SRS Documentation for

PHTRS

Pothole Tracking and Repair System

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Introduction

Purpose

This document defines the software requirements and details for the Pothole Tracking and Repair System (PHTRS) application for the Department of Public Works. The goal of this is to design a system to assist and streamline the pothole repair process by efficiently tracking and managing the pothole reports from the public and internal teams.

Scope

This system will allow users to submit pothole reports with details for review. From this report potholes are uniquely identified, assessed by staff for repair priority and then assigned for repair. The system also allows the entry and update of details that can be used to track pothole repair status by different teams using the system to efficiently manage and track the pothole repair lifecycle, cost, labor and details.

Definitions, Acronyms, Abbreviations and Details

Listed below are important terms, abbreviations and details that will henceforth be used during the development process.

Acronym / Abbreviation	Meaning
PHTRS	Pothole Tracking and Repair System
DFD	Data Flow Diagram
ERD	Entity Relation Diagram

Term	Definition
Stakeholder	A person interested in or funding this project.
User	A person interacting and using the system.
Citizen	A user who is not affiliated with the Department of Public Works.
Staff Member	A person employed or directly affiliated with the Department of Public Works. User group includes members of different departments, such as: damage claims processing department, financial or billing department, administrative department.
Repair Crew	A person either employed or subcontracted by the Department of Public Works to handle the pothole repair process.
Pothole	Depression or damage on a road caused by wear, sinking.
Pothole Record	A record created by the system that contains the details associated to a pothole.

Pothole ID	Pothole Identifying Number. Unique identifier for reported potholes. Used to track, modify and manage pothole and work order details. These are autogenerated by the system.
Pothole Size	Reported size of pothole. Size is detailed on a scale of 1 to 10.
Pothole Repair Priority	Priority rating for pothole repair. Potholes of higher priority should be repaired first. Priority is determined by the size of a pothole as described below: 9-10 Scale is Urgent 8-7 Scale is Top 6-4 Scale is Average 3-1 Scale is low 0 is not an available option This is autogenerated by the system but can be modified by authorized Staff Members.
Pothole Repair Status	Current repair status of a pothole. Available statuses for this are: Work in Progress, Repaired, Temporary Repair and Not Repaired.
Pothole Street Address	Street address where a pothole was reported.
Pothole Location	Location or area where a pothole was reported in a street address. Currently included options are: middle, curb, bike lane, crosswalk.
District	State or city division determined by street address. This is autogenerated by the system.
Pothole Date Reported	Date a pothole was reported in the system. This is autogenerated by the system when a user submits a pothole report.
Citizen ID	Citizen Identifying Number. Unique identifier for Citizen users in the system. Used to track user information such as reported potholes and damage reports. These are autogenerated by the system.
Citizen Username	Unique username selected by a Citizen user.
Citizen Password	Unique password selected by a Citizen user
Citizen Name	Name of the Citizen user.
Citizen Email	Email provided by Citizen user for contact.
Citizen Street Address	Citizen user's address of residence.
Citizen Phone Number	Citizen user's current phone number for contact.
Citizen Damage Reports	List of Damage Reports previously submitted by a Citizen user.
Citizen Pothole Reports	List of Pothole Reports previously submitted by a Citizen user.
Work Order	File created once a pothole report is processed and approved for repair. These include pothole details, repair crew details and cost details that can are traceable and modifiable.
Work Order Record	A record created by the system that contains the details associated to a work order.
Work Order ID	Unique identifier for Work Orders associated with a pothole. These are autogenerated by the system.
Estimated Cost of Repair	Estimated cost of repairs based on historical data of pothole repairs with similar data. This is estimated by computing the hours applied to a repair, crew member size assigned to a repair, type and amount of material used

	in repair, equipment assigned to repair. This is autogenerated by the system but can be modified by an authorized Staff Member.
Cost of Repair	Cost of repair based on current pothole repair data associated to the work order. This is calculated by computing the hours applied to a repair, crew member size assigned to a repair, type and amount of material used in repair, equipment assigned to repair. This is autogenerated by the system but can be modified by an authorized Staff Member.
Assigned Repair Crews	Repair Crew assigned to a Work Order.
Repair Crew Record	A record created by the system that contains the details associated to a repair crew.
Repair Crew ID	Repair Crew Identifying Number. Unique identifier for a Repair Crew that has been assigned to repair a pothole. Used to assign and track repair crews. These are autogenerated by the system.
Crew Size	Number of people assigned to a specific Repair Crew.
Hours Worked on Repair	Number of hours spent to complete a pothole repair.
Equipment	Equipment needed and available to repair a pothole. Currently included options are: safety equipment, measurement kits, paver, roller, dump truck, asphalt heater, compactor, roller, pavement cutter, jackhammer, miller, cleaning equipment, hand tools.
Equipment Assigned to Crew	Equipment assigned to a specific Repair Crew. Currently included options available are listed under Equipment.
Filler Material	Material used to fill potholes. Currently included options are: asphalt mix, tack coal, concrete, aggregate, emulsion sealant, crack filler.
Filler Material Used	Filler material used by the Repair Crew to repair the a pothole assigned to their crew. Currently included options available are listed under Filler Material. This is directly associated with the Amount of Filler Material Used.
Amount of Filler Material Used	Amount of filler material used to repair a pothole. This is directly associated with the Filler Material Used. Units are measured in pounds.
Damage Due to Pothole	Report submitted by a Citizen claiming that there was damage to their property.
Damage File Record	A record created by the system that contains the details associated to a report of damage to property reported by a Citizen user.
Damage File ID	Damage File Identifying Number. Unique identifier for reported damage reports. Used to track, modify and manage damage file records. These are autogenerated by the system.
Type of Damage	Type of damage to property reported by a Citizen user. Currently included options are: suspension, body or frame, tire or rim, motor, other.
Estimated Damage Costs	Estimate of monetary cost of damage caused by a pothole provided by a Citizen user.

Supporting Documents	Additional documentation to support request or claim. Examples of these include: documents, receipts, images, etc.
Damage Report Status	Review status of a damage report. Currently included options are: submitted, under review, approved, denied.
Damage Review Updates	Section where Staff Members can add notes for the review process of damage reports. Staff Members can select whether or not an update is visible to a Citizen user in their damage report record.
Damage Report Date Submitted	Date a damage report was submitted to the system. This is autogenerated by the system when a user submits a damage report.
Damage Report Date Reviewed	Date a damage report was reviewed by a staff member. This date is automatically updated when a status change or update visible to a client occurs.
Staff Member Record	A record created by the system that contains the details associated to a Staff Member.
Staff Member ID	Staff Member Identifying Number. Unique identifier for Staff Member users in the system. These are autogenerated by the system.
Staff Member Username	Unique username assigned to a Staff Member.
Staff Member Password	Unique password selected by a Staff Member.
Staff Member Name	Name of the Staff Member.
Staff Member Role	Role assigned to a Staff Member. This is used to determine the permissions they are granted in the system.
Permissions	Permissions granted to a Staff Member can be used to allow or limit the data they have access to. Roles can have preset permissions and additional individual permissions can be granted at the administrators discretion.
Estimate Reports	Reports generated by using historical data with similar data values to generate estimation for analysis. These estimate reports can be for: costs, labor, materials, damage costs, etc.
Reports	Reports generated by using current data entered to graphically represent information for analysis. These reports can be for: costs, labor, materials, damage costs, etc.

Developer Responsibilities Summary

This section outlines, in general, the responsibilities and tasks assigned to the developer team.

The development team is expected to

- Review this document regularly for project understanding and updates.
- Provide updates during the development stage.
- Report issues encountered during the development stage.
- Receive and review client and user feedback.
- Develop system as laid out in the SRS.
- Review assigned task and provide feedback on them (time estimates, notes, etc.)
- Develop and test interfaces.
- Design and implement backend logic.
- Design and implement backend data storage.
- Use clean coding design and properly document code.

General Descriptions

Product Function Summary

This system aims to streamline and digitize the process of reporting, tracking, and repairing potholes in a large city. The system does this by allowing users to report potholes for review, creating traceable records for repair work orders as well as creating traceable records for property damage caused by potholes.

This section describes in more detail the problem or need that is being addressed, and the functionalities available to resolve it.

Problem Statement

The Department of Public Works needs a more streamlined and efficient process to track and report potholes in the city.

PHTRS streamlines the process of pothole repair by leveraging community feedback in reporting both potholes and damages to their property caused by them. It also provides an organized and traceable system to record pothole details, repair work orders, repair prioritization mechanisms, and damage claims processing.

Below is a detailed breakdown of the functionalities PHTRS offers.

Citizen Pothole Reporting

PHTRS leverages user-generated reports to increase the scope of identified potholes in a large city, assess their risk level, and prioritize their repair based on their risk factor.

Pothole Reporting

When a pothole is reported the system creates a record with a unique identifier that can be used for tracking and monitoring.

Damage Reporting

PHTRS allows users to report damage caused to their property due to potholes. This provides a streamlined process to handle damage claims and reduces the likelihood of users seeking external resolutions to the damage caused.

Work Order Management

Once it's determined that a pothole should be repaired, a work order record is generated that is used to track the different stages of the pothole repair for efficient follow-up. The work order allows the allocation and tracking of resources, repair crews, and repair process tracking.

Pothole Repair Prioritization

PHTRS offers methods to prioritize pothole repairs based on predetermined risk factors to increase road security, reduce property damage to citizens, and minimize damage incidence of payouts for property damage caused by potholes.

Repair Resource Allocation

Resources can be allocated through the system for the repair of potholes through work orders. Estimation tools are reporting tools are available to assist in budget and resource allocation.

Cost Tracking
PHTRS also functions as an efficient cost tracking tool as it creates traceable records that can be used to pull and analyze historical data of costs, materials and labors used during repairs.

Cost Estimation
PHTRS calculates estimated repair costs by taking into consideration factors such as crew hours worked, materials and equipment used in the repair.

Damage Claims Processing
PHTRS provides a platform for users to report damages to their property caused by potholes, allowing for these claims to be processed internally and in a streamlined traceable manner.

Interactive Queries
PHTRS provides an interactive query-based system for users to be able to query information about potholes, work orders, repair statuses, and resource allocations in a manner that is traceable.

Report Generation
Reports can be generated from the traceable records generated by the system, allowing efficient reviews of overall pothole repair costs, resources used, pothole repair times, damage claims payouts as well as overall road conditions.

Increased Road Security
By providing a streamlined process of pothole reporting and pothole repair, the system effectively assists in reducing the amount of high-risk potholes in a large city.

User Characteristics

This section describes, in general terms, the user groups that will be interacting with the system. Users are separated into different groups to emphasize the access and permissions they are granted within the system.

All users

Are expected to:

- Have access to the internet to be able to use the application.
- Be internet literate and able to navigate and use the application.

Citizen

User group is expected to:

- Create an account to log in to the application.
- Be able and willing to report potholes they encounter.
- Be able and willing to report damage to their property caused by a pothole.
- Be honest in report and claim information submitted.
- Submit supporting documentation for their report or claims when requested.

Staff Member

User group is expected to:

- Be given company approval/access to create an account in the system.
- Have access to the application features based on their role.

Repair Crew

User group is expected to:

- Repair potholes assigned to their team based on allocated budget.
- Have authority clearance to modify information regarding costs, labor and equipment usage.
- Submit supporting documentation for their report.

General Restrictions

This section indicates the restrictions within which the PHRTS will operate.

Data Privacy and Storage

The system functions and complies with data privacy laws. Sensitive user information is encrypted and securely stored. Personal sensitive information is limited to publicly available information and does not request nor contain personal sensitive information that could prove harmful to users' personal lives.

Limited Access and Permissions

The system provides permissions and access keys to limit the information that each user group is able to view, access or modify. This information is encrypted and stored with access permissions that can be granted by stakeholders upon their decisions.

Internet Dependency

This is a web-based application and requires a stable internet connection for use. All user groups are required to have a device with internet access for proper use.

General Assumptions

This section outlines the general assumptions considered to be true about the environment and the user groups using the system.

- Devices used to access the system are expected to be in working condition with no flaws.
- Devices used to access the system are expected to have internet access.
- User groups are expected to have access to a stable internet connection.
- User groups are expected to have basic computer, application and internet understanding and skills to use the system.
- Staff Member user groups is expected to have clear understanding of pothole repair process handling, claims process handling and repair crew assignment processes.
- Staff Member user group is expected to have basic understanding of reporting tools and analysis.
- User groups are expected to make timely reports and updates of the information being entered in the system.
- System is expected to be granted access and connection to existing city data structures, mapping and validation services for address handling.

Specific Requirements

Inputs and Outputs

This section outlines the expected inputs and outputs for the PHTRS system.

Pothole Record

Input

- Pothole Street Address
- Pothole Size (Scale of 1 to 10)
- Pothole Location (middle, curb, bike lane, crosswalk)
- Pothole Status (Work in progress, repaired, temporary repair, not repaired)

Output

- Pothole ID
- District
    - Determined from street address
- Repair Priority
    - Determined from the size of the pothole
- Pothole Status
- Date Reported

Citizen Record

Input

- Username
- Password
- Email
- Name
- Citizen Street Address
- Citizen Phone Number

Output

- Citizen ID
- Citizen Damage Reports
- Citizen Pothole Reports

Work Order Record

Input

- Pothole Record
- Repair Crew Record
- Assigned Repair Crew

Output

- Work Order ID

- Estimated cost of repair reports
    - Generated by using the historical data of previous projects with similar details to the current project.
- Cost of repair reports
    - Generated by using current project data related to labor and repair costs.

Damage File Record

Input

- Citizen Record
- Type of damage
- Estimated Damage Costs
- Supporting documents
    - Photos, bills, invoices, estimates, insurance information, damage inspection.

Output

- Damage File ID
- Report Status
- Damage Review Updates
- Damage Report Date Submitted
- Damage Report Date Reviewed

Staff Member Record

Input

- Username
- Password
- Name
- Role
- Permissions

Output

- Staff Member ID

Repair Crew Record

Input

- Pothole Record
- Crew Size
- Equipment Assigned to Crew
- Filler Material Used
- Amount of Filler Material Used
- Hours Worked on Repair

Output

- Repair Crew ID

Functional Requirements

This section outlines the use cases for the different user groups.

Citizen

Use case: Submitting a Damage Claim

- User opens application
- System displays login page
- User enters their information and logs in to their account
- System displays dashboard for citizen user group
- User chooses to create a damage claim
- User enters details of damage to their vehicle
- User submits supporting documentation for their damage claim
- User chooses to submit details
- User now waits for the claim to be reviewed

Citizen

User case: Submitting a Pothole Report

- User opens application
- System displays login page
- User enters their information and logs in to their account
- System displays dashboard for citizen user group
- User chooses to create a pothole report
- User enters details about the pothole they are reporting (address, location, size)
- User submits supporting documents for their pothole report (optional)
- User chooses to submit the pothole report

Staff Member

User case: Submitting a Work Order

- User opens application
- System displays login page
- User enters their information and logs in to their account
- System displays dashboard for staff user group
- User chooses to review pothole report submitted by citizen user
- User determines pothole priority level is high and creates a work order
- User assigns a Repair Crew to work on pothole repair

Repair Crew

User case: Updating Work Order After Repair

- User opens application
- System displays login page
- User enters their information and logs in to their account
- System displays dashboard for repair crew user group
- User reviews active work order
- User updates hours worked on repair, equipment used, and materials used
- User updates pothole repair status to completed

Interface Requirements

This section outlines the general requirements for the interfaces the system offers.

Software Interface

- System should interact and retrieve information from location validating services.
- System should interact and retrieve information from district mapping and validating services.

Hardware Interface

- System should be able to communicate and interact with desktop computers, laptops, tablets and other mobile devices.
- System should be able to and connect to a reliable and secure internet connection.

General User Interface

- Interface should be simple and intuitive to allow quick learning by Citizen users and minimal training for Staff Members and Repair Crew.
- Interface that allows users to log in to their accounts.
- Interface that allows users to create an account if they do not have one.
- Forms that allow users to enter the requested information in a clear and easy-to-understand manner.
- Interface allows users to submit files through clear and easy-to-understand file selection process (select files and drag and drop methods are accepted)
- Interfaces that allow users to submit documents via message/email like method.
- Interfaces are active based on user interaction, and users will be logged out after a period of inactivity.

Citizen Interface

- Interface allows users to report potholes
- Interface allows users to report damage to their property
- Interface allows users to see status of pothole repairs in their area

Staff Member Interface

- Interface allows users to view and modify pothole reports
- Interface allows users to create and work orders for repairs
- Interface allows users to view and assign repair crews to pothole repairs
- Interface allows users to create reports based on pothole repair work orders

Repair Crew Interface

- Interface allows users to view and modify repair work order materials and labor details
- Interface allows users to update status of pothole repairs

Software & Performance Requirements

This section outlines the overall minimum software and performance requirements for the PHTRS.

- This is a web-based product, and it is required to run it from a web server such as Apache as it is highly customizable, flexible and can handle large amounts of traffic.
- The system must be compatible with most modern popular web browsers like Chrome, Edge, FireFox, Safari, etc.
- There are no operating system requirements, other than it is required that it functions seamlessly on widely used operating systems such as Windows, Apple, Linux, etc.
- The system's front-end will be React.js based and back-end will be Java. APIs will be used to seamlessly communicate between the two and the database implemented.
- Database used will be SQL based DBMS MySQL as it a widely supported and ideal for handling complex data structures.
- The system's backend server information will be encrypted and outside vendor security services will be used to ensure that data security policies are adhered to. Please refer to the security provider for further details.
- Backend servers are only accessible to authorized users selected by the company.
- System response time is estimated to be between 2 to 5 minutes, this estimate is reliant and can be affected by the user's internet connection speed.

Hardware Requirements

This section outlines the overall minimum hardware requirements for the PHTRS.

- System should be compatible with desktop computers, laptops, tablets and all mobile devices with web browsers and internet connections.
- Reliable internet security is recommended, minimum for stable functionality should be 1Gbps bandwidth connection. Requirement is considered since there may be a need for document upload.
- Recommended minimum server memory space of 16GB in order to handle the amount of user queries while maintaining smooth performance.
- Recommended 500GB SSD space to allow smooth operation of retrieval of data from database records.
- Both the memory recommendations are based on the large amount of users the system will be handling from both internal and external users.
- Quad-core processors are recommended to be able to handle multiple queries at the same time, otherwise slower response rates may be experienced.

Design Constraints

This system functions as an online web-based application that can be accessed from any location. As such, it is not dependent of the hardware from which it is being used. Users can access the system through devices such as desktop computers, laptops, tablets and other mobile devices that have access to internet.

User access is reliant on permissions and type of access granted by the stakeholders.

General Constraints

- This system functions as an online web-based application that can be accessed from any location.
    - It is not dependent of the hardware from which it is being used.
        - It does however require that the hardware has capabilities for internet connectivity.
    - Users can access the system through devices such as desktop computers, laptops, tablets and other mobile devices that have access to internet.
- User access is reliant on permissions and type of access granted by the stakeholders.

Project Development Model

This section outlines the recommended project development model for the PHTRS.

Based on design, function and development details provided in this document, the recommended project development model is the Waterfall Development Model. This decision has been made based on extensive research and review of this document and justifications for the use of this model are detailed below:

- Extensive documentation of the system is beneficial as it provides better understanding of the more intricate parts of the system.
    - Training material can be created from this documentation, providing easier user training where needed.
    - Extensive documentation would benefit future additions or modifications the development teams may need if the project is to be updated for scaling purposes.
    - System requirements are well defined and structured in a way that the waterfall method would be ideal.
        - Requirements are of static nature with minimal need for changes based on system needs and design.
        - Function design are clear and require little to no abstraction (not overly-complicated)
    - Milestones or guided structure is ideal for the PHTRS as certain stages of design and implementation rely on one another, or benefit from each other.
        - Designing the project in stages would be beneficial in understanding and implementing its components more efficiently.
        - The risk of changes in requirements is minimal based on project functionality
    - Clear requirement outline is established early in the development process with no need to create changes on these requirements later on.
        - The project is not platform or system reliant, reducing the need for constant changes to cater to a specific system.

Risk Analysis and Management

Extensive research and analysis has identified potential risk factors and ways to manage them.

- Data Security Risks associated with unauthorized access to sensitive information could pose a threat.
    - This can be mitigated by:
        - Conducting strict security audits to review personnel and the access they possess.
            - Unauthorized or unknown accounts should be purged from system.
        - Implement and maintain strict guidelines for user group access permissions to ensure qualified staff is given access to sensitive information.
        - Data encryption methods should be implemented at every level to maintain data integrity and security.
        - Removal of information from records and databases should be conducted on a multi-stage approach and only done by authorized staff.
- User Driven Errors associated with user groups entering incorrect information that could cause invalid or unusable data.
    - This can be mitigated by:
        - Introducing validation methods for data that is being entered.
        - Introducing data filters to regulate and clean data that is entered.
        - Provide training for Staff Member and Repair Crew user groups to reduce data entry errors.
        - Conduct regular audits to validate data and information in the system.
        - Integrate automation in validation and audit processes.
        - Conduct audits and remove users that are known to provide incorrect information from the system.
        - Remove individuals with access to the system that have a history of creating data issues.
- System Downtime Risks associated with the loss of internet connection, power outages, or equipment issues.
    - This can be mitigated by:
        - Implementing procedures for alternate power sources in the event of a power outage.
        - Contracting and maintaining coverage of internet access with a reliable and stable provider.
        - System is not reliant on specific hardware, in the event that coverage is not reliable at office locations for staff members, reroute staff to work from home methods.
        - Audit office equipment to guarantee proper functioning of equipment that is accessing the system.

Programming Development

This section outlines the selected programming development aspects for the PHTRS.

This system takes on a multi-stage programming development approach as the front-end aspects and the back-end aspects are handled through different languages and frameworks. These are depicted below:

- Front end – React
    - A smoother user interactive experience can be created thanks to its rendering capabilities.
    - Faster rendering and reduced loading times help in providing real-time updates.
    - Reusable components can facilitate the design and creation of the UI.
    - Database integration through Java API is possible.
    - Easier implementation and connectivity/communication with Java through the use of Apis.
    - It's suitable for scalable design through the use of components.
    - Use of built-in states and components facilitates the design stages.
- Back end – Java
    - Can easily communicate with the selected front-end React.
    - Can be used to manage database queries directly through it.
    - Communication with React is facilitated through the use of APIs.
    - The combination of React and Java assists in increasing security through their built-in methods.
    - APIs are available to facilitate development and unique APIs can be created for the system, which can be easily connected with React front-end development models.

The decision for the selected development languages and models are ideal for creating web-based applications that aren't tied to a specific platform or OS. Because of this, they are flexible and scalable in nature, allowing for the development of the application to be completed efficiently through the use of object-oriented design principles selected.

Philosophy for Programming Design Development

This section outlines the selected programming philosophy for the PHTRS.

The selected programming philosophy for this system is the object-oriented design. The decision to take this approach was based on the following factors:

- A lot of the aspects of the system can be broken down into reusable objects that can be used across the system.
    - These all have data and elements in common, and relationships with one another that can be leveraged to create an efficient system that simulates a real-world application.
- We can take an object-oriented approach and limit the access users have to making modifications on these to prevent accidental modifications.
- The ability to implement methods to create, modify and delete objects would be beneficial in the overall design of this system as each individually created object would have its own identifier to assist in this process.
- It would be ideal for scaling the design of the system, as the objects can be easily reused and modified with minimal impact to the rest of the system's code.
- The system itself would be easier to maintain by using object-oriented design, making it more sustainable and manageable.

Estimated Timeframes

This section outlines the estimated timeframes needed for each of the development phases.

For the purposes of this section, please note that the timeframes have been factored as weeks in order to provide accurate representations of time.

Summary of Estimated Timeframe		
Breakdown of Phases	Tasks	Estimated Timeframe In Weeks
Requirement Analysis Phase	Gather requirements from clients, start SRS preparation, user interviews, research and analysis	3
Design Phase	Create system architecture, create database architecture, create interface prototypes, create DFD, create ERD and create flowcharts	4
Development Phase	Coding development stage	16
Testing Phase	System testing stage	8
Deployment Phase	Deploy application, configuration with clients	2
Estimated total		33
Optional Services / Phases	Tasks	
User Training Phase	User training for clients, developers and users involved in the application use	2
Maintenance Phase	Updates, bug fixes, patches, support. Outlined as a yearly ongoing process in this estimate.	52

Estimated Costs

This section outlines the estimated costs of the PHTRS.

Research Summary

Extensive research and analysis was conducted to take into consideration the different factors needed to provide a cost estimate. Some of these include:

- Average salaries based on staff roles recommendations outlined in this document.
- Recommended number of staff assignment for each phase.
- Recommended budget allocations for tools, software and other resources associated with each phase.
- Comparison and analysis of similarly structured existing projects.

Estimated Costs Summary

Below is a quick glance at the estimated costs based on project stages.

Breakdown of Phases	Tasks	Estimated Costs
Requirement Analysis Phase	Gather requirements from clients, start SRS preparation, user interviews, research and analysis	$25,260.00
Design Phase	Create system architecture, create database architecture, create interface prototypes, create DFD, create ERD and create flowcharts	$29,300.00
Development Phase	Coding development stage	$224,420.00
Testing Phase	System testing stage	$49,760.00
Deployment Phase	Deploy application, configuration with clients	$14,220.00
Estimated total		$342,960.00
Optional Services / Phases	Tasks	
User Training Phase	User training for clients, developers and users involved in the application use	$13,450.00
Maintenance Phase	Updates, bug fixes, patches, support	$592,420.00

Estimated Costs by Project Phase

Below is a detailed breakdown of the factors taken into consideration to reach the estimated costs for each of the project's phases.

Requirement Analysis Phase		
Details	Number Factors	Type of factor
Duration		
3 weeks	3	weeks
Additional Factors		
Product Managers are recommended for this stage		
Assume full-time 40 hour work weeks		
Product Manager hourly average	$52.00	$ hourly
Number of Product Managers recommended	4	People
Total average salary based on hourly rates, number of people and phase duration 3 weeks 4 people 40 hour work weeks at $52 an hour	$24,960.00	$
Additional software or tools cost vary on the ones selected, for this estimate we will average it to $300. A recommendation will be made on possible ones to use but the decision will be left to the client.	$300.00	$
Estimated Costs		
Factoring in the different aspects mentioned above		
Estimated total average salaries	$24,960.00	$
Additional software or tools estimate	$300.00	$
Estimated total	$25,260.00	$
This is an estimated number based on researched averages and is subject to change based on adjustments needed, requirement negotiations and changes requested throughout the development process. Please reach out to the Product Manager for further details.		

Design Phase		
Details	Number Factors	Type of factor
Duration		
4 weeks	4	weeks
Additional Factors		
System Engineers/Designers are recommended for this stage		
Assume full-time 40 hour work weeks		
System Engineer/Designer hourly average	$60.00	$ hourly
Number of System Engineer/Designers recommended	3	People
Total average salary based on hourly rates, number of people and phase duration 4 weeks 3 people 40 hour work weeks at $60 an hour	$28,800.00	$
Additional software or tools cost vary on the ones selected, for this estimate we will average it to $500. A recommendation will be made on possible ones to use but the decision will be left to the client.	$500.00	$
Estimated Costs		
Factoring in the different aspects mentioned above		
Estimated total average salaries	$28,800.00	$
Additional software or tools estimate	$500.00	$
Estimated total	$29,300.00	$
This is an estimated number based on researched averages and is subject to change based on adjustments needed, requirement negotiations and changes requested throughout the development process. Please reach out to the Product Manager for further details.		

Development Phase		
Details	Number Factors	Type of factor
Duration		
16 weeks	16	weeks
Additional Factors		
Developers/Programmers are recommended for this stage		
Assume full-time 40 hour work weeks		
Developer/Programmer hourly average	$58.00	$ hourly
Number of Developers/Programmers recommended	6	People
Total average salary based on hourly rates, number of people and phase duration 16 weeks 6 people 40 hour work weeks at $58 an hour	$222,720.00	$
Considerations need to be taken for developers with experience in React.js, back-end development for database implementation, front-end UI design, etc.		
Additional software or tools cost vary on the ones selected, for this estimate we will average it to $1700. A recommendation will be made on possible ones to use but the decision will be left to the client.	$1,700.00	$
Estimated Costs		
Factoring in the different aspects mentioned above		
Estimated total average salaries	$222,720.00	$
Additional software or tools estimate	$1,700.00	$
Estimated total	$224,420.00	$
This is an estimated number based on researched averages and is subject to change based on adjustments needed, requirement negotiations and changes requested throughout the development process. Please reach out to the Product Manager for further details.		

Testing Phase		
Details	Number Factors	Type of factor
Duration		
8 weeks	8	weeks
Additional Factors		
QA Engineers are recommended for this stage		
Assume full-time 40 hour work weeks		
QA Engineer hourly average	$51.00	$ hourly
Number of QA Engineers recommended	3	People
Total average salary based on hourly rates, number of people and phase duration 8 weeks 3 people 40 hour work weeks at $51 an hour	$48,960.00	$
Additional software or tools cost vary on the ones selected, for this estimate we will average it to $800. A recommendation will be made on possible ones to use but the decision will be left to the client.	$800.00	$
Estimated Costs		
Factoring in the different aspects mentioned above		
Estimated total average salaries	$48,960.00	$
Additional software or tools estimate	$800.00	$
Estimated total	$49,760.00	$
This is an estimated number based on researched averages and is subject to change based on adjustments needed, requirement negotiations and changes requested throughout the development process. Please reach out to the Product Manager for further details.		

Deployment Phase		
Details	Number Factors	Type of factor
Duration		
2 weeks	2	weeks
Additional Factors		
Developers/Programmers are recommended for this stage		
Assume full-time 40 hour work weeks		
Developer/Programmer hourly average	$58.00	$ hourly
Number of Developers/Programmers recommended	3	People
Total average salary based on hourly rates, number of people and phase duration 2 weeks 3 people 40 hour work weeks at $58 an hour	$13,920.00	$
Additional software or tools cost vary on the ones selected, for this estimate we will average it to $300. A recommendation will be made on possible ones to use but the decision will be left to the client.	$300.00	$
Estimated Costs		
Factoring in the different aspects mentioned above		
Estimated total average salaries	$13,920.00	$
Additional software or tools estimate	$300.00	$
Estimated total	$14,220.00	$
This is an estimated number based on researched averages and is subject to change based on adjustments needed, requirement negotiations and changes requested throughout the development process. Please reach out to the Product Manager for further details.		

User Training Phase		
Details	Number Factors	Type of factor
Duration		
2 weeks	2	weeks
Additional Factors		
Optional Service provided - inquire with Product Management team to include this in contract if desired. Estimate provided is based on ideal scenarios and this number is subject to change based on the selected teams, amount of staff to be trained and duration requested.		
Training team is recommended at this stage, comprised of developers and product managers to assist in training client development teams, users and other selected staff.		
Assume full-time 40 hour work weeks		
Training team hourly average (averaged between developers and product managers).	$55.00	$ hourly
Number Training Team Members recommended	3	People
Total average salary based on hourly rates, number of people and phase duration 2 weeks 3 people 40 hour work weeks at $55 an hour	$13,200.00	$
Additional software or tools cost vary on the ones selected, for this estimate we will average it to $250. A recommendation will be made on possible ones to use but the decision will be left to the client.	$250	$
Estimated Costs		
Factoring in the different aspects mentioned above		
Estimated total average salaries	$13,200.00	$
Additional software or tools estimate	$250	$
Estimated total	$13,450.00	$
This is an estimated number based on researched averages and is subject to change based on adjustments needed, requirement negotiations and changes requested throughout the development process. Please reach out to the Product Manager for further details.		

Maintenance Phase		
Details	Number Factors	Type of factor
Duration		
Ongoing - Yearly for estimate costs	52	weeks
Additional Factors		
Optional Service provided - inquire with Product Management team to include this in contract if desired. Estimate provided is based on ideal scenarios and this number is subject to change based on the selected teams, amount of staff to be trained and duration requested.		
If selected, we will discuss details and assign an ongoing maintenance plan and team dedicated to maintaining the system on your behalf.		
Developers/Programmers are recommended for this stage		
Assume full-time 40 hour work weeks		
Developer/Programmer hourly average	$58.00	$ hourly
Number of Developers/Programmers recommended	4	People
Total average salary based on hourly rates, number of people and phase duration 52 weeks 4 people 40 hour work weeks at $58 an hour	$482,560.00	$
A Product Manager is recommended for this stage		
Assume full-time 40 hour work weeks		
Product Manager hourly average	$52.00	$ hourly
Number of Product Managers recommended	1	People
Total average salary based on hourly rates, number of people and phase duration 52 weeks 1 people 40 hour work weeks at $52 an hour	$108,160.00	$
Additional software or tools cost vary on the ones selected, for this estimate we will average it to $1700. A recommendation will be made on possible ones to use but the decision will be left to the client.	$1,700.00	$
Estimated Costs		
Factoring in the different aspects mentioned above		
Estimated total average salaries	$590,720.00	$
Additional software or tools estimate	$1,700.00	$
Estimated total	$592,420.00	$
This is an estimated number based on researched averages and is subject to change based on adjustments needed, requirement negotiations and changes requested throughout the development process. Please reach out to the Product Manager for further details.		

Acceptance Criteria

This section outlines the acceptance criteria for the PHTRS.

- The system must support reporting, tracking, and managing pothole reports as described in this document.
- Staff Member users must be able to query pothole status, work order status, and repair status from this system.
- System must automatically generate pothole IDs, work order IDs, and damage file IDs based on queries and reports made.
- Interface must require minimal to no training to use the system.
- The system must function across multiple platforms on web browsers with no modifications needed.
- The system should function within the specified minimum software and hardware requirements outlined in this document.
- The system must adhere to current security laws and regulations.
- The system must provide error-handling messages for users to handle common user-generated errors.
- The system will go through extensive testing with real citizens to ensure functionality once it's close to deployment to confirm acceptance and adherence criteria are met.

Log / Records

This section outlines a task log for the development process.

Meeting Date	Time	Attendance	Assigned Tasks	Progress Made
2024-11-02			Start Project SRS Draft	Initial draft created and document sections outlined
2024-11-04			Project Research	Initial research conducted, typed notes and added references to list
2024-11-08			SRS Document Work	Filled sections of SRS based on current information
2024-11-13			SRS and Diagram Work	Started work on DFD and ERD, updated SRS
2024-11-14			Performance, Interface, Constraints Updates	Researched and updated performance and interface details
2024-11-16			Diagram Updates, Interface Drafts	Continued making progress on diagrams and questions Initial draft of conclusion completed – review needed Initial Interface drafts
2024-11-18			Diagram Draft Revisions	Made revisions to the diagram drafts and started final versions
2024-11-20			Data Dictionary Update, Questions Update	Finalized Data Dictionary, finalized ERD Finalized answers on several questions
2024-11-21			Interface Updates	Initial drafts finalized by hand, starting to digitize
2024-11-22			DFD Updates and Final Render	Finalized the DFD and added to the document
2024-11-23			Flowchart Updates	Finalized Flowchart Draft, starting to digitize
2024-11-25			Acceptance Criteria Updated Interface Updates	Finalized Acceptance Criteria and made progress on the Interface's final design
2024-11-27			Interface Design Updates	Updated prototypes to match new updated details
2024-12-01			DFD, ERD, and Data Dictionary Updates	Additional updates were needed on these sections. Added details and updated images.
2024-12-03			SRS Document Updates	Updated Acceptance Criteria, and answers to Questions

2024-12-05			Estimated Costs Updates	Made updates to the initial Estimated Costs drafts based on new research.
2024-12-06			Estimated Costs Updates Continuation	Continued working on updates Estimated Costs section and answer to refine it.
2024-12-07			Proofreading and Verification	Initiated proofreading process before final organization
2024-12-08			Updates to Presentation and Script	Made updates to the Presentation and Scripts for the Video
2024-12-09			Final revisions to SRS, creating table of contents based on file document and finalized Presentation. Video recording process started.	Made final revisions needed to the SRS and the presentation. Updated the report document to include requested information and refined the script for the video. Initiated recording process for delivery.
2024-12-10			Finalized video recording and delivered project.	Final recording session completed. Organized documents for delivery and project was delivered.

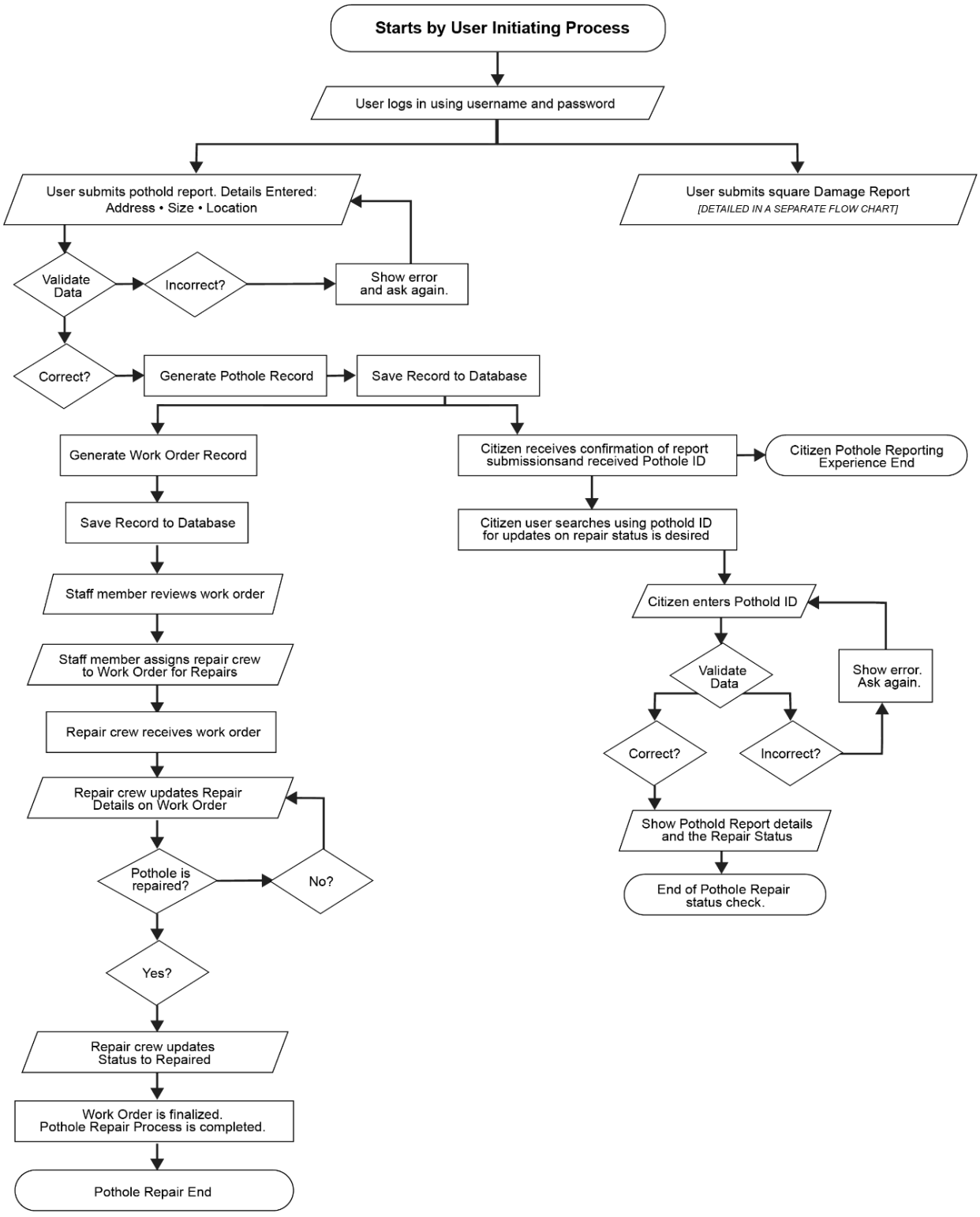
Design

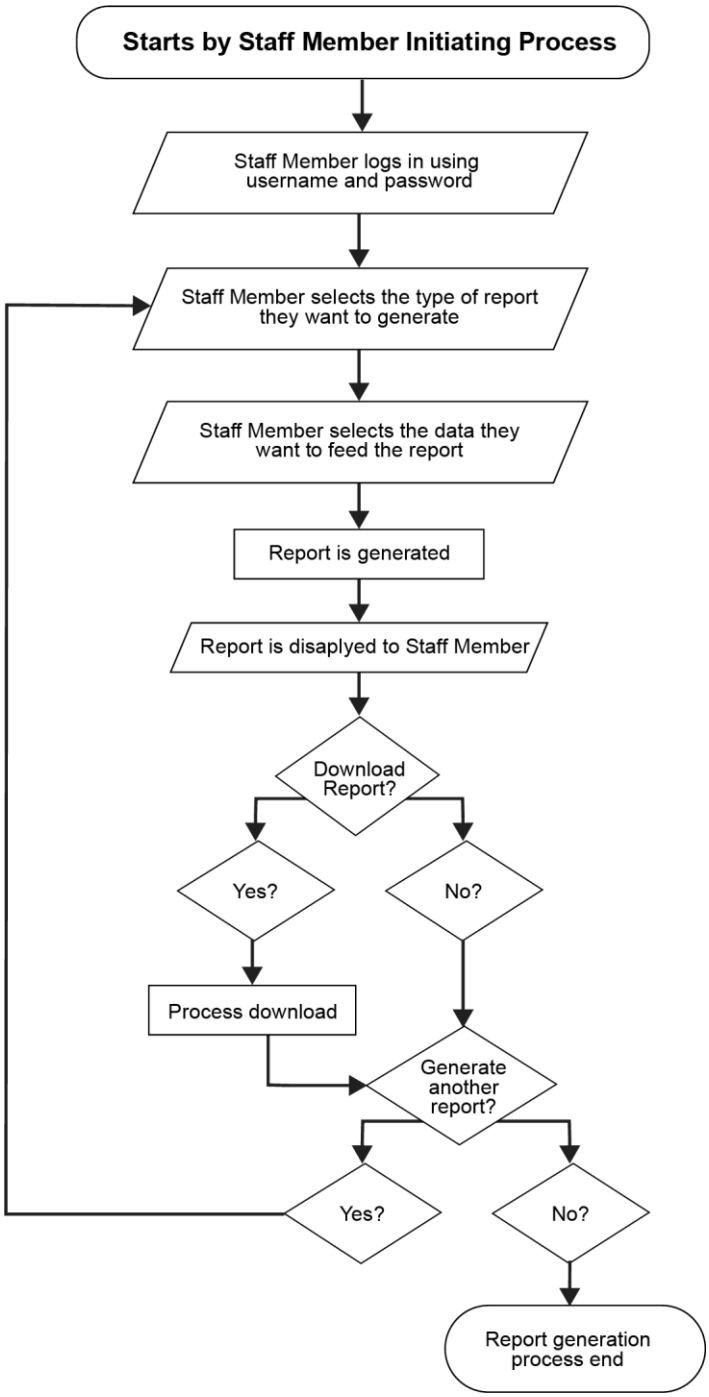
This section outlines the design aspects of the PHTRS. Please note that higher-resolution images of these flowcharts are included in the attached “Deliverables” folder.

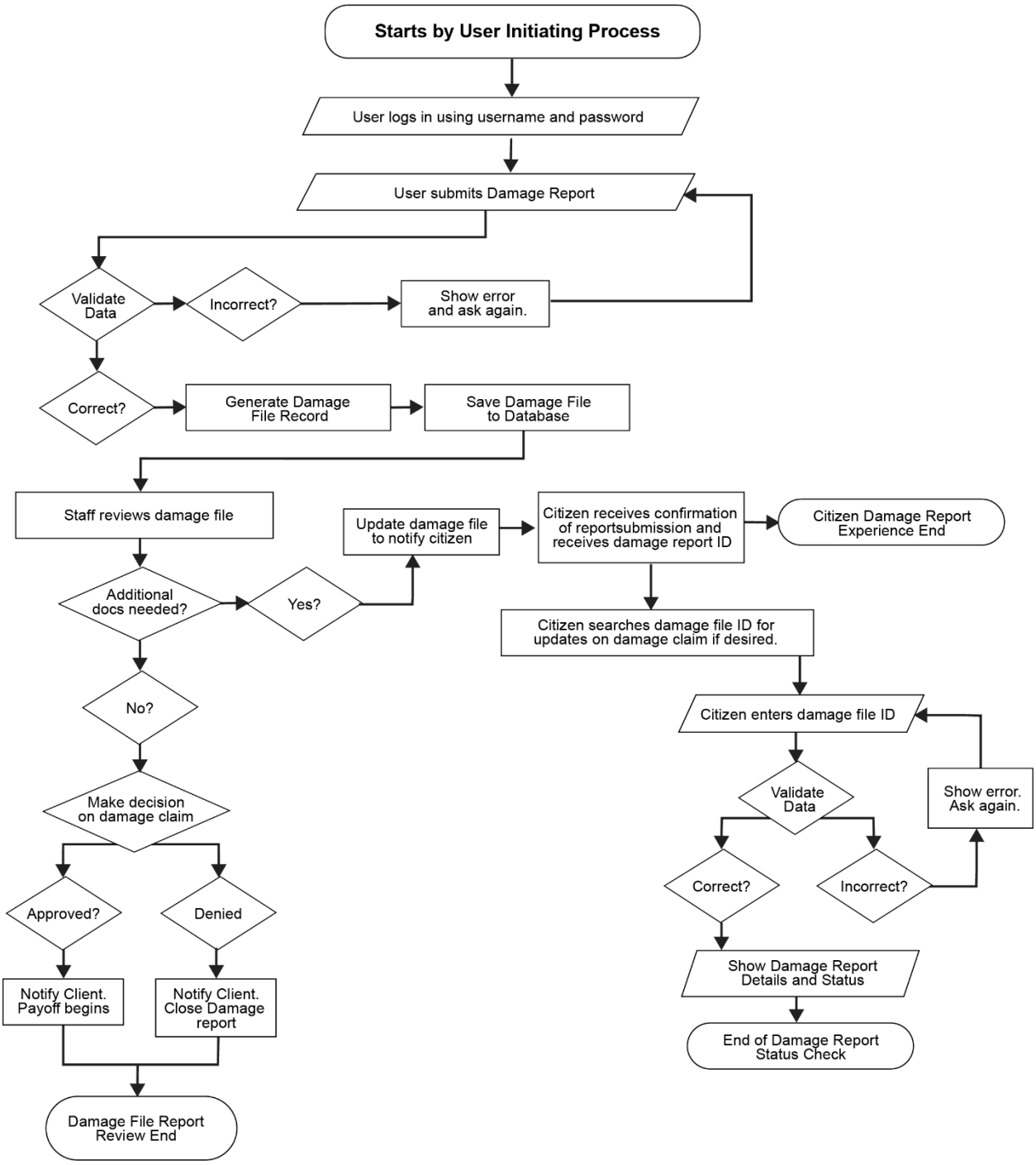
In the following pages are detailed images of the PHTRS Flowcharts, Data Flow Diagram (DFD), Entity Relationship Diagram (ERD), Data Dictionary and Interface Prototypes.

Higher-resolution images are also available in the attached “Deliverables” folder included with this document. Please refer to these for better reference.

Flowcharts


Starts by User Initiating Process
User logs in using username and password
User submits pothold report. Details Entered: Address • Size • Location
User submits square Damage Report
[DETAILED IN A SEPARATE FLOW CHART]
Validate Data
Incorrect?
Show error and ask again.
Correct?
Generate Pothole Record
Save Record to Database
Generate Work Order Record
Save Record to Database
Staff member reviews work order
Staff member assigns repair crew to Work Order for Repairs
Repair crew receives work order
Repair crew updates Repair Details on Work Order
Pothole is repaired?
No?
Yes?
Repair crew updates Status to Repaired
Work Order is finalized. Pothole Repair Process is completed.
Pothole Repair End
Citizen receives confirmation of report submissionsand received Pothole ID
Citizen Pothole Reporting Experience End
Citizen user searches using pothold ID for updates on repair status is desired
Citizen enters Pothold ID
Validate Data
Show error. Ask again.
Correct?
Incorrect?
Show Pothold Report details and the Repair Status
End of Pothole Repair status check.

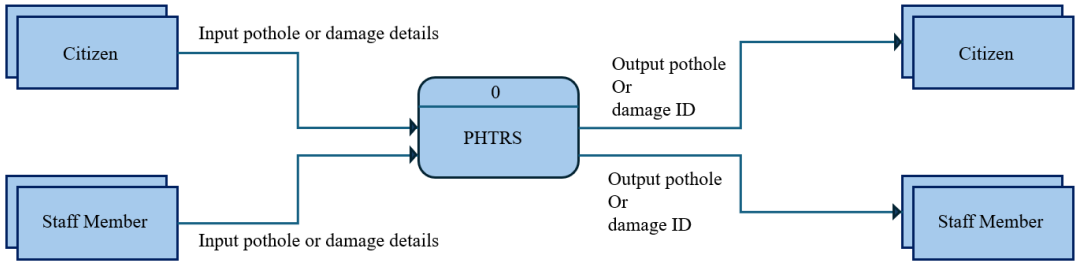

Starts by Staff Member Initiating Process
Staff Member logs in using username and password
Staff Member selects the type of report they want to generate
Staff Member selects the data they want to feed the report
Report is generated
Report is disaplyed to Staff Member
Download Report?
Yes?
No?
Process download
Generate another report?
Yes?
No?
Report generation process end


Starts by User Initiating Process
User logs in using username and password
User submits Damage Report
Validate Data
Incorrect?
Show error and ask again.
Correct?
Generate Damage File Record
Save Damage File to Database
Staff reviews damage file
Additional docs needed?
Yes?
Update damage file to notify citizen
Citizen receives confirmation of reportsubmission and receives damage report ID
Citizen Damage Report Experience End
Citizen searches damage file ID for updates on damage claim if desired.
No?
Citizen enters damage file ID
Validate Data
Show error. Ask again.
Correct?
Incorrect?
Show Damage Report Details and Status
End of Damage Report Status Check
Make decision on damage claim
Approved?
Denied
Notify Client. Payoff begins
Notify Client. Close Damage report
Damage File Report Review End

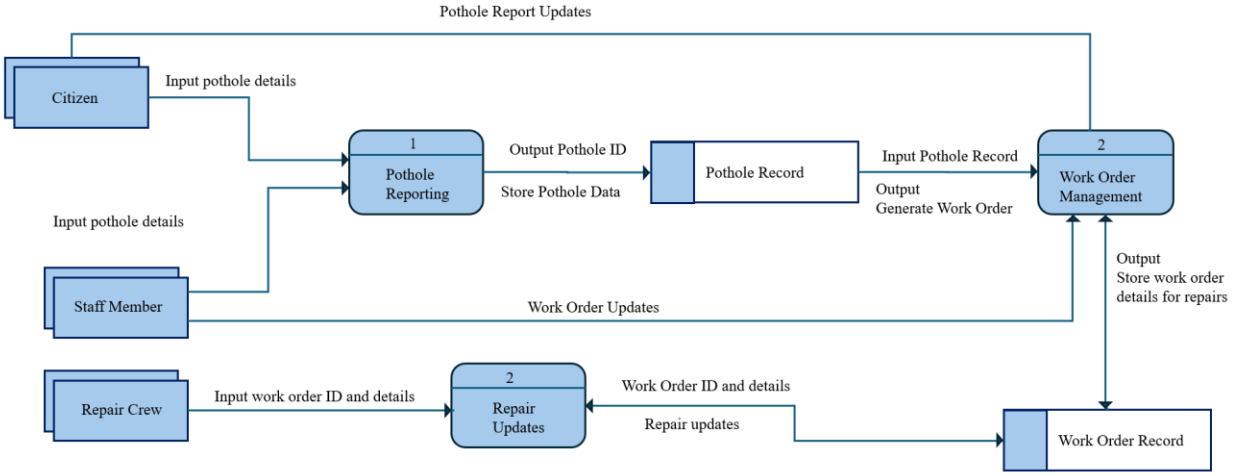
Data Flow Diagram

This section outlines the Data Flow Diagram for the PHTRS.

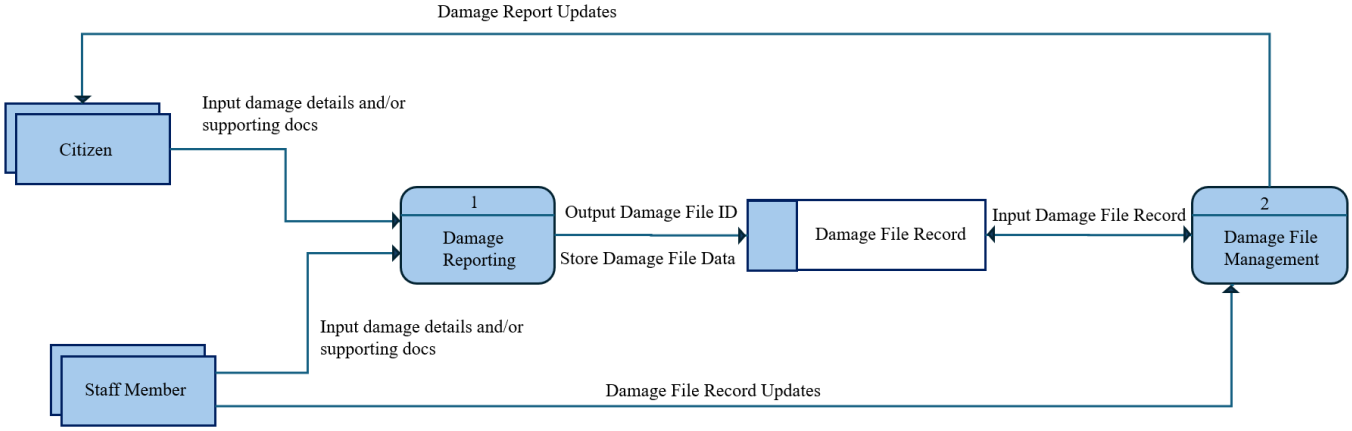
DFD Level 0 for PHTRS



DFD PHTRS – Pothole Reports



DFD PHTRS – Damage Reports

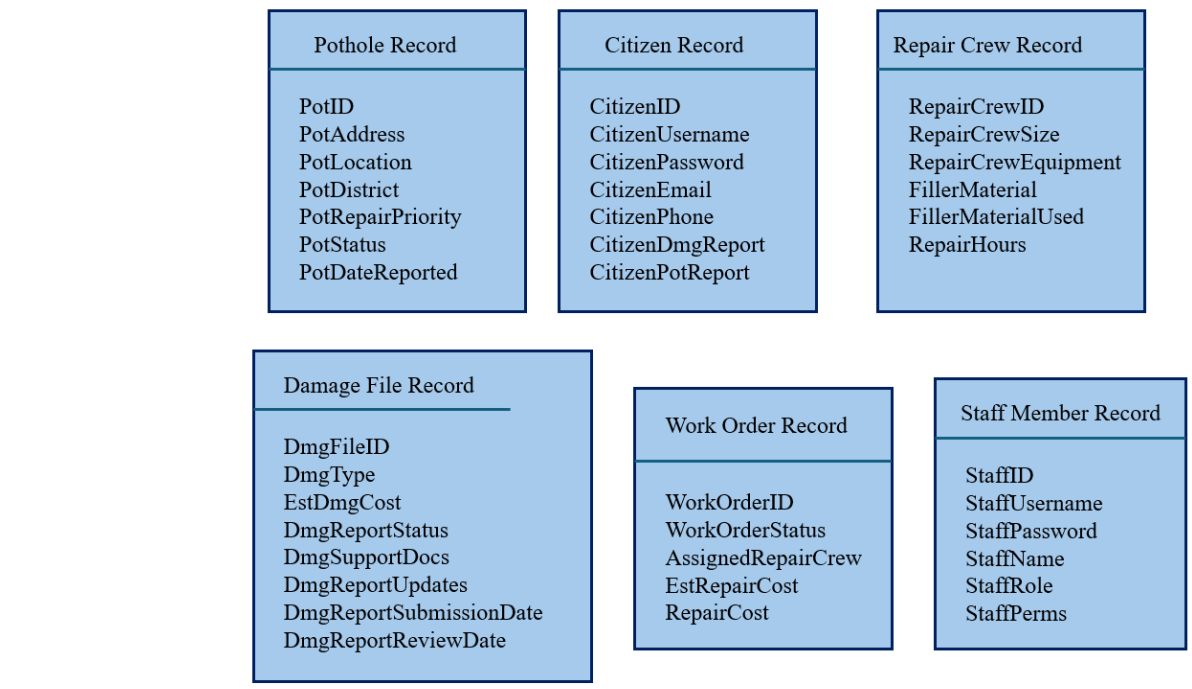


Entity Relationship Diagram

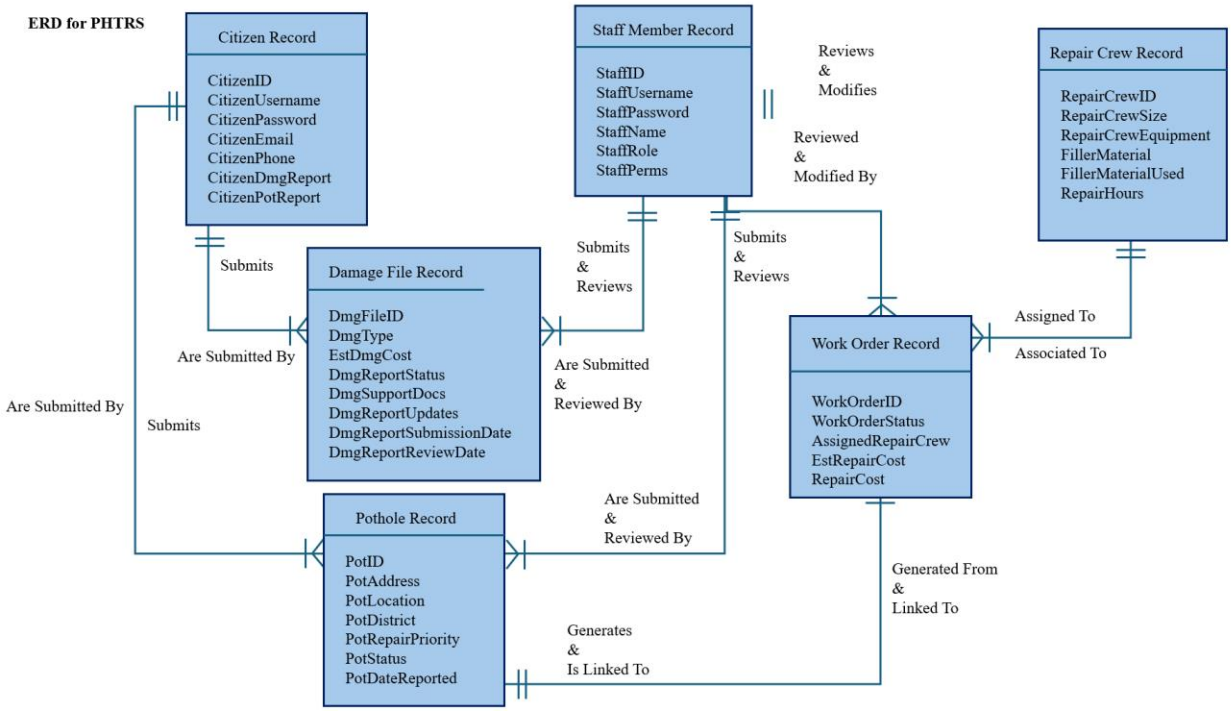
This section outlines the Entity Relationship Diagram of the PHTRS.

Data Entities

Data Entities are described in the diagram below. These have been exploded for ease of view.



Entity Relationship Diagram



Data Dictionary

This section outlines the Data Dictionary for the PHTRS.

PotholeRecord				
Name	System ID	Value	Description	Input / Output
Citizen Record		Citizen ID	Information pulled from Citizen Record	Input
Pothole ID	PotID	Alphanumeric or Text	Unique ID assigned to a reported Pothole	Output
Pothole Street Address	PotAddress	Alphanumeric or Text Street Address City State Zip Code	Street address associated to a pothole	Input
Size	PotSize	Scale of 1 to 10	Reported size of a pothole Option to select on a scale of 1 to 10	Input
Location	PotLocation	Middle Curb Bike Lane Crosswalk	Reported location of the pothole on a street	Input
District	PotDistrict	Alphanumeric or Text	District is determined based off the address	Output
Repair Priority	PotRepairPriority	Urgent Top Average Low	Priority is determined based off the size of the pothole 9-10 Scale is Urgent 8-7 Scale is Top 6-4 Scale is Average 3-1 Scale is low 0 is Not an available option	Output
Pothole Status	PotStatus	Work in progress Repaired Temporary repair Not repaired	Current status of a pothole Work in progress - pothole is currently being repaired Repaired - pothole was repaired Temporary repair - pothole was temporarily repaired Not repaired - no work on pothole has started	Output
Date Reported	PotDateReported	Date YYYY/MM/DD	Date a pothole was reported in the system	Output

WorkOrderRecord				
Name	System ID	Value	Description	Input / Output
Work Order ID	WorkOrderID	Alphanumeric or Text	Unique ID assigned to a work order	Output
Work Order Status	WorkOrderStatus	Open Closed	Current status of a work order Open Closed	Output
Pothole Record		Location Size Status Repair Priority	Information pulled from Pothole Record	Input
Repair Crew Record		Repair Crew ID Number Number of people on crew Equipment assigned to crew Hours applied to repair Filler Material Used Amount of Filler Material Used	Information pulled from Repair Crew Record	Input
Assigned Repair Crew	AssignedRepairCrew	Alphanumeric or Text	Repair Crew assigned to the Work Order	Input
Estimated Cost of Repair	EstRepairCost	Alphanumeric or Text	Estimated cost of repairs based on historical data of pothole repairs with similar data This is estimated by computing the hours applied to a repair, crew member size assigned to a repair, type and amount of material used in repair, equipment assigned to repair	Output
Cost of Repair	RepairCost	Alphanumeric or Text	Cost of repair based on current pothole repair data associated to the work order This is calculated by computing the hours applied to a repair, crew member size assigned to a repair, type and amount of material used in repair, equipment assigned to repair	Output

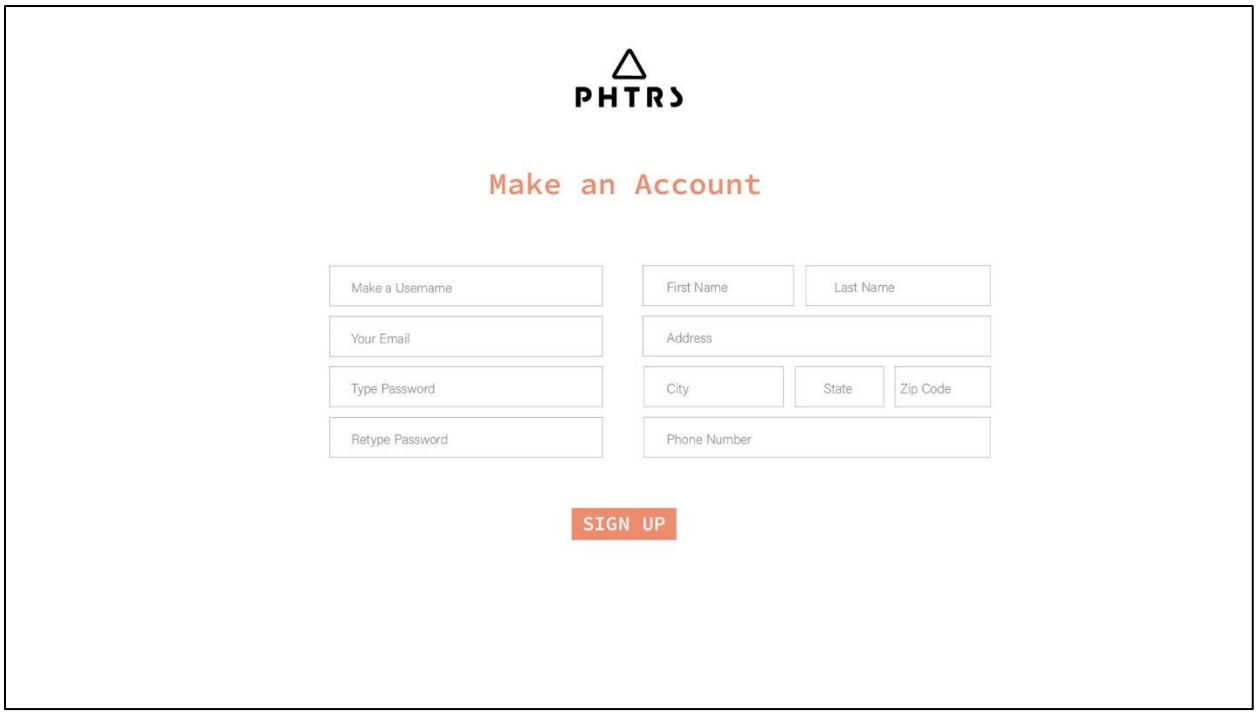
StaffMemberRecord				
Name	System ID	Value	Description	Input / Output
Staff Member ID	StaffID	Alphanumeric or Text	Unique ID assigned to a Staff Member	Output
Username	StaffUsername	Alphanumeric or Text	Unique username assigned to staff member user	Input
Password	StaffPassword	Alphanumeric or Text	Unique password selected by staff member user	Input
Name	StaffName	Alphanumeric or Text First Name Last Name	Name of the staff member user	Input
Role	StaffRole	Representative Claims Processor Repair Crew Billing IT Admin	Role assigned to the staff member user The role selected has predetermined permissions assigned by the company administration team	Input
Permissions	StaffPerms	Alphanumeric or Text	List of permissions granted to the staff member user Additional permissions can be assigned to staff member user at the administrators discretion	Input

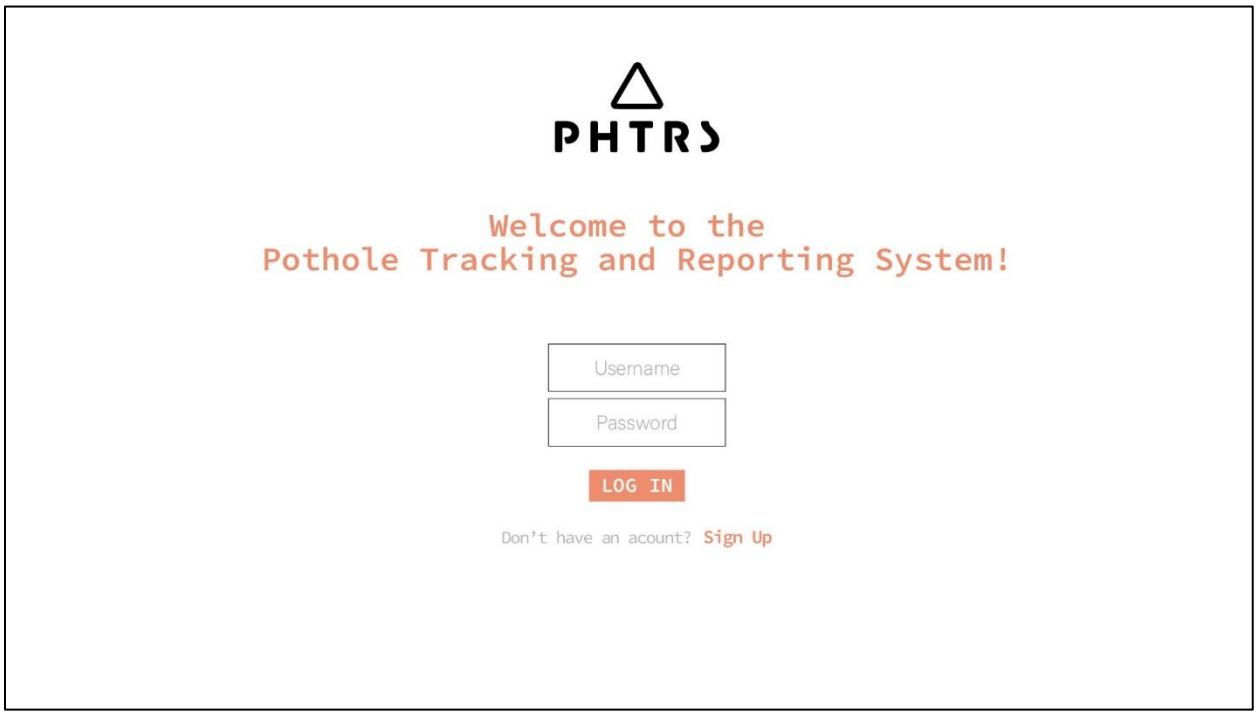
DamageFileRecord				
Name	System ID	Value	Description	Input / Output
Damage File ID	DmgFileID	Alphanumeric or Text	Unique ID assigned to a Damage Report File	Output
Citizen Record		Name Address Phone Number	Information pulled from Citizen Record	Input
Type of Damage	DmgType	Suspension Body or Frame Tire or Rim Motor Other	Type of damage to citizen's property due to a pothole. Suspension - damage to vehicle suspension Body of Frame - cosmetic body or frame damage to vehicle Tire or Rim - damage to vehicle tires Motor - damage to vehicle motor Other - other types of damages not listed above	Input
Estimated Damage Costs	EstDmgCost	Numeric	Estimated cost of damage provided by citizen	Input
Report Status	DmgReportStatus	Submitted Under review Approved Denied	Review status of a damage report Submitted - citizen submitted report but has not been reviewed Under Review - the report is currently being reviewed Approved - damage report found valid and payout will be made Denied - damage report found invalid and payout will not be made	Input
Supporting Documents	DmgSupportDocs	Files	Support documents for damage report submitted by citizen. These include document files and image files of all types	Input
Damage Review Updates	DmgReportUpdates	Alphanumeric or Text	Section where Staff Members can add notes for the review process of damage reports. Staff Members can select whether or not an update is visible to a Citizen user in their damage report record.	Input
Damage Report Date Submitted	DmgReportSubmissionDate	Date YYYY/MM/DD	Date a damage report was submitted in the system.	Output
Damage Report Date Reviewed	DmgReportReviewDate	Date YYYY/MM/DD	Date a damage report was reviewed by a staff member. This date is updated when a status change or update visible to a client occurs.	Output

CitizenRecord				
Name	System ID	Value	Description	Input / Output
Citizen ID	CitizenID	Alphanumeric or Text	Unique ID assigned to a Citizen Record	Output
Username	CitizenUsername	Alphanumeric or Text	Unique username selected by citizen user	Input
Password	CitizenPassword	Alphanumeric or Text	Unique password selected by citizen user	Input
Email	CitizenEmail	Alphanumeric or Text	Email entered by citizen user	Input
Name	CitizenName	Alphanumeric or Text First Name Last name	Name of the citizen user	Input
Citizen Street Address	CitizenAddress	Alphanumeric or Text Street Address City State Zip Code	Street address for the citizen user	Input
Citizen Phone Number	CitizenPhone	Alphanumeric or Text Area Code Seven Digit	Phone number for the citizen user	Input
Citizen Damage Reports	CitizenDmgReports	Alphanumeric or Text	Previously submitted damage reports Damage Report IDs associated with the Citizen	Output
Citizen Pothole Reports	CitizenPotReports	Alphanumeric or Text	Previously submitted pothole reports PotholeIDs associated with the Citizen	Output

RepairCrewRecord				
Name	System ID	Value	Description	Input / Output
Repair Crew ID	RepairCrewID	Alphanumeric or Text	Unique ID assigned to a Repair Record. These are autogenerated by the system.	Output
Crew Size	RepairCrewSize	Numeric	Number of people assigned to a specific repair crew	Input
Equipment Assigned to Crew	RepairCrewEquipment	Safety Equipment Measurement Kits Paver Roller Dump Truck Asphalt Heater Compactor Pavement Cutter Jackhammer Miller Cleaning Equipment Hand Tools	Specific equipment assigned to a repair crew	Input
Filler Material Used	FillerMaterial	Asphalt Mix Tack Coat Concrete Aggregate Emulsion Sealant Crack Filler	Specific type of material used as filler to repair a pothole This field is specifically associated with the Amount of Filler Material Used	Input
Amount of Filler Material Used	FillerMaterialAmount	Numeric	Amount of filler material used to repair pothole This field is directly associated with the Filler Material Used Units are measured in pounds	Input
Hours Worked on Repair	RepairHours	Numeric	Number of hours spent repairing a pothole	Input
Pothole Record		Pothole ID, Pothole Status	Information pulled from Pothole Record	Input

Interfaces


PHTRS
Make an Account
Make a Username
First Name
Last Name
Your Email
Address
Type Password
City
State
Zip Code
Retype Password
Phone Number
SIGN UP


PHTRS
Welcome to the
Pothole Tracking and Reporting System!
Username
Password
LOG IN
Don't have an acount? Sign Up

PHTRS

Hi Username!

What would you like to do today?

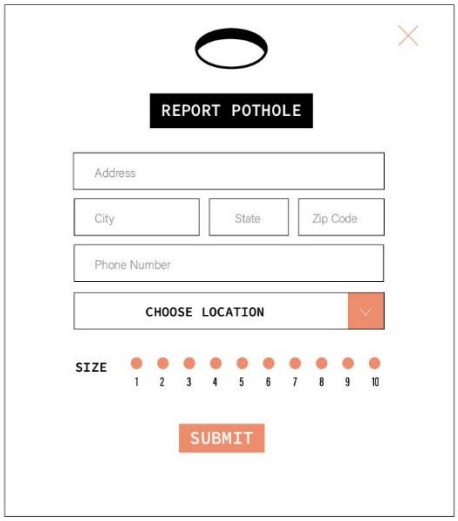
REPORT POTHOLE

VIEW PREVIOUS REPORTS

REPORT DAMAGE

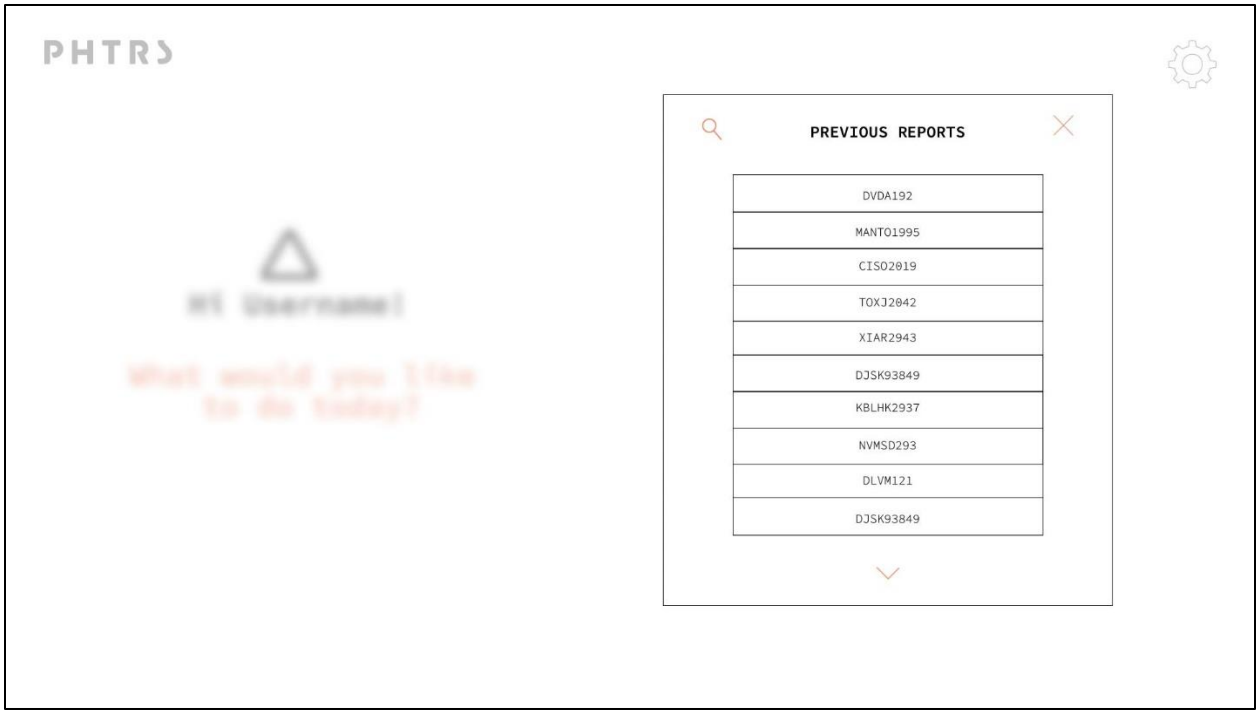
VIEW PREVIOUS CLAIMS

PHTRS



PHTRS
Hi Username!
What would you like to do today?
REPORT POTHOLE
Address
City
State
Zip Code
Phone Number
CHOOSE LOCATION
Middle
Curb
Bike Lane
Crosswalk

PHTRS
Hi Username!
What would you like to do today?
Thank you for reporting this pothole!
Here is the ID for your report:
MANTO1995
BACK TO DASH


PHTRS
Hi Username!
What would you like to do today?
PREVIOUS REPORTS
DVDA192
MANTO1995
CISO2019
TOXJ2042
XIAR2943
DJSK93849
KBLHK2937
NVMSD293
DLVM121
DJSK93849

PHTRS
Hi Username!
What would you like to do today?
SEARCH PREVIOUS REPORTS
DVDA192
MANTO1995
CISO2019
TOXJ2042
XIAR2943
DJSK93849
KBLHK2937
NVMSD293
DLVM121
DJSK93849

PHTRS

Hi Username!

What would you like to do today?

MANTO

MANTO1995

MANTO191A

PHTRS

Hi Username!

What would you like to do today?

PREVIOUS REPORTS

DVDA192

Nov 13, 2024

Status: Repaired

631 SW 67TH Terrace
Pembroke Pines, FL 33023

LOCATION: CURB
SIZE: 7

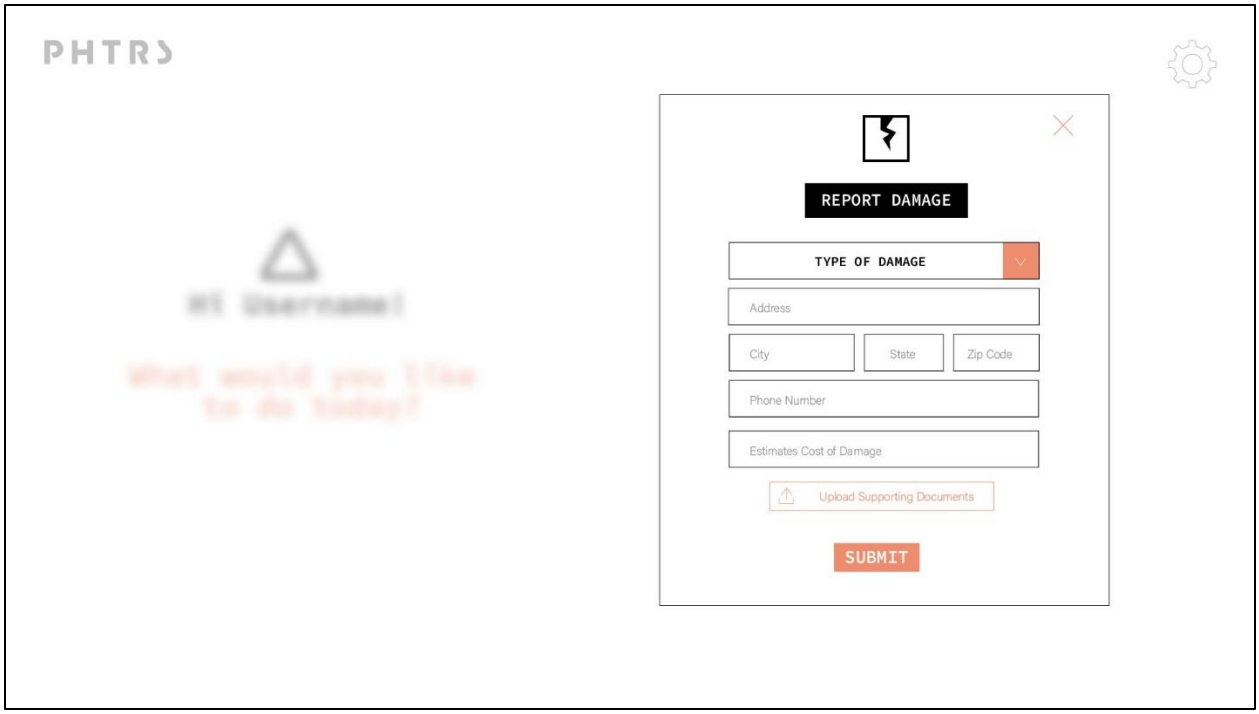
DJSK93849

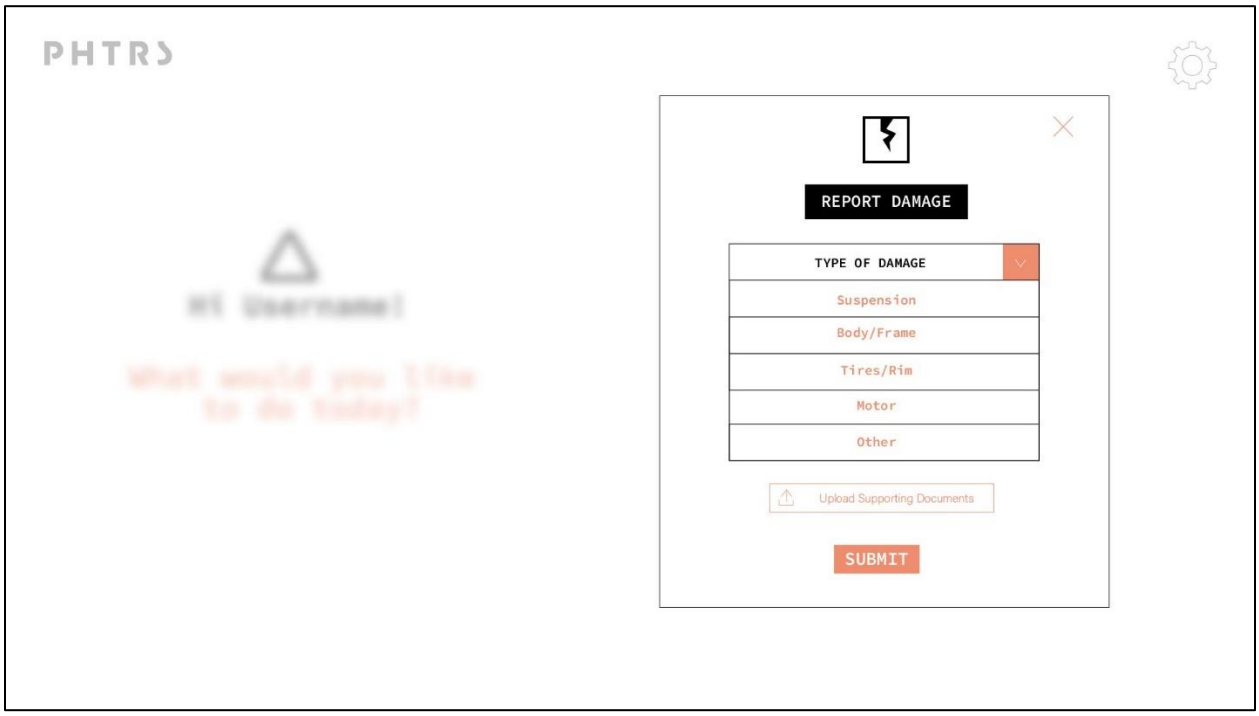
KBLHK2937

NVMSD293

DLVM121

DJSK93849


PHTRS
Hi Username!
What would you like to do today?
REPORT DAMAGE
TYPE OF DAMAGE
Address
City
State
Zip Code
Phone Number
Estimates Cost of Damage
Upload Supporting Documents
SUBMIT


PHTRS
Hi Username!
What would you like to do today?
REPORT DAMAGE
TYPE OF DAMAGE
Suspension
Body/Frame
Tires/Rim
Motor
Other
Upload Supporting Documents
SUBMIT

PHTRS

Hi Username!

What would you like to do today?

PREVIOUS CLAIMS

MAS09D

918FCA

ZNXC29A

PHTRS

Hi Username!

What would you like to do today?

PREVIOUS CLAIMS

MAS09D

918FCA

Reported on Nov 13, 2024

Status: In Review

TYPE OF DAMAGE: TIRE/RIM

SUPPORTING DOCS

tirePhoto2024.jpg

UPDATES

Nov 15, 2024 | Documents reviewed

Nov 18, 2024 | Sent to claims

CANCEL CLAIM

ZNXC29A

PHTRS

Hi Username!

What would you like to do today?

WORK ORDER MANAGEMENT

MANAGE WORK ORDERS

GENERATE REPORTS

POTHOLE REPORTING

REPORT POTHOLE

VIEW PREVIOUS REPORTS

POTHOLE REPORTING

REPORT DAMAGE

VIEW PREVIOUS CLAIMS

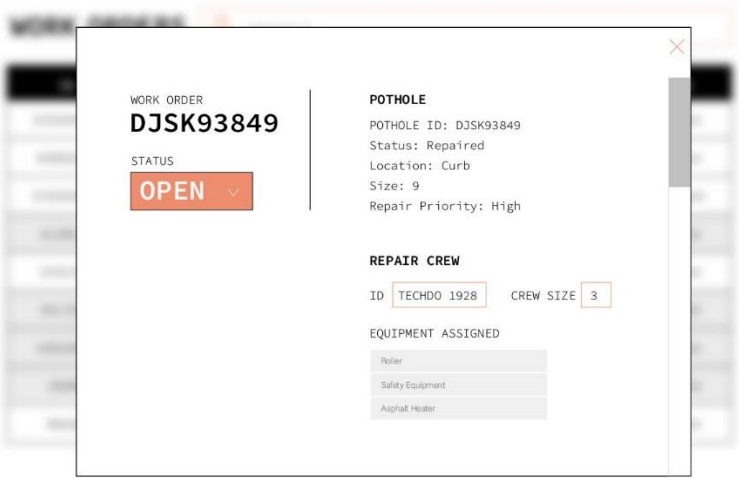
PHTRS

WORK ORDERS

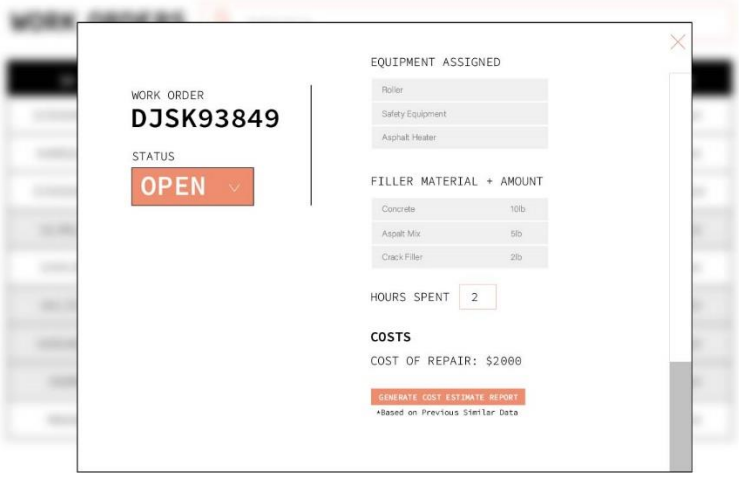
SEARCH BY ID

ID	STATUS	ASSIGNED CREW	DATE OPENED
DJSK93849	OPEN	TECHDO 1928	NOV 13, 2024
NVMSD293	OPEN	STALEI 1392	OCT 11, 2024
DJSK93849	OPEN	CEPRO 1029	SEPT 13, 2024
DLVM121	CLOSE	JINDO 2930	JULY 1, 2024
DJKSJD8	OPEN	TECHDO 1928	DEC 10, 2024
AKLJS39	CLOSE	STALEI 1392	SEPT 1, 2024
A9834E4J	CLOSE	CEPRO 1029	JUNE 3, 2024
VNXM4	CLOSE	JINDO 2930	OCT 31, 2024
MAK8A	OPEN	JINDO 2930	NOV 13, 2024

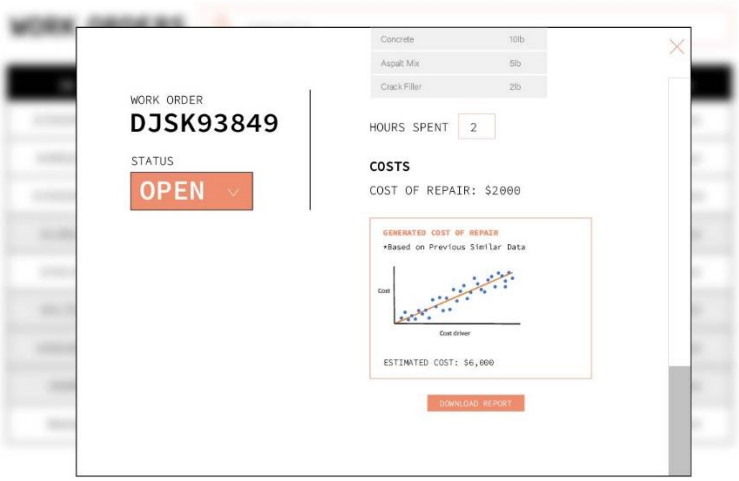
PHTRS


WORK ORDER
DJSK93849
STATUS
OPEN
POTHOLE
POTHOLE ID: DJSK93849
Status: Repaired
Location: Curb
Size: 9
Repair Priority: High
REPAIR CREW
ID TECHDO 1928
CREW SIZE 3
EQUIPMENT ASSIGNED
Roller
Safety Equipment
Asphalt Heater

PHTRS


WORK ORDER
DJSK93849
STATUS
OPEN
EQUIPMENT ASSIGNED
Roller
Safety Equipment
Asphalt Heater
FILLER MATERIAL + AMOUNT
Concrete 10lb
Asphalt Mix 5lb
Crack Filler 2lb
HOURS SPENT 2
COSTS
COST OF REPAIR: $2000
GENERATE COST ESTIMATE REPORT
*Based on Previous Similar Data

PHTRS



PHTRS

Pothole Tracking and Reporting System

WORK ORDER
DJSK93849

STATUS
OPEN

POTHOLE

POTHOLE ID: DJSK93849

STATUS
OPEN

Location: Curb
Size: 9
Repair Priority: High

REPAIR CREW

ID: TECHDO 1928 CREW SIZE 3

EQUIPMENT ASSIGNED

Safety Equipment	Dump Truck	Jack Hammer
Measurement Kits	Asphalt Heater	Miller
Paver	Compactor	Cleaning Equipment
Roller	Pacement Cutter	Hand Tools

FILLER MATERIAL

Asphalt Mix		lb
Tack Coat	11	lb
Concete		lb
Aggregate		lb
Emulsion Sealant		lb
Crack Filler	7	lb

References

This section outlines a list of the references used to create this document.

Apache Basics for Beginners. RSS. (2024a, April 16). https://daily.dev/blog/apache-basics-for-beginners

App development timeline: How long does it take? (2024). softwarium. (n.d.). https://www.softwarium.net/blog/timeline-of-software-development

Asphalt equipment :: Pothole Repair Equipment. Green Way Sales. (2018, May 9). https://greenwaysales.com/

Asphalt, F. (2023, October 3). *Selecting the Right Pothole Repair Machine*. Falcon Asphalt Repair Equipment. https://www.falconrme.com/selecting-the-right-pothole-repair-machine/

Bandakkanavar, R. (2023, May 8). *Software requirements specification document with example*. Krazytech. https://krazytech.com/projects/sample-software-requirements-specificationsrs-report-airline-database

Chia, A. (2023, February 13). *What is a data dictionary? A comprehensive guide*. Splunk. https://www.splunk.com/en_us/blog/learn/data-dictionary.html

Comptroller.nyc.gov. (n.d.). https://comptroller.nyc.gov/services/for-the-public/claims/faqs/property-damage-claim-faqs/#:~:text=As%20a%20claimant%2C%20you%20may,damaged%20property%20may%20be%20inspected.

DeBoer, B. (2022, March 16). *Five types of pothole damage your car can experience*. DeBoer's Automotive Services and Repairs. https://www.deboersauto.com/blog/five-types-of-pothole-damage-your-car-can-experience#:~:text=Tire%20damage%20is%20the%20most%20common%20type,making%20for%20a%20bumpy%20and%20uncomfortable%20ride.

Filing claims under your own policy. Department of Financial Services. (n.d.). https://www.dfs.ny.gov/consumers/auto_insurance/filing_claims_under_your_own_policy

Formulating a realistic software development timeline (example). CSW Solutions. (2023, September 7). https://cswsolutions.com/blog/posts/2023/september/formulating-a-realistic-software-development-timeline-example/

GeeksforGeeks. (2023, December 22). *What is a system engineer: Skills, roles and Responsibilities*. GeeksforGeeks. https://www.geeksforgeeks.org/system-engineer/

How to build a web application using Java - Javatpoint. www.javatpoint.com. (n.d.-a). https://www.javatpoint.com/how-to-build-a-web-application-using-java

How to estimate software development costs (+ templates). actiTIME. (2024, September 25). https://www.actitime.com/developers-time-tracking/estimate-software-development-cost

Hutsulyak, O. (2024, August 13). *Why use react for web development: 10 reasons to apply*. TechMagic. https://www.techmagic.co/blog/why-we-use-react-js-in-the-development

Java technologies for web applications. (n.d.). https://www.oracle.com/technical-resources/articles/java/webapps.html

Kosmowski, B. (2023, January 18). *6 steps to accurately estimate software development costs*. SoftKraft. https://www.softkraft.co/software-development-cost-estimation/

Luetic, M. (2024, May 2). *The complete guide on software development time estimation*. DECODE. https://decode.agency/article/software-development-time-estimation/

Ovcharenko, D. (2024, October 6). *11 key roles in a software development team*. Alcor BPO. https://alcor-bpo.com/10-key-roles-in-a-software-development-team-who-is-responsible-for-what/

Pothole repair tips, equipment, and tools: Infrared Asphalt Recyclers. KM International. (2022, April 12). https://www.kminternational.com/2022/04/12/pothole-repair-tips-equipment-tools/

Product manager salary in United States. (n.d.-a). https://www.indeed.com/career/product-manager/salaries

Quality Assurance Engineer salary in United States. (n.d.-b). https://www.indeed.com/career/quality-assurance-engineer/salaries

React for front-end development – features & benefits [2024]. RSS. (2024b, January 11). https://brainhub.eu/library/reasons-to-choose-react

Salary: Product manager in United States 2024 | glassdoor. (n.d.-c). https://www.glassdoor.com/Salaries/product-manager-salary-SRCH_KO0,15.htm

Server hardware sizing recommendations. Global Data 365. (2023, December 5). https://globaldata365.com/helpcenter/server-hardware-sizing-recommendations/#:~:text=The%20minimum%20requirements%20are%20easy,improved%20run%2Dtimes%20and%20efficiency.

Shcherbak, S., & Lozovyuk, A. (2024, October 24). *How to estimate software development costs in 5 steps*. Freshcode. https://www.freshcodeit.com/blog/how-to-calculate-the-cost-of-software-development

Software engineering entity-relationship diagram - javatpoint. www.javatpoint.com. (n.d.-b). https://www.javatpoint.com/software-engineering-entity-relationship-diagrams

Srivastava, S. (2024, December 2). *How to estimate the software development costs*. Appinventiv. https://appinventiv.com/blog/software-development-cost/

Synapse India. (2023, March 21). *Software development team: Key roles & structure*. LinkedIn. https://www.linkedin.com/pulse/software-development-team-key-roles-structure-synapseindia/

Tate, T. (2024, February 27). *Software development timeline: How long does it take to build custom software?*. SOLTECH. https://soltech.net/how-long-does-it-take-to-build-custom-software/#:~:text=On%20average%2C%20we%20see%20a,Involves%2025%2B%20screens

Timbo, R. (2024, May 29). *Software development team roles and responsibilities*. RSS. https://www.revelo.com/blog/development-team

What equipment do you need for road repair?. Bearcat MFG. (2024, March 26). https://bearcatmfg.com/what-equipment-do-you-need-for-road-repair/