LEAN SIX SIGMA ASSESSMENT
FINANCE DEPARTMENT – LIENS PROCESSING

GREEN BELT CERTIFICATION

August 12, 2014

FIVE STAGES: DEFINE

D M A I C

Define

- Executive Summary
- Charter
- Lean Six Sigma Rollout Summary

Measure

- Approach
- Establish Baseline
- Current State Value Stream Map

Analyze

- Ishikawa Analysis
- Cycle Time Analysis
- Pareto Analysis
- Waste Analysis

Improve

- Kaizen Event
- Recommendations
- Detailed Value Stream Map
- Future Value Stream Map

Control

- Education Awareness
- Continuous Improvement

EXECUTIVE SUMMARY

D M A I C

Objectives

- Reduce the overall cycle time for liens process
- Focus on reducing waste: waiting time, defects and motion
- Improve quality and efficiency throughout the process

Scope

- Finance department-related liens processes, including: requests, payments, maintenance/updates, and release of liens

Deliverables

- Current State Assessment
- Ideal State Assessment
- Pareto Analysis
- Cycle Time Analysis
- Recommendations
- Transition Plan
- Continual Improvement & Education Plan

Result

- Cycle Time decrease by 75% to goal of 262 minutes or ~4 hours
  - By removing five steps from current liens processing cycle
  - By improving the Preparing and Sending Release of Lien steps
  - By decreasing the number of people involved in the Post Payment (SAP) step and reducing that cycle time
  - By reducing the cycle time (estimated 10 minutes) in the Locate the Project File step
- Establish buy-in from COH liens processors on improved processes and ensure better quality of work

GREEN BELT PROJECT CHARTER

D M A I C

Background:
The Finance department of the City of Houston has expressed interest in improving its' Liens process, and Lean Six Sigma tools and techniques will be used for the analysis. There are three phases to the Liens process flow: Lien Request, Lien Payment and Release of Lien. The current issues in the process include high levels of variability and waste in searching for the lien assessment.

Objective:
- Reduce the overall cycle time of the liens process by 75%
- Focus on reducing waste: waiting time, defects and motion
- Apply Lean Six Sigma tools and concepts to drive significant improvements via focused Lean Six Sigma tool education and implementation

In Scope:
- Lien Request Phase
  - Searching for assessment of Lien
- Payment Phase
- Release of Lien Phase
- Paving - Asphalt Liens
- Paving - Concrete Liens
- Lamar Terrace I Liens
- COH Finance Department
  - Accounts Receivable Division
- WALS system

Out of Scope:
- COH Department of Neighborhoods (CHIPS)
- Linebarger, Goggan, Blair, and Sampson, LLP
- COH – Housing and Community Development
- COH – Public Works and Engineering

Deliverables: Use of DMAIC LSS methodology
- Define:
  - Gather data
  - Completed project charter
  - Create a LSS Pilot Rollout Schedule
  - Conduct Interviews with Stakeholders
- Measure:
  - High level process map
  - Fully developed current value stream map
    - Assess the gaps in the process
  - Current State Assessment summary
- Analyze:
  - Identify and validate potential root causes
  - Pareto analysis
  - Waste analysis
  - Cycle time analysis
- Improve:
  - Recommendations
  - An improved process that is stable, predictable and meets client requirements
- Control:
  - Documented plan to transition improved process back to process owner, participants and sponsor (Continuous education awareness)
  - Design controls within the process for continuous improvement

Target Benefits:
- Cycle Time decrease by 75% to goal of 262 minutes or ~4 hours
- Improved quality of liens request process
- Increased throughput
- Clearly defined roles, responsibilities and requirements for new liens request process

Roles:
- Green Belt Candidate (Will Chisholm and Bethany Ackeret) to provide customized LSS training materials
- Green Belt Candidate (Will Chisholm and Bethany Ackeret) to provide approach to apply LSS tools and perform corresponding design/implementation
- Black Belt Sponsor (Jay Campbell) to provide mentorship and assistance
- Liens sponsor to provide data required to support LSS tool application
- Liens sponsor to ensure resource availability and involvement as required

Key Stakeholders:
- Will Chisholm (Green Belt Candidate)
- Bethany Ackeret (Green Belt Candidate)
- Jay Campbell (Certified Black Belt)
- LaToya Jasper (Project Sponsor)

LSS PROJECT ROLLOUT SCHEDULE

D M A I C

	Weeks - Starting 6/30/2014								
Tasks	**Activities**	**Wk 1**	**Wk 2**	**Wk 3**	**Wk 4**	**Wk 5**	**Wk 6**	**Wk 7**	**Wk 8**
		6/30	7/7	7/14	7/21	7/28	8/11	8/18	8/25
Preparation	Gather Data								
Assessment	Conduct Interviews								
	Compile Detailed Current State Value Stream Map								
	Conduct Cycle Time Analysis								
	Define Opportunities and Benefits for Findings								
	Prioritize Opportunities with Stakeholders – create future state VSM								
Develop New Process	Develop improved process that is stable, predictable and meets client requirements								
Support/ Education	Ongoing recommendation implementation; support and continued education								

D M A I C

FIVE STAGES: MEASURE

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- Define Approach
- Establish Baseline for Analysis
- Current State Value Stream Map

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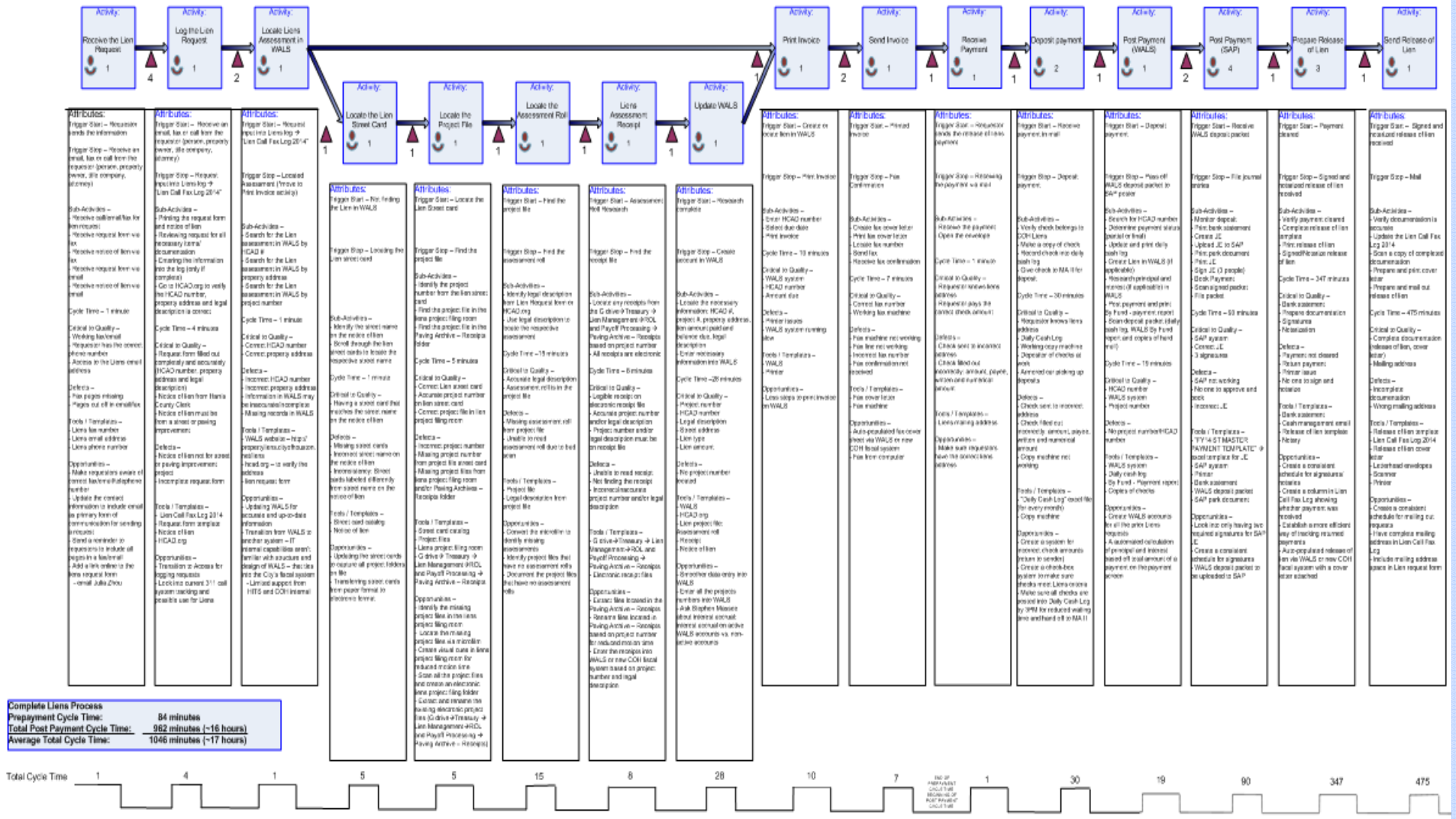
D M A I C

EVALUATING CURRENT STATE PROCESSES

	Conduct Interviews	Create Current State Baseline	Develop Future State Conceptual Model
Activities	▲Interviewed key users in the liens request process ▲Documented their role and any issues	▲Created current state value stream map ▲Established high-level current state operational baseline through existing process documentation and interviews	▲Selected and defined scope of opportunities to be developed ▲Mapped ideal value stream
Deliverables	▲High level value stream map	▲Current State Value Stream Map	▲Process Assessment Findings ▲Future State Value Stream Map

CURRENT STATE VALUE STREAM MAP

D M A I C



FIVE STAGES: ANALYZE

D M A I C

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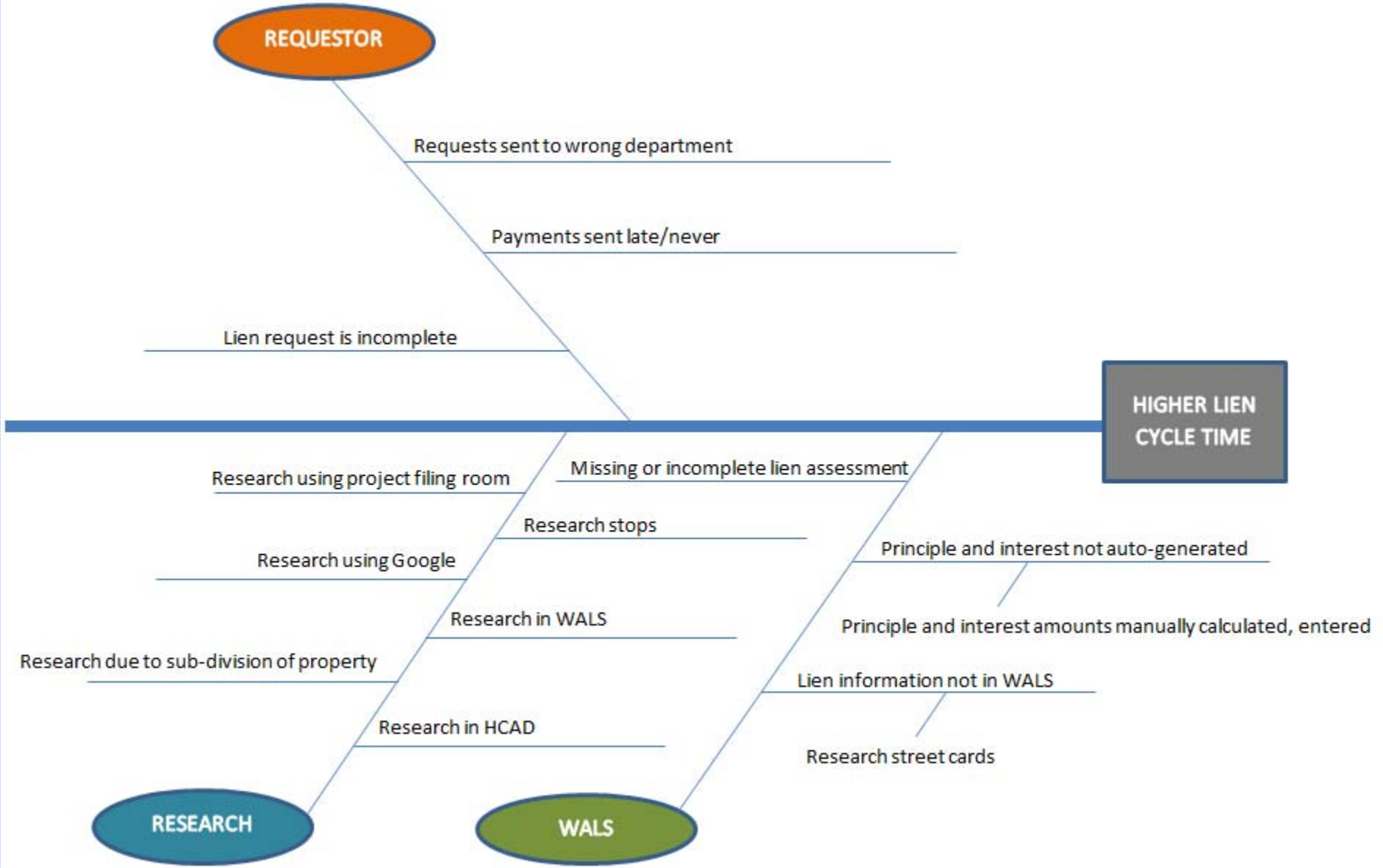
ISHIKAWA: FISH BONE DIAGRAM

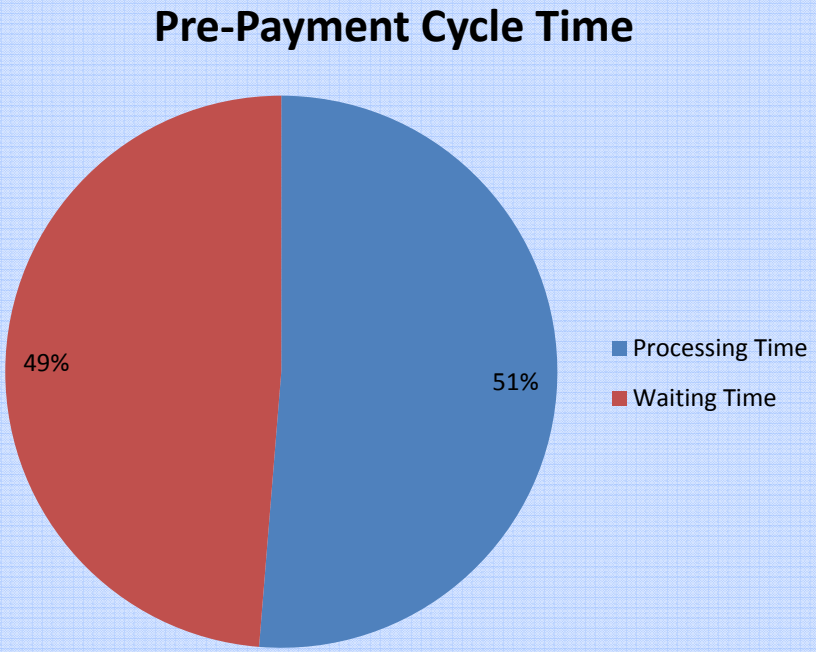
D M A I C

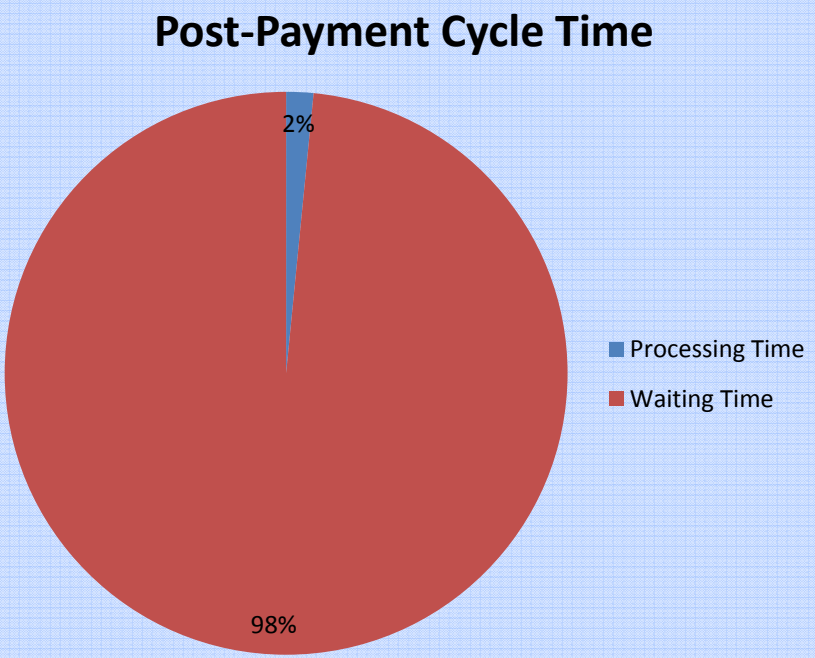


CYCLE TIME ANALYSIS

D M A I C

Pre-Payment Cycle Time (minutes)				
Average	Minimum	Maximum	Processing Time	Waiting Time
77.40	44.00	136.00	40	38
Post-Payment Cycle Time (minutes)				
Average	Minimum	Maximum	Processing Time	Waiting Time
961.33	804.00	1181.00	15	947





CYCLE TIME ANALYSIS – TIMESTAMP EXAMPLES

D M A I C

	Request 1			Request 2		
	Start	Stop	Cycle	Start	Stop	Cycle
Receive the Lien Request	1:00:00 PM	1:01:00 PM	1.00	10:55:00 AM	10:57:00 AM	2.00
Log the Lien Request	1:01:00 PM	1:02:00 PM	1.00	10:57:00 AM	10:59:00 AM	2.00
Locate the Liens Assessment in WALS	1:02:00 PM	1:03:00 PM	1.00	10:59:00 AM	11:00:00 AM	1.00
Locate the Lien Street Card	1:03:00 PM			11:00:00 AM		
Locate the Project File		1:08:00 PM	5.00		11:05:00 AM	5.00
Locate the Assessment Role	1:08:00 PM	1:30:00 PM	22.00	11:05:00 AM	11:19:00 AM	14.00
Liens Assessment Receipt						
Update WALS	1:30:00 PM	2:35:00 PM	65.00	11:19:00 AM	11:34:00 AM	15.00
Print Invoice	2:35:00 PM	2:36:00 PM	1.00	11:34:00 AM	11:45:00 AM	11.00
Send Invoice	2:36:00 PM	2:43:00 PM	7.00	11:45:00 AM	11:59:00 AM	14.00
Total Prepayment Cycle Time			**103.00**			**64.00**
Receive Payment	2:58:00 PM	2:59:00 PM	1.00	11:33:00 AM	11:34:00 AM	1.00
Deposit/Post Payment (WALS)	2:59:00 PM	3:05:00 PM	6.00	11:34:00 AM	2:45:00 PM	191.00
Check Clears (SAP)						
Prepare Release of Liens	3:05:00 PM	11:29:00 AM	340.00	2:45:00 PM	11:33:00 AM	348.00
Send Release of Liens	11:29:00 AM	11:23:00 AM	474.00	11:33:00 AM	11:27:00 AM	474.00
Total Post Payment Cycle Time			**805.00**			**1,014.00**
Total Cycle Time			**908.00**			**1,078.00**

DEFECTS: PARETO ANALYSIS

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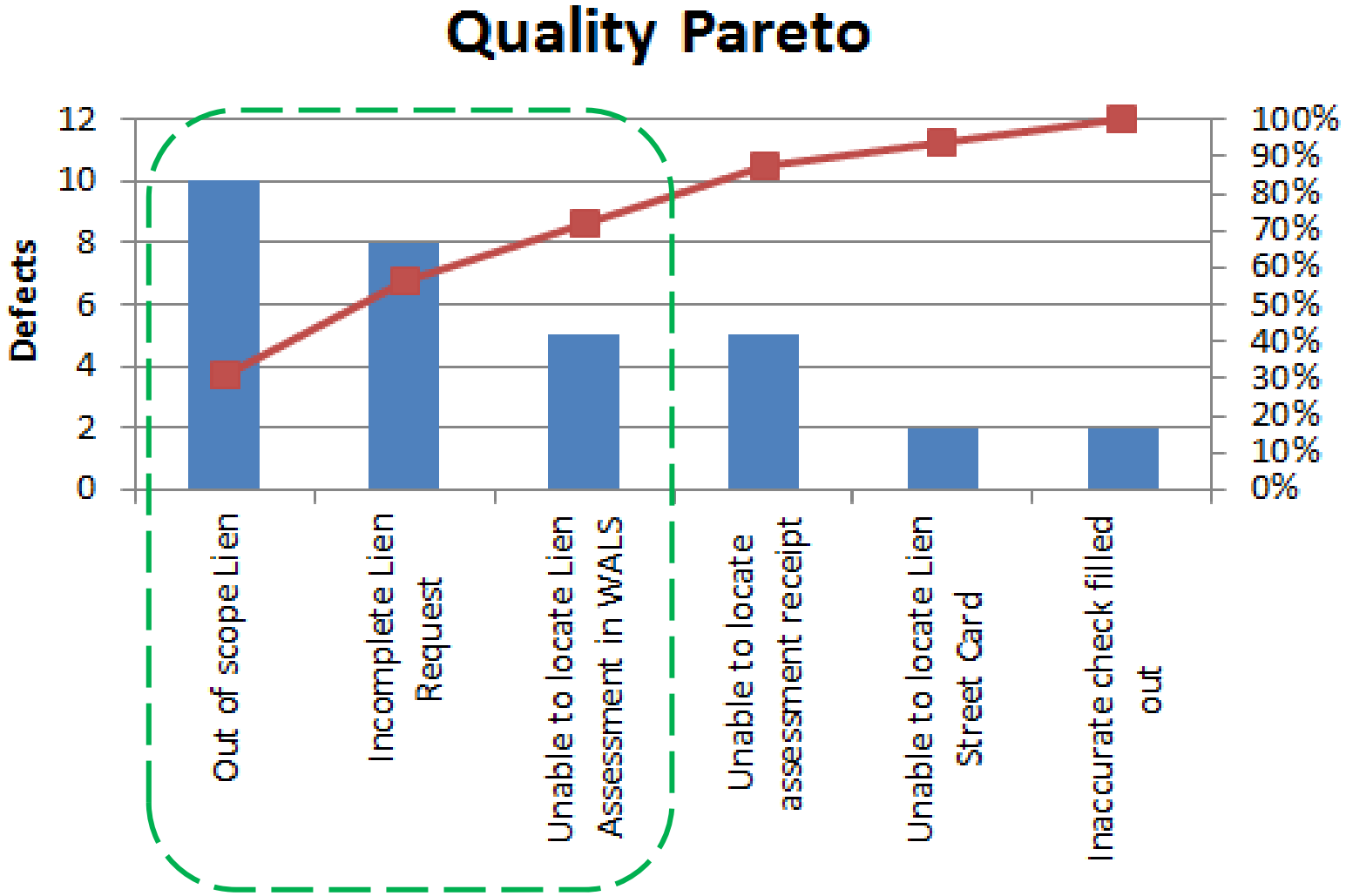
- Sample size = 44
- 73% overall defect rate in the process
- 32 out of 44 lien requests were defects



Key areas drive highest amount of defects (~80%)

PRIMARY WASTE IN CURRENT STATE – LIENS PROCESSING

FIVE STAGES: IMPROVE

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PROCESS ASSESSMENT FINDINGS

D M A I C

	Finding	Recommendation	Potential Benefits
Defects	1) On average, it takes nearly 30 minutes to update WALS because liens data is absent in WALS.	To internally create a Microsoft Access database to house all the WALS information. Hire a temporary employee to enter all of the lien information on file.	Decrease the cycle time by reducing over-processing and inventory waste.
	2) Liens are being sent to the wrong department and are incomplete because the information on City of Houston liens website is unclear and confusing.	Revise the City of Houston liens website to better present the liens instructions and information.	Reduce the number of out of scope liens and incomplete liens (defects).
Waiting Time	3) Preparing and sending the release of liens takes 1-2 business days due to the waiting time.	Streamline and standardize the signature and notarization process by creating daily office hours with signer/notary.	Reduce the cycle time by decreasing waiting time.
	4) Posting payments in SAP takes between 1-2 hours due to the involvement of multiple people in the process.	Train the liens processor to park the journal entries in SAP.	Reduce the cycle time by decreasing waiting time and motion.
Motion	5) Liens research takes excessive time because there are no indicators in the liens filing room to locate a project folder.	Create visual cues in liens project filing room.	Reduce cycle time by clear signals to project file location.
	6) Liens research takes excessive time because there are missing project folders that don't match to a street card.	Create a spreadsheet that captures all project folders on file and that are missing.	Reduce the number of defects and eliminate motion waste.

IMPLEMENTATION STATUS

D M A I C

	Finding	Recommendation	Implementation Status
Defects	1) On average, it takes nearly 30 minutes to update WALS due to waiting time.	To internally create a Microsoft Access database to house all the WALS information. Hire a temporary employee to enter all of the lien information on file.	In Progress
	2) Liens are being sent to the wrong department and are incomplete because the information on City of Houston liens website is unclear and confusing.	Revise the City of Houston liens website to better present the liens instructions and information.	Complete
Waiting Time	3) Preparing and sending the release of liens takes 1-2 business days due to the waiting time.	Streamline and standardize the signature and notarization process by creating daily office hours with signer/notary.	Complete
	4) Posting payments in SAP takes between 1-2 hours due to the involvement of multiple people in the process.	Train the liens processor to park the journal entries in SAP.	Complete
Motion	5) Liens research takes excessive time because there are no indicators in the liens filing room to locate a project folder.	Create visual cues in liens project filing room.	Complete
	6) Liens research takes excessive time because there are missing project folders that don't match to a street card.	Create a spreadsheet that captures all project folders on file and that are missing.	Complete

VISUAL CUE IN LIENS FILING ROOM

BEFORE

AFTER

FUTURE STATE VALUE STREAM MAP IMPROVEMENTS

D M A I C

- **Recommendation #1 would remove five steps from the VSM:**
  - Locate the Lien Street Card
  - Locate the Project File
  - Locate the Assessment Roll
  - Liens Assessment Receipt
  - Update WALS

- **Recommendation #2 is not easily quantifiable at this time.**

- **Recommendation #3 would reduce the cycle time in the Preparing and Sending Release of Lien steps by between 1 – 2 business days.**

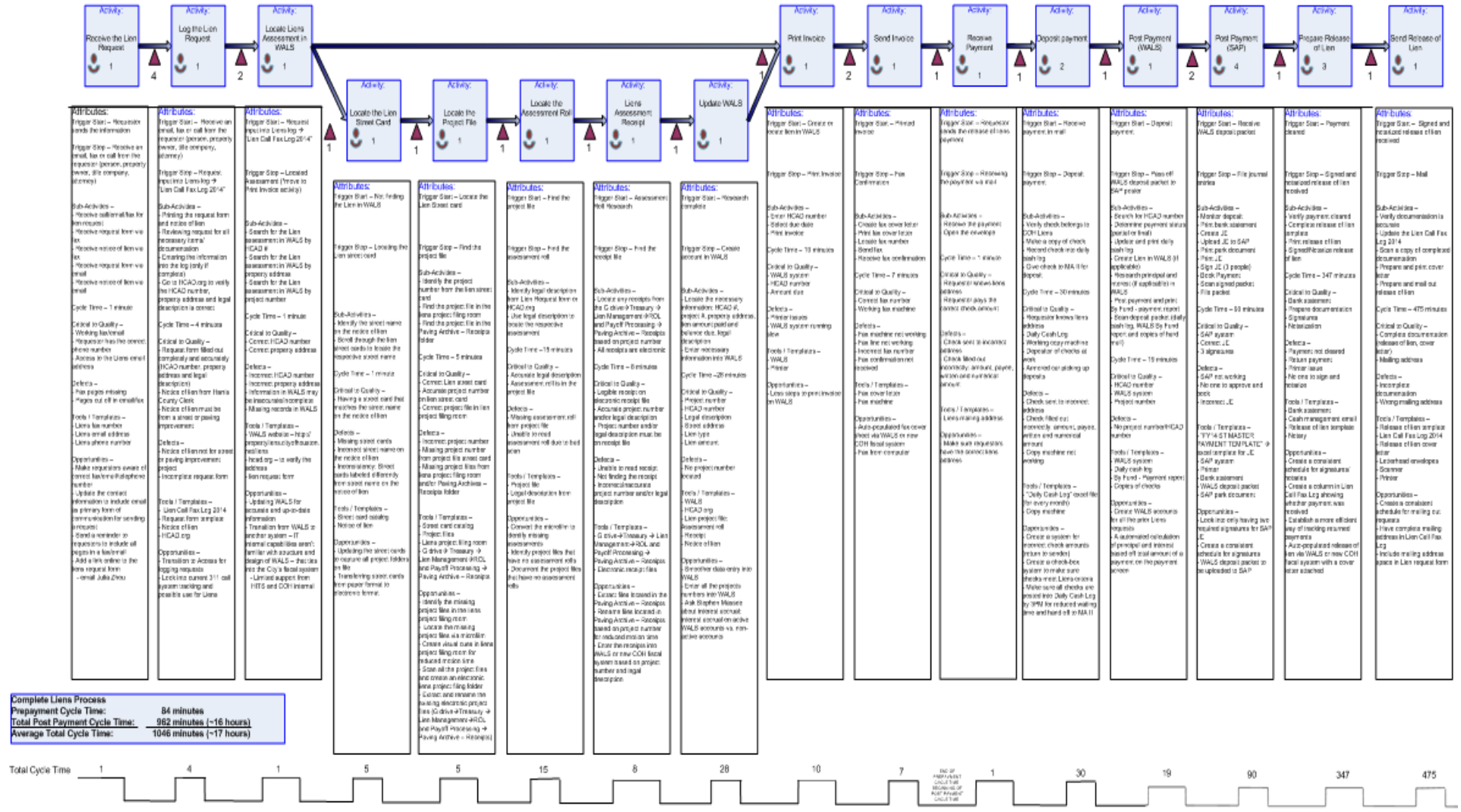
- **Recommendation #4 would reduce the cycle time (estimated 60 minutes) and decrease the number of people involved in the process in the Post Payment (SAP) step.**

- **Recommendations #5 and #6 would reduce the cycle time (estimated 10 minutes) in the Locate the Project File step.**

Ideal state would decrease cycle time about 800 minutes (~13 hours)!

CURRENT STATE VALUE STREAM MAP

D M A I C



FUTURE VALUE STREAM MAP

D M A I C

Attributes:

Trigger Start – Requestor sends the information

Trigger Stop – Receive an email, fax or call from the requestor (person, property owner, title company, attorney)

Sub-Activities –
- Receive call/email/fax for lien request
- Receive request form via fax
- Receive notice of lien via fax
- Receive request form via email
- Receive notice of lien via email

Cycle Time – 1 minute

Critical to Quality –
- Working fax/email
- Requestor has the correct phone number
- Access to the Liens email address

Defects –
- Fax pages missing
- Pages cut off in email/fax

Tools / Templates –
- Liens fax number
- Liens email address
- Liens phone number

Opportunities –
- Make requestors aware of correct fax/email/telephone number
- Update the contact information to include email as primary form of communication for sending a request
- Send a reminder to requestors to include all pages in a fax/email
- Add a link online to the liens request form
  - email Julia Zhou

Attributes:

Trigger Start – Receive an email, fax or call from the requestor (person, property owner, title company, attorney)

Trigger Stop – Request input into Liens log → "Lien Call Fax Log 2014"

Sub-Activities –
- Printing the request form and notice of lien
- Reviewing request for all necessary items/ documentation
- Entering the information into the log (only if complete)
- Go to HCAD.org to verify the HCAD number, property address and legal description is correct

Cycle Time – 4 minutes

Critical to Quality –
- Request form filled out completely and accurately (HCAD number, property address and legal description)
- Notice of lien from Harris County Clerk
- Notice of lien must be from a street or paving improvement

Defects –
- Notice of lien not for street or paving improvement project
- Incomplete request form

Tools / Templates –
- Lien Call Fax Log 2014
- Request form template
- Notice of lien
- HCAD.org

Opportunities –
- Transition to Access for logging requests
- Look into current 311 call system tracking and possible use for Liens

Attributes:

Trigger Start – Request input into Liens log → "Lien Call Fax Log 2014"

Trigger Stop – Located Assessment (*move to Print Invoice activity)

Sub-Activities –
- Search for the Lien assessment in WALS by HCAD #
- Search for the Lien assessment in WALS by property address
- Search for the Lien assessment in WALS by project number

Cycle Time – 1 minute

Critical to Quality –
- Correct HCAD number
- Correct property address

Defects –
- Incorrect HCAD number
- Incorrect property address
- Information in WALS may be inaccurate/incomplete
- Missing records in WALS

Tools / Templates –
- WALS website – http://propertyliens.cityofhouston.net/liens
- hcad.org – to verify the address
- lien request form

Opportunities –
- Updating WALS for accurate and up-to-date information
- Transition from WALS to another system – IT internal capabilities aren't familiar with structure and design of WALS – that ties into the City's fiscal system
  - Limited support from HITS and COH internal

Attributes:

Trigger Start – Create or locate lien in WALS

Trigger Stop – Print Invoice

Sub-Activities –
- Enter HCAD number
- Select due date
- Print invoice

Cycle Time – 10 minutes

Critical to Quality –
- WALS system
- HCAD number
- Amount due

Defects –
- Printer issues
- WALS system running slow

Tools / Templates –
- WALS
- Printer

Opportunities –
- Less steps to print invoice on WALS

Attributes:

Trigger Start – Printed invoice

Trigger Stop – Fax Confirmation

Sub-Activities –
- Create fax cover letter
- Print fax cover letter
- Locate fax number
- Send fax
- Receive fax confirmation

Cycle Time – 7 minutes

Critical to Quality –
- Correct fax number
- Working fax machine

Defects –
- Fax machine not working
- Fax line not working
- Incorrect fax number
- Fax confirmation not received

Tools / Templates –
- Fax cover letter
- Fax machine

Opportunities –
- Auto-populated fax cover sheet via WALS or new COH fiscal system
- Fax from computer

Attributes:

Trigger Start – Requestor sends the release of liens payment

Trigger Stop – Receiving the payment via mail

Sub-Activities –
- Receive the payment
- Open the envelope

Cycle Time – 1 minute

Critical to Quality –
- Requestor knows liens address
- Requestor pays the correct check amount

Defects –
- Check sent to incorrect address
- Check filled out incorrectly: amount, payee, written and numerical amount

Tools / Templates –
- Liens mailing address

Opportunities –
- Make sure requestors have the correct liens address

Attributes:

Trigger Start – Receive payment in mail

Trigger Stop – Deposit payment

Sub-Activities –
- Verify check belongs to COH Liens
- Make a copy of check
- Record check into daily cash log
- Give check to MA II for deposit

Cycle Time – 30 minutes

Critical to Quality –
- Requestor knows liens address
- Daily Cash Log
- Working copy machine
- Depositor of checks at work
- Armored car picking up deposits

Defects –
- Check sent to incorrect address
- Check filled out incorrectly: amount, payee, written and numerical amount
- Copy machine not working

Tools / Templates –
- "Daily Cash Log" excel file (for every month)
- Copy machine

Opportunities –
- Create a system for incorrect check amounts (return to sender)
- Create a check-box system to make sure checks meet Liens criteria
- Make sure all checks are posted into Daily Cash Log by 3PM for reduced waiting time and hand off to MA II

Attributes:

Trigger Start – Deposit payment

Trigger Stop – Pass off WALS deposit packet to SAP poster

Sub-Activities –
- Search for HCAD number
- Determine payment status (partial or final)
- Update and print daily cash log
- Create Lien in WALS (if applicable)
- Research principal and interest (if applicable) in WALS
- Post payment and print By Fund - payment report
- Scan deposit packet (daily cash log, WALS By Fund report and copies of hard mail)

Cycle Time – 19 minutes

Critical to Quality –
- HCAD number
- WALS system
- Project number

Defects –
- No project number/HCAD number

Tools / Templates –
- WALS system
- Daily cash log
- By Fund - Payment report
- Copies of checks

Opportunities –
- Create WALS accounts for all the prior Liens requests
- A automated calculation of principal and interest based off total amount of a payment on the payment screen

Attributes:

Trigger Start – Receive WALS deposit packet

Trigger Stop – File journal entries

Sub-Activities –
- Monitor deposit
- Print bank statement
- Create JE
- Upload JE to SAP
- Print park document
- Print JE
- Sign JE (3 people)
- Book Payment
- Scan signed packet
- File packet

Cycle Time – 90 minutes

Critical to Quality –
- SAP system
- Correct JE
- 3 signatures

Defects –
- SAP not working
- No one to approve and book
- Incorrect JE

Tools / Templates –
- "FY14 ST MASTER PAYMENT TEMPLATE" → excel template for JE
- SAP system
- Printer
- Bank statement
- WALS deposit packet
- SAP park document

Opportunities –
- Look into only having two required signatures for SAP JE
- Create a consistent schedule for signatures
- WALS deposit packet to be uploaded to SAP

Attributes:

Trigger Start – Payment cleared

Trigger Stop – Signed and notarized release of lien received

Sub-Activities –
- Verify payment cleared
- Complete release of lien template
- Print release of lien
- Signed/Notarize release of lien

Cycle Time – 347 minutes

Critical to Quality –
- Bank statement
- Prepare documentation
- Signatures
- Notarization

Defects –
- Payment not cleared
- Return payment
- Printer issue
- No one to sign and notarize

Tools / Templates –
- Bank statement
- Cash management email
- Release of lien template
- Notary

Opportunities –
- Create a consistent schedule for signatures/ notaries
- Create a column in Lien Call Fax Log showing whether payment was received
- Establish a more efficient way of tracking returned payments
- Auto-populated release of lien via WALS or new COH fiscal system with a cover letter attached

Attributes:

Trigger Start – Signed and notarized release of lien received

Trigger Stop – Mail

Sub-Activities –
- Verify documentation is accurate
- Update the Lien Call Fax Log 2014
- Scan a copy of completed documentation
- Prepare and print cover letter
- Prepare and mail out release of lien

Cycle Time – 475 minutes

Critical to Quality –
- Complete documentation (release of lien, cover letter)
- Mailing address

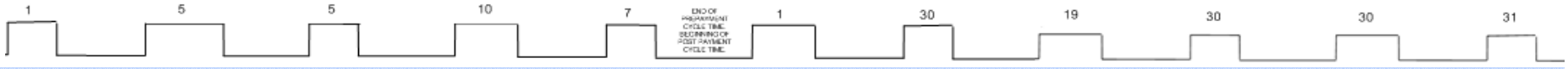
Defects –
- Incomplete documentation
- Wrong mailing address

Tools / Templates –
- Release of lien template
- Lien Call Fax Log 2014
- Release of lien cover letter
- Letterhead envelopes
- Scanner
- Printer

Opportunities –
- Create a consistent schedule for mailing out requests
- Have complete mailing address in Lien Call Fax Log
- Include mailing address space in Lien request form

Complete Liens Process

Prepayment Cycle Time:	**28 minutes**
Total Post Payment Cycle Time:	**141 minutes (~2 hours)**
Average Total Cycle Time:	**169 minutes (~3 hours)**



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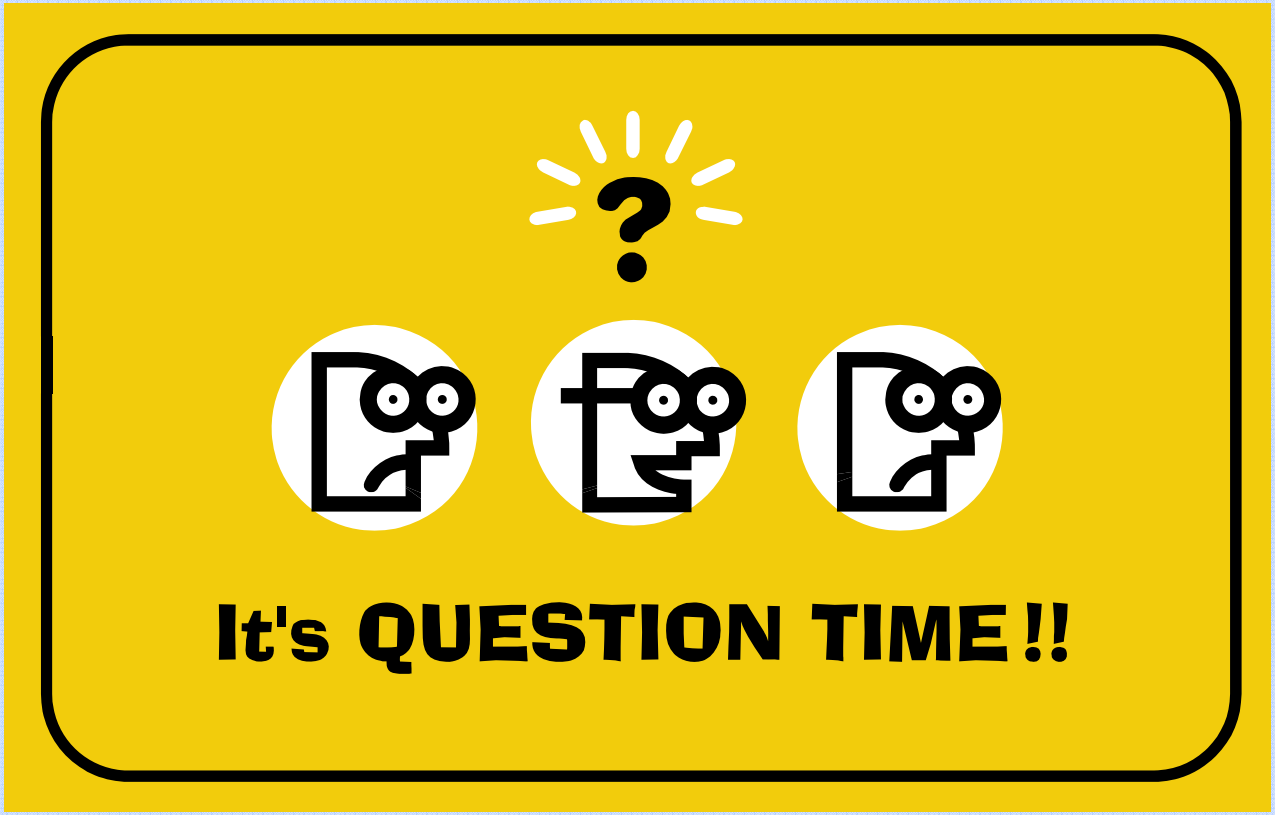
Add controls into the process

- Spreadsheet to track total pre-payment cycle time and post-payment cycle time
- Every two weeks, liens processor will track a liens request at the detailed level
- Build timestamps into the forthcoming database


It's QUESTION TIME!!