Town of Moraga	Agenda Item
Ordinances, Resolutions, Requests for Action	10. C.

Meeting Date November 9, 2022

TOWN OF MORAGA **STAFF REPORT**

To: **Honorable Mayor and Councilmembers**

From: **Shawn Knapp, Public Works Director / Town Engineer**
Farah Khorashadi, Senior Civil Engineer

Subject: **Receive and Accept the Basis of Design Report for the 2021-2023 Annual Storm Drain Repairs Project (CIP 21-205); and Provide Staff with Direction on the Implementation of Proposed Storm Drain Pipe Projects**

Background

The Town of Moraga's storm drainage network consists of 21 miles of publicly maintained storm drain infrastructure consisting of underground pipes, culverts at roadway under crossings, improved and unimproved ditches, and natural creeks within the Town's Right of Way (ROW) and easements. The remaining 8 miles of the storm drain system are within private property, and maintenance is the responsibility of the property owner.

In 2015, the Town of Moraga developed a Storm Drain Master Plan (Master Plan) to establish a Capital Improvement Program (CIP) that would assess and rehabilitate stormwater system conditions within the Town limits. The objective was to increase the level of service throughout the existing drainage system and ensure that the system was being improved based on priority and was routinely updated over the course of several CIP projects. The Master Plan assessment included video inspection of pipelines, field investigations of creek culverts and drainage features (including manholes, catch basins, etc.), as-built research, and related improvement construction costs. The Master Plan also included an evaluation of the existing drainage system based on hydrologic and hydraulic calculations and provided general recommendations and guidelines for repairs. The improvement program created from the Master Plan was an overall guideline to be used for annual budgeting and was intended to assist with scoping out and prioritizing necessary storm drain maintenance and repairs.

Street rehabilitation projects that followed the preparation of the Master Plan integrated identified storm drain repairs consistent with Council policy, specifically Resolution 98-2015, which identifies Measure K revenue be dedicated to the Town's most critical infrastructure needs, specifically repair of failing streets, storm drains, and related infrastructure. In general, the storm drain repairs for these areas included point repairs,

lining, and removal and replacement of pipe depending on the severity of the defects. Repair of the storm drains was necessary to ensure soundness, longevity, and investment in the rehabilitation of the paved streets.

After heavy rainfall in 2016, the Town experienced repeated failed storm drain infrastructure, which caused major sinkholes and triggered maintenance work to unclog pipes filled with debris and sediment. As there wasn't significant flooding caused by undersized pipes, the focus was shifted to addressing the existing condition of the pipelines, not capacity issues. As a result, the Town prepared a 2019 Addendum to the Master Plan (2019 Addendum).

In 2019, the Town also completed a field storm drain pipe mapping project that revealed approximately 88% of the pipes are Reinforced Concrete Pipe (RCP), 7% are Corrugated Metal Pipe (CMP), and the remaining 5% consist of Composite Plastic Pipe. The 2019 Addendum included a re-evaluation of the annual Operation & Maintenance (O&M) program needs which considered the improved system information collected from the field mapping project and maintenance records. The 2019 Addendum recommended a reduced projected annual need of $540,000 consisting of a $420,000 enhanced O&M program and a $120,000 a year Capital Improvement Program.

Enhanced Storm Drain Program

The Town has continued to annually fund the investigation of pipe conditions and rehabilitation of pipelines based on a small annual budget. In 2020, The Town Council awarded a $30,125 annual contract to 360 Pipeline Inspections, LLC (360 Pipeline) for small scale On-Call Town Storm Drain Cleaning and Close-Circuit Television Videoing (CCTV) inspection program. In September 2020, 360 Pipeline and Town staff began the first annual proactive inspections of the Town's storm drain facilities using CCTV. The inspection included 23 pipe segments consisting of 1,920 linear feet of priority CMP. Based on this inspection, severe deficiencies were discovered in three storm drainpipes segments, and the Moraga Road & Hacienda Drainage Project (CIP 21-206) to repair these three pipe segments were designed, bid, and repaired in Fall of 2022.

In 2021, the Town received one-time funding from the Federal America Rescue Plan Act (ARPA), which identified storm drain infrastructure as an eligible expense. This funding provided the Town the opportunity to make a major investment in repairing the storm drain infrastructure to help prevent future catastrophic failures. The Fiscal Year 2022/23 Budget includes funding for the Enhanced Storm Drain O&M program, a temporary part-time Senior Civil Engineer to oversee the expanded storm drain program, and $2,071,000 in ARPA funding for two capital storm drain projects, the Moraga Road and Hacienda Drainage Project and the 2021-2023 Annual Storm Drain Repairs (CIP 21-205).

2022-2024 Worst Streets First Pavement Rehabilitation

Storm drain pipes within 2022, 2023, and 2024 Pavement Rehabilitation "Worst-First" projects are being CCTV inspected under those respective projects and will be addressed within the pavement project scope, consistent with past pavement management program practices. Attachment B includes 2022, 2023, and 2024 Pavement Rehabilitation's "Worst-First" List of Street Segments.

2021-2023 Annual Storm Drain Repairs

On March 9, 2022, the Town Council approved $334,573 (including 10% contingency) for an engineering design services agreement using ARPA funding with Harris & Associates for the 2021-2023 Annual Storm Drain Repairs Project.

Harris's primary project tasks were to complete the following:

- Update GIS storm drain maps in accordance with the 2019 Addendum.
- Inspect 30,000 linear feet of storm drain to identify deficiencies, defects, obstructions, or potential failures focusing on all corrugated metal pipes (CMP) pipes and storm drain pipes/culverts 36" in diameter and larger on Town-owned property or easements.
- Document the conditions of the inspected pipes, and prioritize the repairs to complete repairs on the most vulnerable pipe/culvert segments.
- Provide recommendations regarding repairs, replacement, operations, and maintenance; prepare cost estimates for repairs or rehabilitations for each recommended repair segment of the pipe within Public ROW in the form of a Basis of Design (BOD) report.
- Develop Plans, Specifications & Estimates (PS&E) for construction based on a $1.3 Million construction budget.

Discussion

Storm Drain Cleaning and CCTV Inspections

In July 2022, Harris & Associates' sub-consultant, Presidio, began the inspection of approximately 30,000 LF (184 segments) of storm drain pipes. All pipes were inspected per the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) condition grading system. The defects within a pipe are graded from 1-5, increasing in severity, with five being the most significant. Grades are assigned based on the significance of the defect, extent of damage, percentage of restriction to flow capacity, and amount of wall loss due to deterioration.

Storm drain pipes that are filled with silt and debris need to be cleaned out to facilitate running closed-circuit television (CCTV) equipment through the full length of the pipe to complete comprehensive inspections. From July 2022 – September 2022, approximately 3,000+ linear feet of pipe were cleaned, resulting in the removal of 10 cubic yards of debris. Following the first round of cleaning, a significant number of pipe segments still needed heavy cleaning prior to CCTV because of significant deferred maintenance. Harris expended all of its original allotted budget on heavy pipe cleaning tasks and requested a change order to clean an additional 14 reinforced concrete pipes that were 36 inches or bigger to complete CCTV inspections. Staff, within their contract authority, issued Harris a change order for the additional cleaning, and this work is ongoing. If analysis of the CCTV inspections of these 14 pipes results in a priority repair recommendation based on the selection criteria, staff will reprioritize the Project Storm Drain Project list to include these pipe segments.

CCTV Inspection Report Analysis

Harris & Associates, in consultation with the Town staff, analyzed pipe segments with a rating of 3 and above. An example of a Grade 3 structural defect is when the pipe is observed to have a damaged surface due to corrosion. If left untreated, this could cause further corrosion creating a hole in the future. An example of Grade 5 is when the hole and soil are visible within the pipe, contaminating flow and creating a void. Of the 184 evaluated segments, 36% percent were identified to have Grade 3 or higher per the criteria above and were analyzed for repair recommendations.

The repair selection criteria focused on fixing the worst structural defective pipes (highest priority starting with Grade 5 structural gradings). The $1.3 Million construction budget was sufficient to repair all storm drain pipes with Grade 4 and 5 structural defects ratings. The remaining construction budget allowed for the repair of a number of storm drain pipes with Grade 3 structural defects, with priority for pipes that would have the largest impact upon failure to the public.

Table 3-1 of the attached Basis of Design Report, included below, summarizes the pipe locations that were analyzed and recommended for rehabilitation for next year's storm drain project. The Opinion of Probable Construction Cost includes construction, construction contingency, and an 8% inflation annual construction price escalator.

Table 3-1: Proposed Storm Drain Pipe Projects with Treatment Costs

Priority No.	Material	Diameter (in)	Length (ft)	Closest Address	Recommended Proposed Improvements
1	RCP	36	30	24 Woodford Drive (portion in private property)[1]	Point Repair
2	RCP	18	34	350 Bedford Place	Point Repair
3	RCP	36	605	37 Corliss Drive	Point Repair
4	RCP	36	208	729 Camino Ricardo	Invert Paving
5	RCP	36	47	1003 Wickham Drive	Heavy Cleaning and Reinspect Pipe
6	RCP	42	241	425 Deerfield Drive	Rehabilitation by Grouting Invert
7	RCP	18	50	421 Belfair Place	Point Repair
8	CMP	36	170	1051 Camino Pablo	Clean and rehabilitate with Geopolymer liner
9	CMP	18	120	Moraga Rd s/o Dolores Court (Portion in private property) [1]	1. Point Repair 2. Install CIPP liner

[1] Locations where portions of pipe segments are on private property (PP), the PP owners will be notified of their responsibilities and work will be coordinated.

10	RCP	36	393	1049 Wickham Drive	Heavy Cleaning and reinspect
11	RCP	42	196	1682 St Andrews Drive	Point Repair
12	RCP	36	182	431 Deerfield Drive	Rehabilitation by Grouting Invert
13	RCP	18	65	195 Devin Drive	Point Repair
14	RCP	30	630	5 Thune Avenue	Install CIPP liner
15	RCP	60	176	327 Moraga Road	Invert Paving
16	RCP	42	402	2 Woodford Drive	Heavy Cleaning and Install CIPP liner
17	CMP	24	236	92 Redwood Lane	Install CIPP Liner
18	RCP	21	33	619 Carroll Drive	Point Repair
19	RCP	30	43	356 Deerfield Drive	Heavy Clean and reinspect pipe (entire length)
20	RCP	30	320	310 Donald Drive	Remove and replace pipe
21	CMP	12	58	104 Donald Drive (Portion in private property) [1]	Remove and replace pipe
22	RCP	30	202	18 Ashbrook Place	Remove and Replace Pipe
				TOTAL	**$1,353,170**

Next Steps

Over the next few months, Harris will complete the 65% and 100% design drawings for the construction project. A Request for Construction Bid Proposals for the 2021-2023 Annual Storm Drain Repairs Project work is tentatively scheduled to be released in late February 2023. The goal is to bring the contract award to an April 2023 Council meeting for approval and for construction to begin in Summer 2023.

CEQA

Design work is categorically exempt from the California Environmental Quality Act (CEQA) per §15306. CEQA analysis for the construction of the Project will be conducted as part of the scope of services under the design contract.

Fiscal Impact

None

Reviewed by Annie To, Administrative Services Director.

Alternatives

1. Receive and accept the Basis of Design Report for the 2021-2023 Annual Storm Drain Repairs Project (CIP 21-205); and Provide Staff with Direction, if any, on the Implementation of the Proposed Storm Drain Pipe Projects list.
2. Receive, modify, and accept the Basis of Design Report for the 2021-2023 Annual Storm Drain Repairs Project.
3. Do not accept the Basis of Design Report for the 2021-2023 Annual Storm Drain Repairs Project and provide direction to staff.

Recommendations

Staff recommends the Town Council receive and accept the Basis of Design Report for the 2021-2023 Annual Storm Drain Repairs Project (CIP 21-205); and provide staff with direction, if any, on the implementation of the Proposed Storm Drain Pipe Projects list.

Report reviewed by: **Cynthia Battenberg, Town Manager**

Attachments:

A. Basis of Design Report - 2021-2023 Annual Storm Drain Repairs October 2022
B. 2022, 2023, and 2024 Pavement Rehabilitation "Worst-First" List of Street Segments

ATTACHMENT A

Basis of Design Report - 2021-2023 Annual Storm Drain Repairs October 2022

ATTACHMENT B

2022, 2023, and 2024 Pavement Rehabilitation
"Worst-First" List of Street Segments

2022 Pavement Rehabilitation Project

The design street list for the 2022 Pavement Rehabilitation project is below. These streets were chosen based on their PCI as well as preliminary field investigation. Pavement treatments will vary from microsurfacing, cape seal, and overlay. The street segments listed in the table below are subject to change during design due to underground conflicts, budgets, construction bid proposal, and etc. The final list will be made available when the Town Council awards the construction contract.

Street	Beginning	End
Camino Pablo	215' south of Tharp Drive	Private Road
Camino Ricardo	Moraga Way	Greenfield Drive
Campolindo Court	Campolindo Drive	North End
Campolindo Drive	Corte Mateo	Corte de Rosas
Corte Granada	Via Granada	South End
Devin Drive	El Paraiso Court	Moraga Road
Donald Drive	Laird Drive	West End
Fernwood Drive	Willowspring Lane	Belfair Place
Fernwood Drive	Donald Drive	Birchwood Drive
Gaywood Place	Cedarwood Drive	West End
Hardie Drive	Moraga Way	Idlewood Court
Juniper Way	Rimer Drive	East End
Kimberley Drive	360' south of Scofield Drive	Scofield Drive
Longfield Place	Fernwood Drive	North End
Lynwood Place	Greenfield Drive	Corliss Drive
Quintas Lane	Paseo del Rio	Calle la Mesa
Rheem Boulevard	Scofield Drive	333 Rheem Boulevard
Sarah Lane	Rimer Drive	East End
Shuey Drive	Camino Pablo	Larch Avenue
Tia Place	Larch Avenue	East End
Via Granada	Quintas Lane	Corte del Sol
Viader Drive	Country Club Drive	Moraga Way

NOTE: The street list is subject to change.

2023 Pavement Rehabilitation Project

The design street list for 2023 Pavement Rehabilitation project is below and will begin at the end of 2022. The pavement design treatments will include using a Stress Absorbing Membrane Interlayer (SAMI) and pavement overlays. The street segments listed in the table below are subject to change during design for many reasons including underground conflicts, budgets, construction bid proposal, and etc. The final list will be made available when the Town Council awards the construction contract.

Street	Beginning	End
Butterfield Place	Tharp Drive	South End
Constance Place	Canyon Road	North End
Corliss Drive	Ashford Place	Moraga Road
Corliss Drive	Warfield Drive	Wakefield Drive
Donald Drive	Laird Drive	Moraga Road
Lakefiled Road	Tharp Drive	South End
Redfield Place	Tharp drive	East End
Springfield Place	Tharp Drive	South End

NOTE: The street list is subject to change.

2024 Pavement Rehabilitation Project

The design street list for 2024 Pavement Rehabilitation project is below and will begin at the end of 2023. Treatments generally will include using a Stress Absorbing Membrane Interlayer (SAMI), pavement overlays and full-depth Reclamation (FDR). The street segments listed in the table below are subject to change during design for many reasons including underground conflicts, budgets, construction bid proposal, and etc. The final list will be made available when the Town Council awards the construction contract.

Street	Beginning	End
Corte Fortuna	Calle La Mesa	East End
Millfield Place	Deerfield Drive	East End
Paseo del Rio	Campolindo Drive	Calle La Mesa
Via Granada	Calle la Mesa	Moraga Road
Wimpole Street	Woodford Drive	North End

NOTE: The street list is subject to change.