (signed by EEO prior)	Prior to trainee on job
	OJT 832	CDOT Trainee Status and Evaluation	Monthly/lifetime of project
	280 Forms	EEO & Labor Compliance Verification (project interview)	Monthly/lifetime of project
	118 Forms	Stamped, Signed, stapled to weekly payroll	Weekly/lifetime of project
	Payrolls	Checked, turned in with 118, prime and subs	Monthly to EEO

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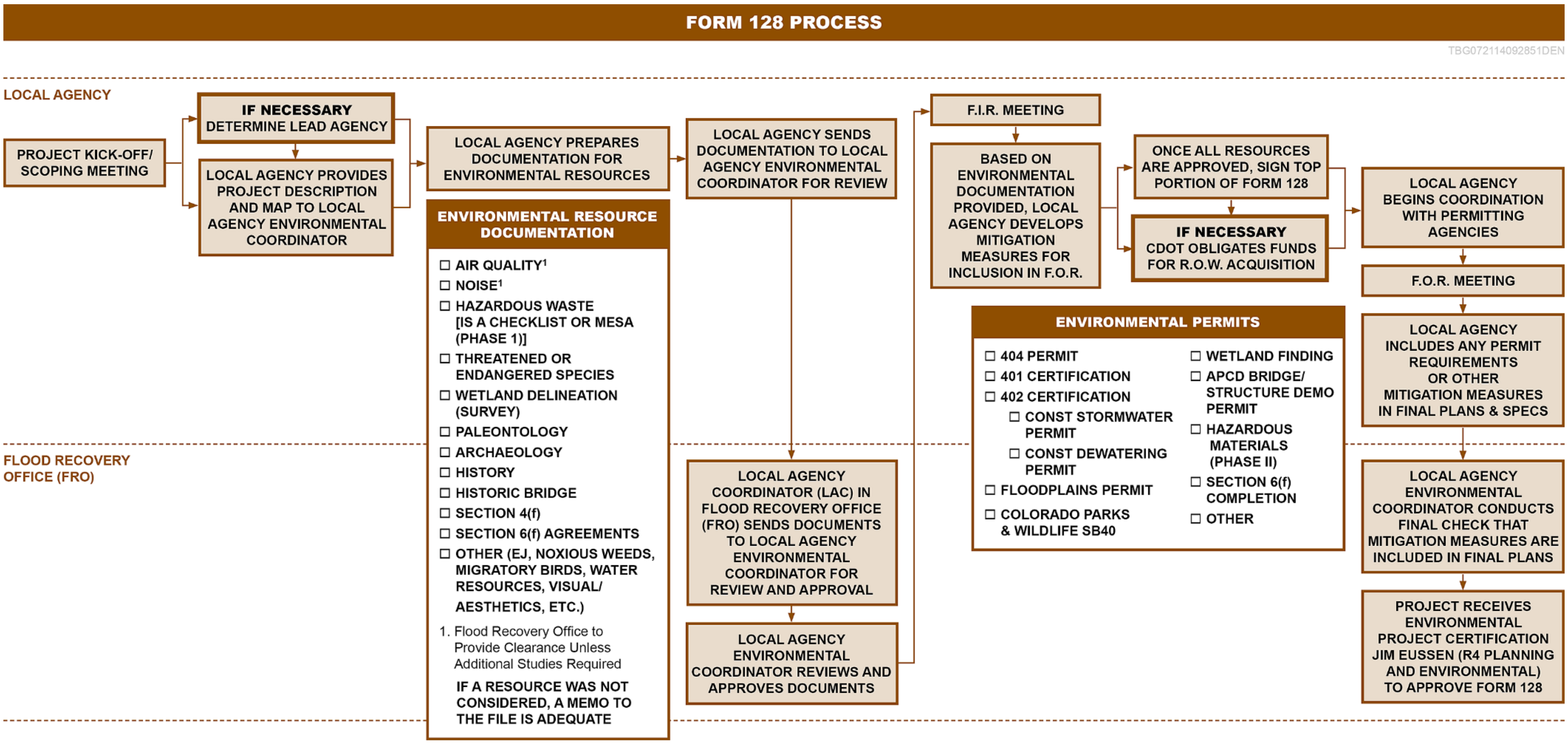
Environmental Process

Environmental Process

- Local agency responsibilities
  - Clarify lead agency / coordination needs
  - Provide project description / map of work area – permanent and construction limits
  - Prepare documentation for environmental resources (resources on next slides)
  - Develop mitigation measures based on permits and FIR comments
  - Coordinating with resource agencies and obtaining permits
- CDOT approves and signs Form 128
  - “Top Half” and “Bottom Half”

Environmental Process



Environmental Resource Analysis

- Air Quality and Noise
  - CDOT will provide clearance or advise of additional analysis required
- Hazardous Waste
  - Initial / Modified Site Assessment or Phase I
- Threatened or Endangered Species
  - Conservation Measures from USFWS
- Wetland Delineation (survey)
- History and Historic Bridge
  - Area of Potential Effects – direct and indirect – to be coordinated before surveys occur
  - Linear resources (ditches, railroads, etc.)

Environmental Resource Analysis

- Archaeology
  - Area of Potential Effect generally = construction footprint
- Section 4(f)
  - Historic Properties, Trails, Parks
  - If Section 4(f) resources are present – consult with CDOT early!
- Section 6(f)
  - Recreation properties funded with Land and Water Conservation Funds
  - Uncommon for flood projects
- Other

Environmental Permits by Agency

- Wetlands
  - 404 Permit
  - Wetland Finding
  - 402 Certification
- Senate Bill 40 approval
- Floodplains Permit
- Section 6(f) completion
- Hazardous Waste Phase II Site Assessments
- Stormwater Management Plan

Environmental Permits by Contractor

- Water Permits
  - Construction Stormwater Permit
  - Construction Dewatering Permit
- APCD bridge/structure demolition permit
- Other demolition or local permits

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Request for Reimbursement Questions

DOT Flood Recovery Website

http://www.coloradodot.info/projects/floodrelatedprojects/local-agency-projects

- PowerPoint presentations
- Forms
- Manuals
- What else?

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Local Agency Training is Coming – Stay Tuned

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Risk and Resiliency Process

Risk and Resiliency Analysis

- FHWA requires a risk-based analysis for designing repairs to ensure they are cost effective and reduce the potential for future loss.
- Currently FHWA has not adopted a risk based model for analyzing resiliencies for infrastructure projects
- CDOT & FHWA Piloting an infrastructure model including peer reviews, sensitivity analysis and comparison to FEMA model
- Model considers
  - vulnerability of the asset
  - threat likelihood
  - probability of a successful failure.

"Resilience: Capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and environment."

Economic Justification of Resilient Design Alternatives

- Process based on RAMCAP approach published by the ASME for Critical Infrastructure (American Society of Mechanical Engineers)
- Assessing risk of assets to natural threats
- Assessing vulnerability of assets to natural threats
- Estimating consequences of future natural threats to Federal Aid Roads
- Reduced annualized risk for design alternatives are compared to "Restore-in-Kind" designs to natural threats

Economic Justification of Resilient Design Alternatives

- Three pieces of information provided to CDOT/FHWA for decision making regarding resilient design alternatives:
  - Annualized monetary risk to design alternatives from natural threats
  - Measure of resilience for design alternatives from natural threats that reflects the anticipated number of vehicles that could be affected (not serviced) in any given year due to natural threats
  - Criticality Rating that reflects each asset's impact on service provided by the owner

Risk from Natural Threats

$$Risk = C \times V \times T$$

Where:

R = annual monetary risk due to natural threats ($)

C = consequences ($)

V = vulnerability to identified consequences under a specific threat (probability)

T = specific threat likelihood (probability)

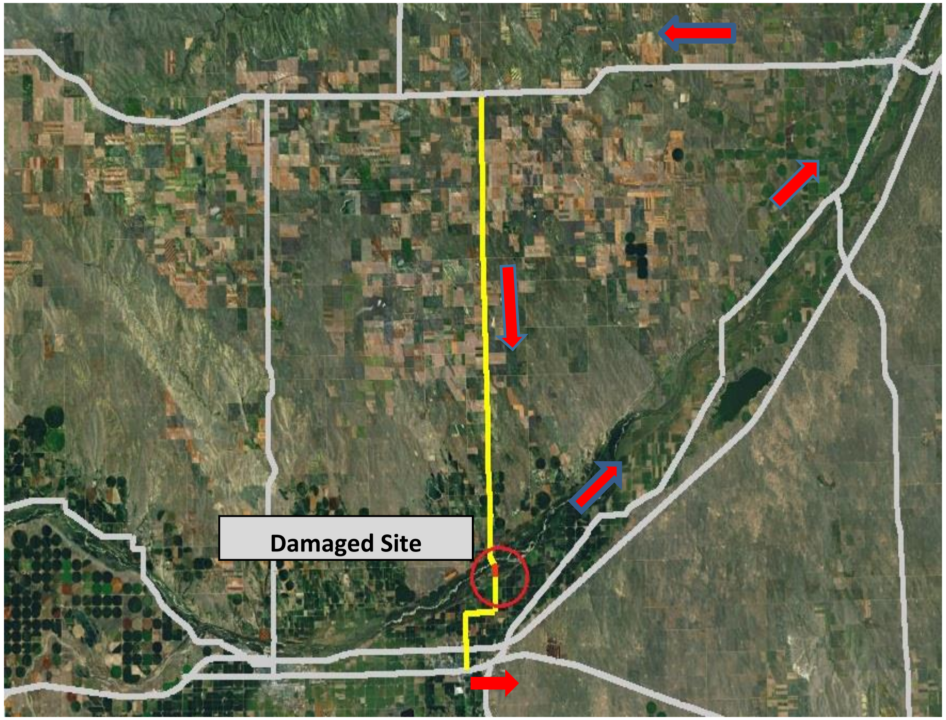
Resilience from Natural Threats

- As per FHWA Emergency Relief Manual, cannot account for user costs

$$Resilience = AADT \times \%AADT\ Not\ Serviced \times DaysOut\ of\ Service \times V \times T$$

Criticality Rating Provided for Context

- Site Location and Re-routing Alternative



Criticality Rating Provided for Context

	Score				
	1 Very Low Impact	**2 Low Impact**	**3 Moderate Impact**	**4 High Impact**	**5 Very High Impact**
Road Classification	Rural Major Collector	Urban Collector (Major or Minor)	Minor Arterial	Primary Arterial	Interstate Freeway Expressway
Need for Access by Essential Traffic	Facility Open to Essential Traffic More Than 48 Hours After Event Multiple-Redundant Routes Available with No/Minimal Loss of Capacity	Facility Open to Essential Traffic Within 48 Hours of Event Single Redundant Route Available with No/Minimal Loss of Capacity	Facility Open to Essential Traffic Within 12 Hours of Event Multiple Redundant Routes Available with Some Loss of Capacity	Facility Open to Essential Traffic Within 2 Hours of Event Single Redundant Route Available with Significant Loss of Capacity	Facility Open to Essential Traffic Immediately Following Event Single Point of Failure
Route Designation	Truck % under 10%	HAZMAT Route	Truck % over 10%	Defense Route	Evacuation Route
Capital Cost of Damaged Site (per Lane Mile)	< $5.0 million / lane mile	$5.0 - $10 million / lane mile	$10 - $20 million / lane mile	$20 - $30 million / lane mile	> $30 million / lane mile

Criticality Rating

Criticality Ranking	Description	Score
Criterion 1: Road Clasification	Principal Arterial	4
Criterion 2: Need for Access by Essential Traffic	Immediately after event (major E-W connector to nearby eastern plains communities)	5
Criterion 3: Route Designation	Evac Route	5
Criterion 4: Capital cost of Damage Site ($ /Lane-mile)	$ 5,423,683	2
	Total score	**16**

Resilience Index Score

Criticality Score	Criticality Level	Resilience Index Score
4 to 10	Low	1.0
11 to 15	Moderate	2.0
16 to 20	High	3.0

Alternatives for Permanent Repairs

- Three categories of roadway repairs:
  - Restore facilities to pre-disaster conditions including upgrades to current best practices (RIK)
  - Repair facilities to current design standards (RTS)
  - Improve facilities to make more resistant to future events and/or betterments (Betterment)

When is RnR Analysis needed?

- If proposed improvements are to Standards or Betterments
- RnR analysis completed for presentation to FHWA at Preliminary Design review meeting (pre-FIR)
  - RnR package submittal needed 4 weeks prior to FHWA meeting
- Was the site damage rated “severe”?
  - Yes
    - RnR will be required for improvements above RTS
    - Betterments
  - No
    - RnR will be required for improvements above RIK
    - RTS and Betterments

RnR Analysis Procedure

- Complete RnR data sheet
  - Site Information
    - General site information
    - Pre-Event conditions
    - Criticality/Resilience
    - Damage caused by event

Preliminary Design RnR Data Sheet

GENERAL INFORMATION		**Notes**
Road Name		
County		
Mile Marker Start		
Mile Marker End		
Other Comments		
PRE-EVENT CONDITIONS		**Notes**
Type of Asset (bridge, roadway, combo)		
Number of Lanes- Primary Direction		
Shoulder Width- Primary Direction (ft)		
Lane Width-Primary Direction (ft)		
Number of Lanes- Secondary Direction		
Shoulder Width- Secondary Direction (ft)		
Lane Width- Secondary Direction (ft)		
Number of Lanes- Other		
Shoulder Width- Other (ft)		
Lane Width- Other (ft)		
Bike/Ped Presence?		
AADT		
% Trucks		
Road User Cost per Day		
Pre-event Design Standard for scour threat (if known/applicable)		
Pre-event Hydraulic Design Standard for facility for flooding		
Peak flow at September 2013 Colorado Flood event		
Flows at site for corresponding flood events 10yr event (Q10), 25yr (Q25), 50yr (Q50), 100yr (Q100) and 500yr event (Q500):		
10 yr event (Q10)		
25 yr event (Q25)		
50 yr event (Q50)		
100 yr event (Q100)		
500 yr event (Q500)		
River elevation corresponding to the different flood events 10yr (E10), 25yr (E25), 50yr (E50), 100yr (E100), 500yr event (E500):		
10 yr event (E10)		
25 yr event (E25)		
50 yr event (E50)		
100 yr event (E100)		
500 yr event (E500)		
Road or Structure Elevation at Damage Site		
Embankment Characteristics (if applicable):		
Slope		
Material (ex. sandy-clay fill, high cohesive, low cohesive, rip-rap, etc)		
Vegetation existence (Yes or No)		
CRITICALITY/RESILIENCE INDEX		**Notes**
Need for site access after event by essential traffic (ex. more than 48hrs, within 48hrs, within 12hrs, within 2hrs or immediately after event)		
Available Alternate Routes? If so, give routes and number of miles of re-route		
Route designation (ex. HAZMAT, Defense, Evacuation)		
Environmental Requirements for RIK: Categorical exclusions (CE), Environmental Assessment Template, Environmental Assessment Template		
DAMAGE		**Notes**
Lat/Long Start of Damaged Section		
Lat/Long End of Damaged Section		
Length of Damaged Section (ft)		
Description of Damage		
Asset Value Lost for THIS Event (ER+PR)		
Flood Intensity for THIS Event		
Number of Lanes Lost to Traffic		
Duration site was down (days)		

RnR Analysis Procedure

- Complete RnR datasheet
  - Costs
    - Total Asset Value
    - ER costs
    - PR costs (RIK)
    - PR + Standards costs (RTS)
    - Betterment costs

PLEASE ATTACH*		Notes
Total Replacement Cost of Site if completely lost		
PR (Replace in Kind + Best Practice)		
Description of Current Standard for site		
Current Standard Hydraulic Design		
Current Standard Hydraulic Capacity (ft^3/sec)		
Current Standard Design Life		
Improve to Current Standards Cost above PR Cost		
Description of Betterment A for site		
Betterment A Hydraulic Design Standard		
Betterment A Hydraulic Design Capacity (ft3/sec)		
Betterment A Design Life		
Betterment A Cost above PR Cost		
Description of Betterment B for site		
Betterment B Hydraulic Design Standard		
Betterment B Hydraulic Design Capacity (ft3/sec)		
Betterment B Design Life		
Betterment B Cost above PR Cost		
Description of Betterment C for site		
Betterment C Hydraulic Design Standard		
Betterment C Hydraulic Design Capacity (ft3/sec)		
Betterment C Design Life		
Betterment C Cost above PR Cost		

RnR Analysis Procedure

- Complete Project Costs
  - Standardized estimate sheet
  - Engineers estimated construction cost
  - Use standardized percentages for
    - Design
    - Construction Oversight
    - Contingencies
    - Indirects

Total Replacement Project Cost Estimate

Project Location: | Initials: | Date:

Name of Road	
Begin MP	or GPS Coordinates
End MP	
County	

Description of Work below :

PROJECT MAJOR CONSTRUCTION ITEMS

Major Earthwork Items	Length (ft)	Width (ft)	Depth (ft)	Unit	Unit Cost	Quantity	Cost
Rock Fill				CY	$ 30.00	0	$0
Excavation & Embankment				CY	$ 12.00	0	$0
Seeding and Blankets (= to or steeper than 2:1 slope)				AC	$ 13,750.00	0.00	$0
Seeding and Straw (flatter than 2:1 slope)				AC	$ 3,700.00	0.00	$0
Str. Backfill (Class 1)				CY	$ 30.00	0	$0
Str. Backfill (Flow -fill)				CY	$ 95.00	0	$0
Channel Excavation				CY	$ 45.00	0	$0
Rip Rap to protect embankment slopes				CY	$ 95.00	0	$0
Remove & Recycle Asphalt				SY	$ 9.00	0	$0
Remove & Recycle Concrete				SY	$ 15.00	0	$0
Rock Scaling				HR	$ 100.00	0	$0
Remove & Recycle ABC (6")				SY	$ 10.00	0	$0
Recondition Subgrade (6")				SY	$ 2.00	0	$0
					$ -	0	$0
					$ -	0	$0
					$ -	0	$0
					Estimated Cost Earthwork		**$0**

Bases & Pavements	Length (ft)	Width (ft)	Depth (in)	Unit	Unit Cost	Quantity	Cost
6" ABC Class 6				CY	$ 30.00	0	$0
HMA (assume 5") area greater than 500LF				TN	$ 80.00	0	$0
PCCP (assume 9", but project specific overrides)				SY	$ 40.00	0	$0
HMA Patching - anything less than 500 LF				TN	$ 130.00	0	$0
					$ -	0	$0

RnR Analysis Procedure

- Miscellaneous
  - Road User Cost Sheet
  - If available
    - Drawings of improvements
    - HEC-RAS
    - HEC-6 (streambank)
    - HY-8 (culvert)

ROAD USER COST CALCULATIONS

Subaccount: Project Name: CDOT FLOOD - MP 77.3-79.1 Highway No.: US34A

Construction Year ADT: 5600 % Trucks: 6

NON-CONSTRUCTION CONDITIONS

Posted Speed = 45 Length = 2 Miles

Travel Time = Mileage ÷ (Posted Speed ÷ 60 min/hr) = **2.67** **Minutes**

CONSTRUCTION CONDITIONS

Total Construction Length including Detours: 73 Miles

	*Length			Construction Speed MPH		Travel Time
US 34A:	14.7	M	÷	45	x 60 =	19.60
US 36B:	21.8	M	÷	45	x 60 =	29.07
SH 66B:	7.9	M	÷	60	x 60 =	7.90
US 287C:	15.7	M	÷	65	x 60 =	14.49
US 34A:	12.8	M	÷	45	x 60 =	17.07

*Segment Length Total: 72.9 **Total Travel Time = 88.13 Minutes**

*Segment mileage should add up to Total Construction Length.

TRAVEL TIME COSTS:

Delay Cost Factors:
Passenger Cars: 12.16 $ / veh-hr of delay
Multi-Unit Trucks: 24.18 $ / veh-hr of delay

	[%]		[ADT]		[COST FACT]		Daily Cost per Minute of Delay
Passenger Car Component:	0.94	X	5600	X	12.16	÷ 60 min/hr =	**$1,066.84**
Truck Component:	0.06	X	5600	X	24.18	÷ 60 min/hr =	**$135.41**

Total Daily Cost per Minute of Delay = $1,202.25

ROAD USER COSTS

Construction Delay = Construction Travel Time - Non-Construction Travel Time = **85.46** Minutes

Total Resultant Delay Costs = 85.46 X $1,202 = $102,743 per day

USE $102,700

RnR Analysis

- Questions

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