Section 2-01
Design and Environmental Flowcharts

INTRODUCTION

General. The attached flowcharts outline the design and environmental processes for major road construction projects such as reconstruction, widen & overlay, etc. They are not intended for projects such as overlay projects which do not require an involved interaction between design disciplines or a building block approach to design development. A detailed discussion of the flowcharts and their related processes is provided in subsequent sections of Chapter 2.

NEPA Analysis and Documentation Flowchart: The National Environmental Policy Act (NEPA) is an established procedure to ensure all project stakeholders have a voice in shaping projects on the national highway system and other projects constructed with federal funds. The NEPA Analysis and Documentation Flowchart provides a graphical representation of the NEPA procedures to be applied.

Design Process Flowchart: Defines the design development process with nodes that delineate the linear progression of key plan issuances and activities. Shown above each node is the data required to complete the node task, and below each node is a list of the tasks required by each program or section to continue the design process. See Section 2-02 Design Process for specific details as to how a project design relates to the flowchart.

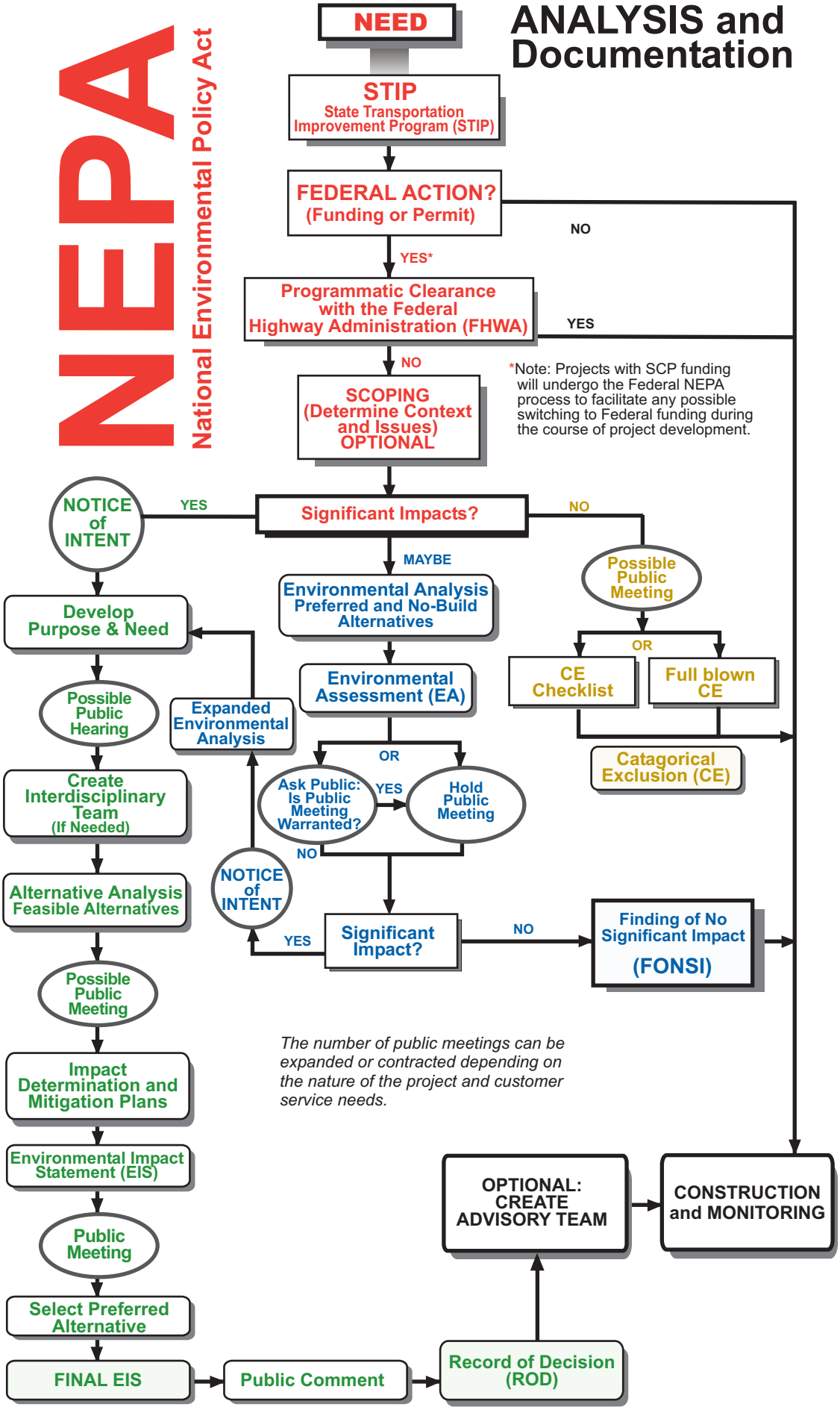
Environmental Process Flowchart: Overlays the NEPA process, with the major nodes of the WYDOT Design Process Flowchart to provide insight as to how the various processes interact with the overall project design. See Section 2-03 Environmental Process for specific details of the NEPA documentation to address the project impact and need.

Attachments:
NEPA Analysis and Documentation Flowchart - 1 Sheet (8½ x11)
Design Process Flowchart - 3 Sheets (11 x 17)
Environmental Process Flowchart - 3 Sheets (11 x 17)

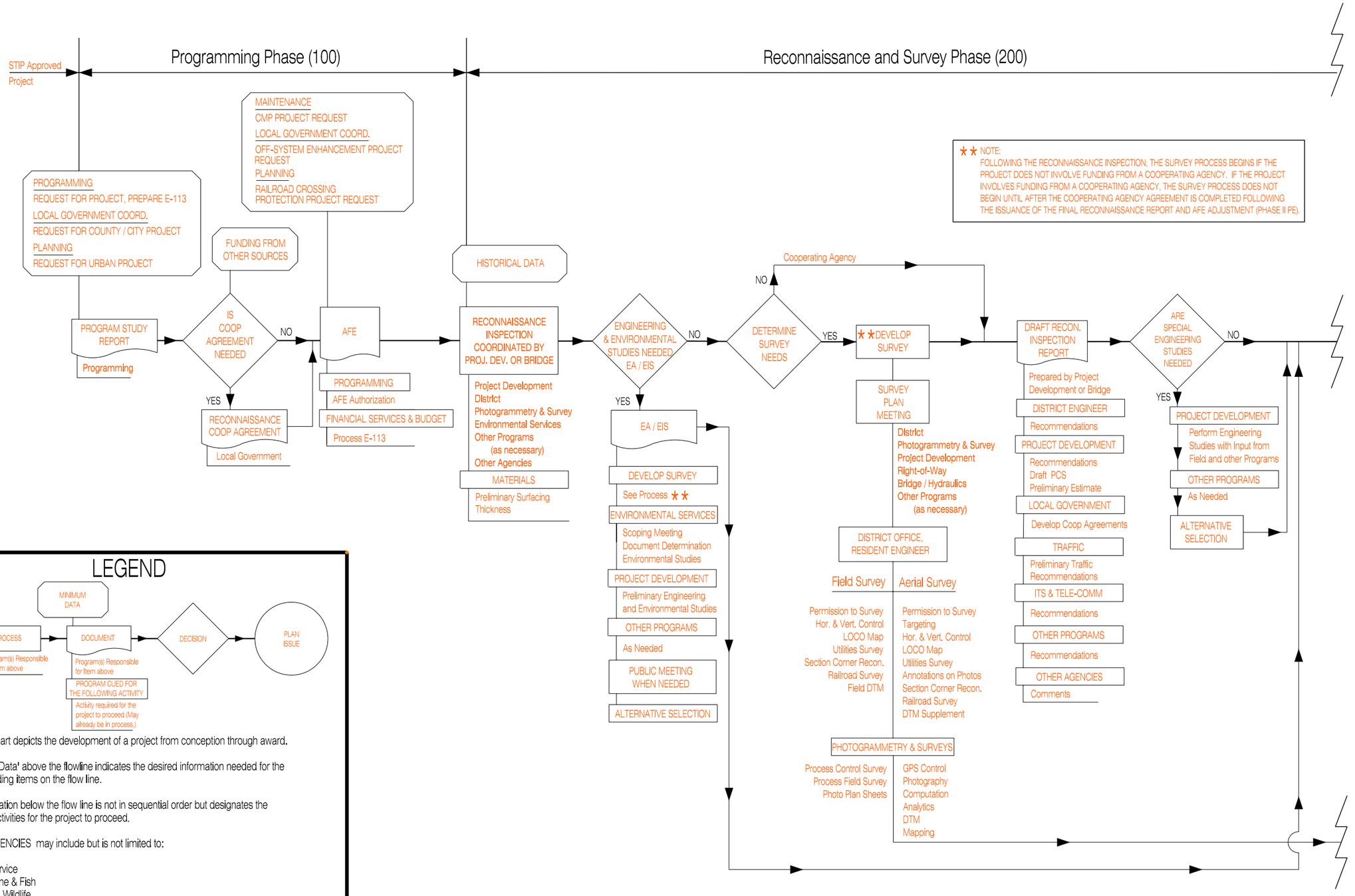
NEPA

National Environmental Policy Act

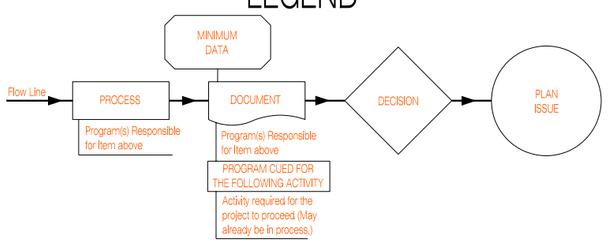
ANALYSIS and Documentation



The number of public meetings can be expanded or contracted depending on the nature of the project and customer service needs.



LEGEND



This flowchart depicts the development of a project from conception through award.

"Minimum Data' above the flowline indicates the desired information needed for the corresponding items on the flow line.

The information below the flow line is not in sequential order but designates the required activities for the project to proceed.

OTHER AGENCIES may include but is not limited to:
- BLM
- Forest Service
- State Game & Fish
- US Fish & Wildlife
- Irrigation Co-/District
- District Water Commission
- City and / or County
- Bureau of Reclamation
- FAA
- etc.

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Reconnaissance and Survey Phase (200)

Preliminary Design Phase (300, 400)

SELECTED DESIGN ALTERNATIVE,
DRAFT PCS,
COST ESTIMATE,
PRELIMINARY SURFACING THICKNESSES, AND
PRELIMINARY TRAFFIC RECOMMENDATIONS
PRELIMINARY ITS & TELE-COMM RECOMMENDATIONS
COOP AGENCY AGREEMENTS

FINAL RECON. INSPECTION REPORT & SCOPE STATEMENT

Prepared by Project Dev. or Bridge

DISTRICT ENGINEER
Approval

HIGHWAY DEV. ENGR.
Approval

LOCAL GOVERNMENT
Revised Funding Allocation
Coop Agency Agreement for BROS / IR Projects

COOPERATING AGENCY
Approval

OTHER AGENCIES
Approval

PROGRAMMING

FINANCIAL SERVICES & BUDGET
LOCAL ENTITY AGREEMENT (ARS)
E-113 PROCESSED

AFE ADJUSTMENT

FINANCIAL SERVICES & BUDGET
Open all design functions

DEVELOP SURVEY

Cooperating Agency (See Process Pg. 1) ★★

DEFINED DATA
MAPPING/DTM
EXISTING UTILITIES & RAILROADS

PRELIMINARY DATA
EXISTING R/W
HORIZONTAL ALIGNMENT(S)
GROUND PROFILE
GRADELINE
TYPICAL SECTION(S)
SECTION LINES
EARTHWORK DESIGN / MASS HAUL
INTERCHANGE & INTERSECTION LAYOUTS
RETAINING WALL LOCATIONS (1)
X-SECTIONS

ISSUE PRELIMINARY PLANS

NOTE:
(1) ANNOTATE POTENTIAL RETAINING WALL LOCATIONS ON PLANS AND CROSS SECTIONS

PRELIMINARY INSPECTION REPORT

Project Development

VALUE ENGINEERING STUDIES REQUIRED

NO

YES

VARIOUS PROGRAMS
Perform Engineering Studies and Life Cycle Cost Analysis

ALTERNATIVE SELECTION

IS PUBLIC MEETING REQUIRED

NO

YES

PUBLIC MEETING

DISTRICT ENVIRONMENTAL SERVICES PROJECT DEVELOPMENT
Review Input from Public Meeting

DEFINED DATA
HORIZONTAL ALIGNMENT
GROUND PROFILE
EXISTING R / W
EXISTING UTILITIES & RAILROADS
LAND TIES
SOILS PROFILE
OWNERSHIPS
SURFACING THICKNESSES
KNOWN CULTURAL SITES
WETLANDS DELINEATION
TYPICAL SECTIONS

PRELIMINARY DATA
GRADE LINE
PROPOSED RIGHT-OF-WAY
BORROW SOURCES (2)
APPROACHES
PIPE SIZES
INTERCHANGE & INTERSECTION LAYOUT(S)
EARTHWORK & X-SECTIONS / MASS HAUL
WETLAND IMPACTS & MITIGATION SITES
GEOLOGY RECOMMENDATIONS
DETOUR LAYOUTS
CONSTRUCTION IMPACT AREAS
HYDRAULICS REPORT
IDENTIFY TYPE OF STRUCTURE
STORM DRAIN LAYOUT
RETAINING WALL LOCATIONS

NOTE:
(2) IDENTIFY ALL POTENTIAL BORROW SOURCES INCLUDING EXTRA SOURCES, OBTAIN ENVIRONMENTAL AND ARCHAEOLOGICAL CLEARANCES AND PERFORM GEOTECHNICAL EXPLORATIONS.

ISSUE GRADING PLANS

PROJECT DEVELOPMENT
Finalize Horizontal Alignment(s)
Preliminary Drainage Design
Preliminary Plans Inspection

DISTRICT OFFICE, RESIDENT ENGINEER
Maintenance Review
Complete Req'd Survey
℄ Staked
R/W Land Surveys
Engineer's Recommendations
Sample Borrow Areas
Alkali Samples

GEOLOGY
Soils Profile Investigation
Preliminary Geology Recommendations
Geology Investigations
Structures Investigations
Surfacing Samples

HYDRAULICS
Drainage Area Determination
Hydraulic Report
Preliminary Storm Drain Layout

BRIDGE
Recommend Structure Type (Perliminary)
Geology Layouts

MATERIALS
Testing Soils, Surfacing, Borrows & Alkali Samples
Pavement Type Determination
Final Surfacing Thicknesses

UTILITIES
Initial Contact To Utilities Companies
Build Utility Geopak Files

ENVIRONMENTAL SERVICES
Wetlands Delineation & Report
Biological Assessment
Public Meeting / Hearing

TRAFFIC
Traffic Structure Investigation
Traffic Geometric Determination

RIGHT - OF - WAY
Existing Railroad Review & Report

ITS & TELE-COMM
Determine Locations

PROJECT DEVELOPMENT
Grading Inspection
Finalize Vertical Alignment
Finalize Grading Design
Preliminary TEQ & EST
Environmental Impact Determination
Drainage Design
NPDES
Wetland Mitigation Plan
Request Revegetation Recommendations

DISTRICT OFFICE, RESIDENT ENGINEER
Maint. Review
Supplemental Engineer's Recommendations

GEOLOGY
Pit Layout Sheets
Final Geology Report

MATERIALS
Soils Profile
Materials & Rates Recommendations

UTILITIES
Utilities Review & Report
Distribute Plans to Utility Companies

HYDRAULICS
Storm Drain Report

BRIDGE
Structure Selection Report
Preliminary Structure Layout
Preliminary Title and General Notes Sheets
Preliminary Cost Estimate
Railroad Notification

TRAFFIC
Review Traffic Geometric Layouts
Construction Traffic Control Recommendations

ENVIRONMENTAL SERVICES
Archeological Survey & Clearance
Revegetation Recommendations

CONTRACTS & ESTIMATES
Preliminary Cost Estimate

FHWA
Recommendations

ITS & TELE-COMM
ITS Site Determinations

OTHER AGENCIES
Recommendations

Preliminary Design Phase (300, 400)

Final Design Phase (500, 600 & 700)

Contract Phase (800)

DEFINED DATA
- HORIZONTAL & VERTICAL ALIGNMENT
- GROUND PROFILE
- LAND TIES
- OWNERSHIPS
- SURFACING & BORROW PITS
- DETOURS
- PROP. R / W & CONSTRUCTION PERMIT AREAS
- EXISTING UTILITIES & RAILROADS
- PROP. APPROACHES, CATTLEGUARDS, & FENCE

DEFINED DATA (CONT.)
- FINAL DRAINAGE & IRRIGATION
- GRADELINE / FINAL EARTHWORK / MASS HAUL
- INTERCHANGE & INTERSECTION LAYOUT(S)
- FINAL TYPICAL SECTION(S) WITH THICKNESSES
- WETLAND MITIGATION PLAN
- SOILS PROFILE
- FINAL GEOLOGY REPORT
- FINAL MATERIALS & RATES RECOMMENDATIONS
- ARCHEOLOGICAL SITES
- STORM DRAIN LAYOUT
- ITS & TELECOMMUNICATION SITES
- STORMWATER PLAN (IF REQUIRED)

PRELIMINARY DATA
- TRAFFIC CONTROL PLAN
- STRIPING DETAILS
- STRUCTURES LAYOUT
- INDEX OF PROPOSED SPECIAL PROVISIONS
- ANNOTATE RETAINING WALL LIMITS ON PLANS

ALL DESIGN FEATURES INCLUDING:
- DRAFT ELECTRICAL DESIGN PLANS
- PRELIMINARY STRUCTURE LAYOUT
- SURFACING SOURCE LAYOUT
- PIT & PLANT SITE & MATERIALS AGREEMENTS
- ITS & TELECOMMUNICATION SITES

SPECIAL PROVISIONS
- FINAL SUMMARIES & QUANTITIES
- DETAIL DRAWINGS
- 404 PERMIT
- CATEGORICAL EXCLUSION
- BRIDGE PLANS
- R.R. STRUCTURE AUTHORIZATION

COMPLETE ALL PLANS, SPECIAL PROVISIONS & AGREEMENTS

R/W ACQUISITION CLEARANCE
- ENVIRONMENTAL CLEARANCE
- UTILITY CLEARANCE
- 404 PERMIT
- AGREEMENTS:
  - RAILROAD
  - MATERIALS PIT
  - PLANT SITE
  - AIR
  - WATER

GRADING INSPECTION REPORT
- Project Development

ISSUE RIGHT-OF-WAY & ENGINEERING INSPECTION PLANS

PROJECT DEVELOPMENT
- R/W & Engineering Inspection
- Begin Preliminary Quantities
- Preliminary TEQ & EST

DISTRICT OFFICE, RESIDENT ENGINEER
- Provide Signed Agreements for Borrow, Surfacing, Haul Road, Waste Area, Plant Site, Water etc.

TRAFFIC
- Traffic Electrical Design
- Final Traffic Summaries

BRIDGE
- Details & Quantities
- Udate Cost Estimate

RIGHT - OF - WAY
- Railroad Exhibits & Contracts
- Final R/W Review & Reports

ENVIRONMENTAL SERVICES
- Categorical Exclusion
- 404 Permit
- Recommendations

MATERIALS
- Surfacing Source Layout

CONTRACTS & ESTIMATES
- Preliminary Cost Estimate

PROGRAMMING
- Issue R / W Project Number

FHWA
- Recommendations

OTHER AGENCIES
- Recommendations

RIGHT-OF-WAY REPORT & DEFICIENCY REPORT
- Right-of-Way

ENGINEERING INSPECTION REPORT
- Project Development

PREPARE DRAFT SPECIAL PROVISIONS
- Responsible Programs

ISSUE RIGHT-OF-WAY & UTILITY PLANS

PROJECT DEVELOPMENT
- Develop Final Summaries

UTILITIES
- Contact Utility Companies
- Program Utility Moves & Servicing

RIGHT-OF-WAY
- Review Meeting to Discuss New R / W (as needed)
- R/W Acquisition & Clearance
- Submit Railroad Agmt.

BRIDGE
- Final Details & Quantities
- Final Cost Estimate
- Submit Final Plans to Railroad

CONSTRUCTION STAFF
- Finalize Special Provisions

ENVIRONMENTAL SERVICES
- Recommendations

PROGRAMMING
- Issue Construction Project Numbers

FINANCIAL SERVICES & BUDGET
- Issue R/W & Utility AFE

ITS & TELE-COMM
- Detailed design, plans & summaries

FHWA
- Recommendations

OTHER AGENCIES
- Recommendations

ISSUE FINAL DESIGN PLANS

PROJECT DEVELOPMENT
- Final Plans Inspection

DISTRICT OFFICE, RESIDENT ENGINEER
- Plan Concurrence

CONSTRUCTION STAFF
- Preliminary Time Determination (as needed)

PHOTOGRAMMETRY & SURVEY
- Issue Final Survey Database File

GEOLOGY
- Plan Concurrence

MATERIALS
- Plan Concurrence

ENVIRONMENTAL SERVICES
- Plan Concurrence

RIGHT-OF-WAY
- Plan Concurrence

CONTRACTS & ESTIMATES
- Preliminary Cost Estimate

FHWA
- Plan Concurrence

OTHER AGENCIES
- Plan Concurrence

CHECK PLANS

ENGINEERING SERVICES

TRANSMIT ELECTRONIC FILES TO RECORDS
- Affected Programs

ISSUE P S&E PLANS

PROJECT DEVELOPMENT
- Construction Staking Reports

CONSTRUCTION STAFF
- Final Time Determination

CONTRACTS & ESTIMATES
- Request R / W Clearance, Environmental Clearance, Utility Clearance and 404 Clearance.
- Submit P S & E Documentation to FHWA, Assistant Chief Engineer for Engineering & Planning and District Engineer
- Final Cost Estimate

ASSISTANT CHIEF ENGINEER FOR ENGINEERING & PLANNING
- Approve Project Advertisement on Non-Interstate or Non-NHS Project

FINANCIAL SERVICES & BUDGET
- Approve Funding

FHWA
- Approve Project Advertisment on NHS Project

DISTRICT OFFICE, RESIDENT ENGINEER
- Review P S & E Submittals with County / City for Approval to Advertise

ENGINEERING SERVICES
- Final Plan check and Distribution
- Print Contract Plans and Documents

OTHER AGENCIES
- Review P S & E Submittals for Approval to Advertise

PREPARE ADVERTISEMENT

CONSTRUCTION STAFF
- Wage Determination

CONTRACTS & ESTIMATES
- Prepare Advertisement
- Prepare Proposal

ADVERTISEMENT

CONTRACTS & ESTIMATES
- Addendums / Special Notice(s)

CONSTRUCTION STAFF
- Issue Bid Envelopes

DISTRICT OFFICE, RESIDENT ENGINEER
- Show Project to Potential Bidders
- Pre-bid Meeting as needed

FINANCIAL SERVICES & BUDGET
- Sell Plans & Project Documents

BID OPENING

CONTRACTS & ESTIMATES
- Analyze Bid for Recommendation to Award

CONSTRUCTION STAFF
- Notify District of Bid Results
- Analyze DBE Documentation

DISTRICT OFFICE, RESIDENT ENGINEER
- Check for Concurrence in Award from Other Agencies Involved in Funding

PROJECT AWARD

TRANSPORTATION COMMISSION

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NEPA (National Environmental Policy Act)

NEED

STP APPROVED PROJECT

FEDERAL ACTION

NO

TO PS & E PLANS

PROGRAMMATIC CE

YES

CATEGORICAL EXCLUSION (CE)

DESIGN PROCESS FLOWCHART

PROGRAM STUDY REPORT

IS COOP AGREEMENT NEEDED

AFE

RECONNAISSANCE INSPECTION COORDINATED BY PROJ. DEV. OR BRIDGE

ENGINEERING & ENVIRONMENTAL STUDIES NEEDED EA / EIS

NO

DETERMINE SURVEY NEEDS

DEVELOP SURVEY

DRAFT RECON. INSPECTION REPORT

ARE SPECIAL ENGINEERING STUDIES NEEDED

NO

YES

EA

ENGINEERING

NEPA (EA)

ENGINEERING

PROGRAMMATIC CLEARANCE WITH FHWA

YES*

NO

OPTIONAL SCOPING (Determine Context and Issues)

SIGNIFICANT IMPACTS

NO

MAYBE

YES

ENVIRONMENTAL ASSESSMENT PROCESS (EA)

NO

SIGNIFICANT IMPACTS

YES

POSSIBLE PUBLIC MEETING

NOTICE OF INTENT

EA W/PROJECT SECTIONS

EXPANDED ENVIRONMENTAL ANALYSIS

NEPA (EA)

ENVIR. ANALYSIS PERFORMED & NO-BUILD ALTERNATIVES

NEPA (EIS)

YES

CORRIDOR STUDY

NO

NEPA (EA)

NEPA (EA)

POSSIBLE PUBLIC MEETING

ENVIRONMENTAL ALTERNATIVE ANALYSIS

ENGINEERING

*NOTE: PROJECTS WITH SCP FUNDING WILL UNDERGO THE FEDERAL NEPA PROCESS TO FACILITATE ANY POSSIBLE SWITCHING TO FEDERAL FUNDING DURING THE COURSE OF PROJECT DEVELOPMENT.

TO EIS

DESIGN PROCESS FLOWCHART

PROGRAM STUDY REPORT

IS COOP AGREEMENT NEEDED

AFE

RECONNAISSANCE INSPECTION COORDINATED BY PROJ. DEV. OR BRIDGE

ENGINEERING & ENVIRONMENTAL STUDIES NEEDED EA / EIS

NO

DETERMINE SURVEY NEEDS

DEVELOP SURVEY

DRAFT RECON. INSPECTION REPORT

ARE SPECIAL ENGINEERING STUDIES NEEDED

NO

YES

EIS

NEPA

ENGINEERING

NEPA (EIS)

ENGINEERING

ENGINEERING

ENVIRONMENTAL IMPACT STATEMENT PROCESS (EIS)

NEPA SURVEY & PRELIMINARY ENVIRONMENTAL ANALYSIS

NOTICE OF INTENT

DEVELOP PURPOSE & NEED

POSSIBLE PUBLIC HEARING

CREATE INTERDISCIPLINARY TEAM (If needed)

ENVIRONMENTAL IMPACT STATEMENT (EIS)

IMPACT DETERMINATION & MITIGATION PLANS

POSSIBLE PUBLIC MEETING

ALTERNATE ANALYSIS FEASIBLE ALTERNATIVES

PUBLIC MEETING

SELECT PREFERRED ALTERNATIVE

FINAL EIS

CONTINUED NEPA PROCESS (EIS)

PUBLIC COMMENT

RECORD OF DECISION

NEPA

NOTE: IN ALL CASES THE NUMBER OF PUBLIC MEETINGS CAN BE EXPANDED OR CONTRACTED DEPENDING ON THE NATURE OF THE PROJECT AND CUSTOMER SERVICE NEEDS.

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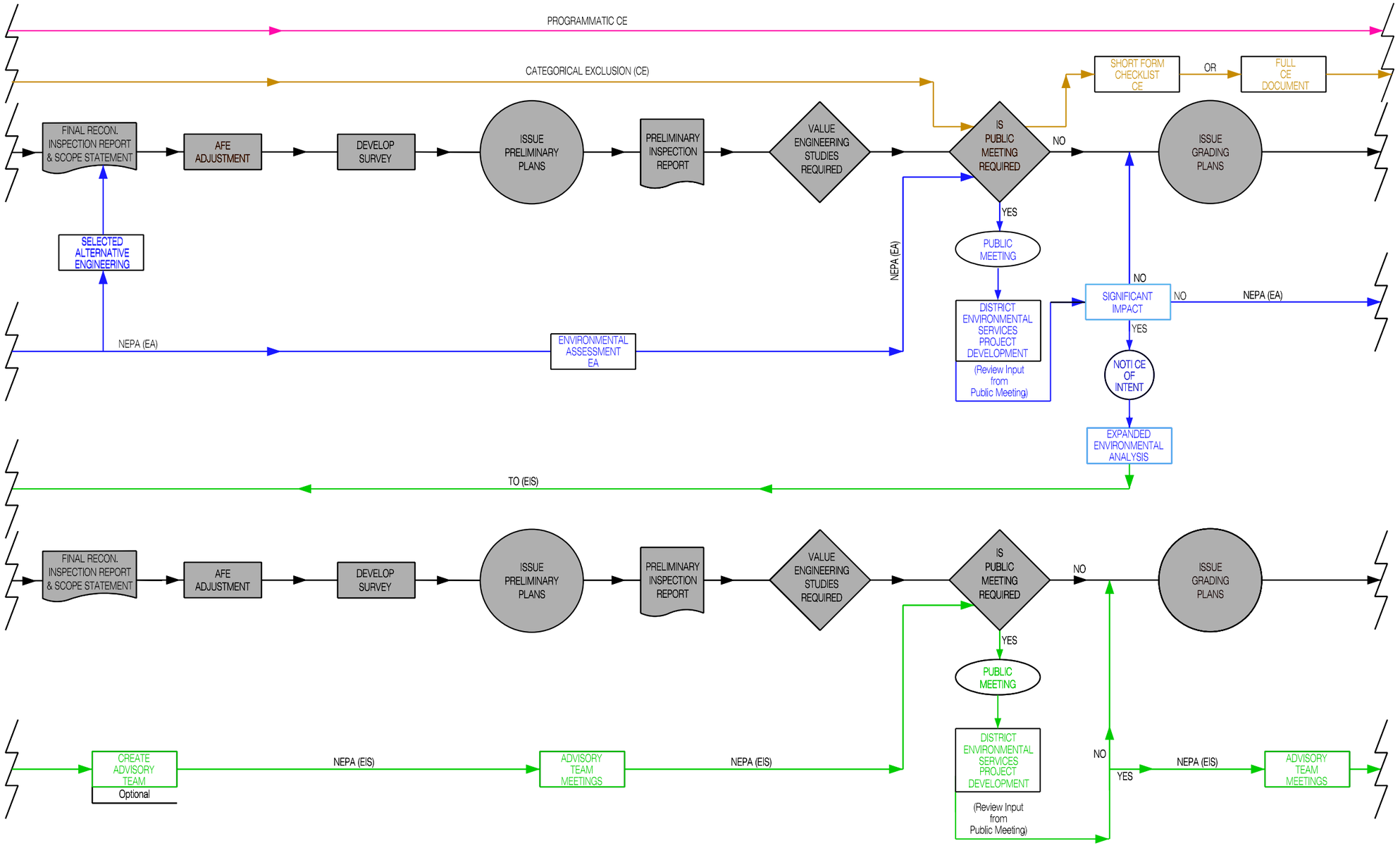

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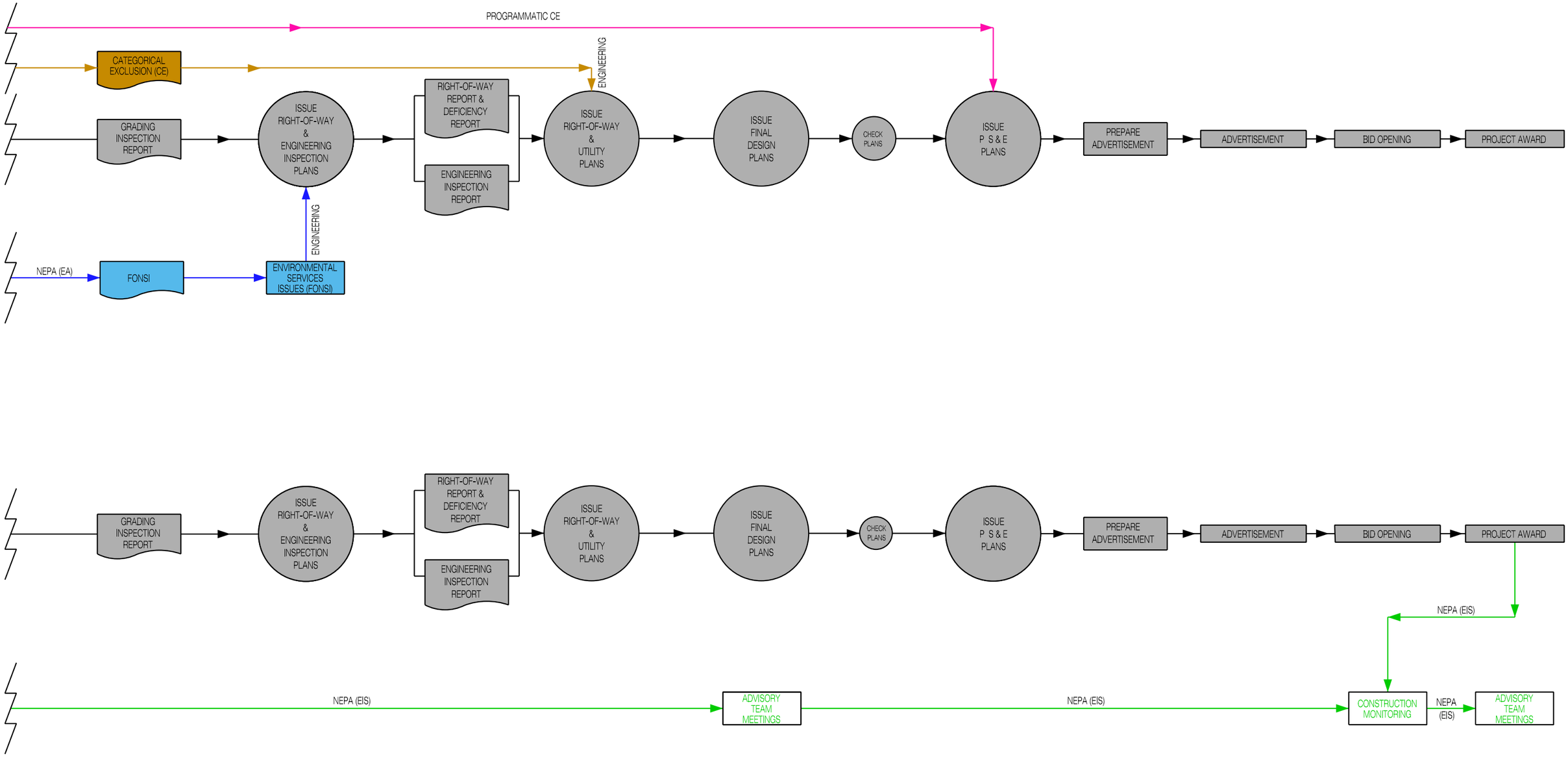

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