Phase 3: Data Considerations

Once you have determined which steps to take regarding asset repair, rehabilitation, or replacement, and have decided how to modify your operations to reduce the impact of future failures, particularly by trying to reduce unexpected failures, it's time to consider how collecting data can help you analyze asset condition and use that knowledge to predict failures.

It is important to develop a data plan before you start collecting information. Determine what questions you are trying to answer with your data, as this will determine the types of information you need to complete your analysis. The nature of the questions determine what data you need. Additionally, determine what format that data should be in to complete your analysis effectively. For example, if you want to perform calculations, data should be stored in a numeric form (e.g "9" and not "nine"). Finally, determine how to efficiently collect, store, update and analyze your data. Determine who will collect data and develop a training program and chain of custody, so that your staff will understand what data is to be collected, on what schedule, by whom and what means - and most importantly - why the data is being collected. If your staff understands how data collection and analysis will benefit the organization you are less likely to encounter resistance.

There are certain attributes, or data points that you will collect for all assets, such as install date, condition and expected useful life. But most asset classes have specific and unique attributes that are important to an effective analysis.

Below are a list of questions to consider about your data and some suggestions for good data management.

It is ok to start small, just make a plan and start.

1. What raw data do you need to collect?

- You can't collect data on everything.
- Only collect data if you are going to use it.
- Think of your critical assets and what data you could collect to ensure you know the condition of the assets.
- Collect common data and asset specific data.
- Create standard operating procedures (SOPs) for collecting data.
- Also decide who will collect the data and include that information in SOPs and future job descriptions.

2. How will you store your data?

- It is extremely important to stay organized. Create SOPs for data storage so multiple people in your utility can handle data.
- Think about what formats you can store data in, and consider the capabilities you have to analyze the data in each format.
- Make sure to have some sort of backup in place so data is not lost.
- Think about who should have access to the data.
- Chose software that:
  - You can afford
  - Is compatible with other software in your system
  - You have expertise using (or are wiling to train someone to use)

3. How will you update your data?

- Can data be collected in the regular course of business or does it require a dedicated effort?
- How often will you collect data? Decide this at the beginning and include it in your SOP.
- Data custody chain:
  - Do you need one?
  - Who has access and what kind?
  - How is it documented?

4. What can you do with the data?

- What do you want to know from the data? Base the type of analysis you will do on the information you need to find out about the assets.
- Always create SOPs for data analysis, review them regularly and update them as needed.
- Also consider when and how often you plan to do analysis and integrate that into the SOPs so that the data is available when you need it.
- Think about whether you can use your data to answer other questions, and if not what additional data points you might need.
- Example analysis: risk assessment
  - Probability of Failure and Consequence of Failure