TOWN OF PLYMOUTH CAPITAL IMPROVEMENT PLAN REQUEST
FY25 SPRING ANNUAL TOWN MEETING

Department:	Water Division	**Priority #:**	1
Project Title and Description:	Water System Improvements	**Total Project Cost:**	$1,790,800

Department/Division Head: Peter Gordon

Check if project is: New ■ Resubmitted ☐ **Cost estimate was developed:** Internally ☐ Externally ■

For project re-submittals, list prior year(s):

List any funding sources and amounts already granted:

Basis of Estimated Costs (attach additional information if available)			**If project has impact on 5 Year Plan and future operating budgets, insert estimated amounts.**		
Capital:	**Cost**	**Comments**	**Fiscal Year:**	**Capital**	**Operations & Maintenance**
Planning and Design	$275,000	Engineering, plans,	*FY26*		
Labor and Materials	$1,140,000	Construction,Paving,Details	*FY27*		
Administration	$213,000	construction oversight, Permitting,Inspector	*FY28*		
Land Acquisition			*FY29*		
Equipment			*FY30*		
Other					
Contingency	$162,800	10%			
Total Capital	$1,790,800				

Project Justification and Objective: Restore critical system hydraulics by repairing water main on the bridge over Rt. 3 access road.

For Capital Project Requests:
Will this project be phased over more than one fiscal year? If yes, enter it on the 5 Year Plan Yes ☐ No ■
Can this project be phased over more than one fiscal year? Yes ☐ No ■

For Capital Equipment Requests:
☐ Check if equipment requested is replacement and enter the year, make & model, VIN and present condition of existing equipment

What is the expected lifespan of this new/replacement equipment: 100yrs

Attach backup information, estimates, or justification to support this request.

TOWN OF PLYMOUTH
Water Division
169 Camelot Drive
Plymouth, Massachusetts 02360

Sandwich Rd. Bridge: Priority 1

The Sandwich Road bridge over the Rt 3 access road carries an 8" cast iron water main. In late February of 2023 the water main failed. The failure occurred in the middle of the bridge where the water main is encased in a void underneath the sidewalk of the north bound travel lane. The Water Division was unable to repair the break due to the main being encased in the bridge structure, however it was possible to isolate the bridge crossing without losing any service connections. Currently, the pipe remains isolated, no water flows across the bridge. This leaves the residents of Chiltonville vulnerable to loss of service should there be another failure in the area. The River St. and Clifford Rd. water mains that service residents of Chiltonville are made of cast iron and were installed in the early 1930's. These water mains also carry water from the Forges Field Well to the Chiltonville storage tank. Repairing this main is a priority, necessary to restore some resilience to the system hydraulics in that area.

We are working with the engineering firm Environmental Partners to develop a strategy for cleaning and structurally lining the pipe and restoring it to service. We are also working to develop a plan to add a bypass for this pipe by thereby increasing system resiliency. The long-term plan for this area is to upgrade the water mains on Sandwich Rd as well as Jordan and Clifford Rd. This was a recommendation from the 2019 Water System Master Plan.

ENVIRONMENTAL PARTNERS
An Apex Company

November 2, 2023

Peter Gordon, Water Superintendent
Department of Public Works
159 Camelot Drive
Plymouth, MA 02360

RE: Project Description and Budgetary Cost Estimate
Sandwich Road Water Main Replacement

Dear Peter,

Environmental Partners is pleased to submit budgetary information for the Sandwich Road Water Main Replacement project in Plymouth, MA. This budgetary information is intended to support obtaining funding for the project at Special Town Meeting.

Project Description

The existing 8-inch cast iron water main crossing the Route 3A bridge on Sandwich Road was installed as part of the original bridge construction work in 1950. The water main has experienced several breaks over the years and therefore has been taken out of service, creating two dead ends on either side of the bridge. This water main serves an important purpose for water conveyance and fire protection within the Town and must be replaced.

The proposed project includes replacing the existing water main on Sandwich Road from East Russell Mills Road to River Street (approximately 2,100 linear feet). EP performed a cursory review of available information and participated in a conversation with MassDOT representatives on October 31, 2023. During this meeting, it was determined that 1) replacing the existing water main on top of the concrete safety walk spanning the bridge and 2) hanging a new water main on the side of the bridge are not viable options for pipe replacement. Demolishing the existing water main within the bridge and replacing in kind was also considered but found to be problematic because of the structural implications to the bridge deck.

There are two feasible options to install pipe under the state highway that are acceptable to MassDOT: Horizontal Directional Drilling (HDD) or pipe jacking. The pipe jacking approach was not considered in this submission because of significant cost implications and extensive time required to permit the work through MassDOT. HDD was deemed a feasible option due to cost and to the fact that a gas main is currently under consideration to be drilled within the same limits under the state highway.

There are two approaches to consider to replace the existing water main in this area:

1. Clean and structurally line the existing 8" cast iron water main within the limits of the Route 3A bridge and install new 12" ductile iron water main via open cut excavation methods to East Russell Mills Road and River Street.
2. Horizontally directionally drill a new 12" HDPE pipe under Route 3A and install new 12" ductile iron water main via open cut excavation methods to East Russell Mills Road and River Street.

The above options will be evaluated in detail during the preliminary design phase of the project, at which time a design approach will be selected. Budgetary cost estimates for each option are included below. The existing 8" water main crossing the bridge will need to be inspected and evaluated to confirm feasibility of Option 1.

Budgetary Cost Estimates

Option 1 - Combination of clean and structurally line existing water main and open cut installation

Construction Cost Estimate	$615,000
Full Width Mill and Overlay	$150,000
Planning Level Construction Contingency (25%)	$192,000
Police Details	$40,000
Engineering (20%)*	$155,000
MassDOT Permitting and Coordination	$20,000
Resident Project Representative	$38,000
Subtotal	$1,210,000

*Includes construction phase services.

Option 2 – Combination of horizontal directional drilling and open cut installation

Construction Cost Estimate	$950,000
Full Width Mill and Overlay	$150,000
Planning Level Construction Contingency (25%)	$275,000
Police Details	$40,000
Engineering*	$155,000
MassDOT Permitting and Coordination	$20,000
Resident Project Representative	$38,000
Subtotal	$1,628,000

*Includes construction phase services.

Assumptions

EP made the following assumptions when preparing the above budgetary estimates:

- 6 week construction duration including final paving
- Construction will be complete before April 1, 2025
- 2 police details per day at 8 hours per day. Budgetary estimates assume that GC will pay for police details. Police detail rates are higher if Town pays directly
- Temporary bypass piping not required

- Project will require two MassDOT permit submissions – one for subsurface exploration during design and one for construction
- Disturbed roadway will be mill and overlayed from curb to curb (feasibility to be confirmed during design)
    - Bridge will not be re-paved

Schedule

EP anticipates funding for this project to be available in mid-April 2024. EP will prepare a proposal inclusive of scope of services to perform the work upon the Town's request. EP expects to commence engineering services no sooner than April 2024, upon receipt of an executed contract from the Town. Construction schedule may be impacted by Contractor availability.

Please feel free to contact us with any questions or concerns.

Very truly yours,

Environmental Partners Group, LLC

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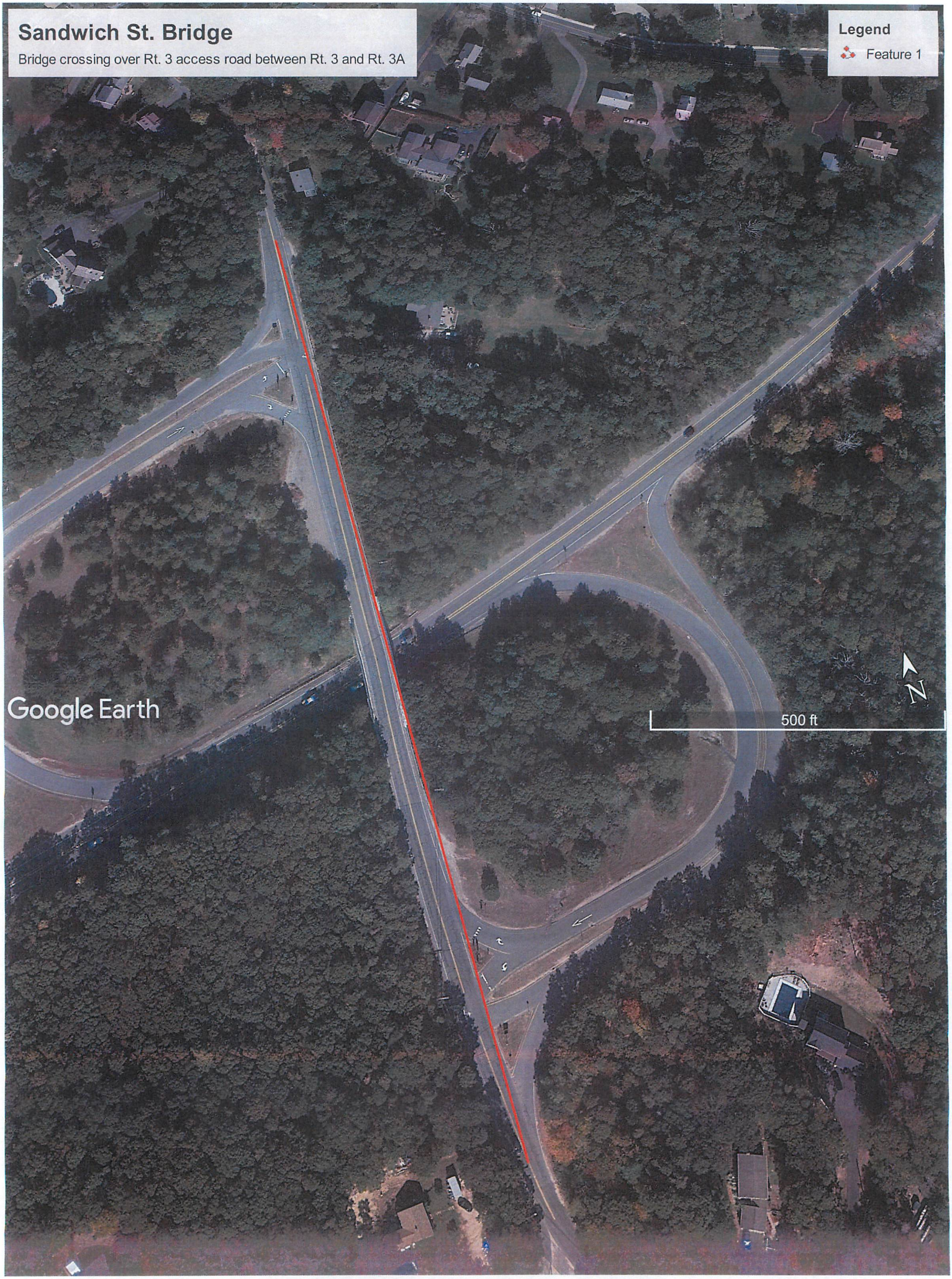
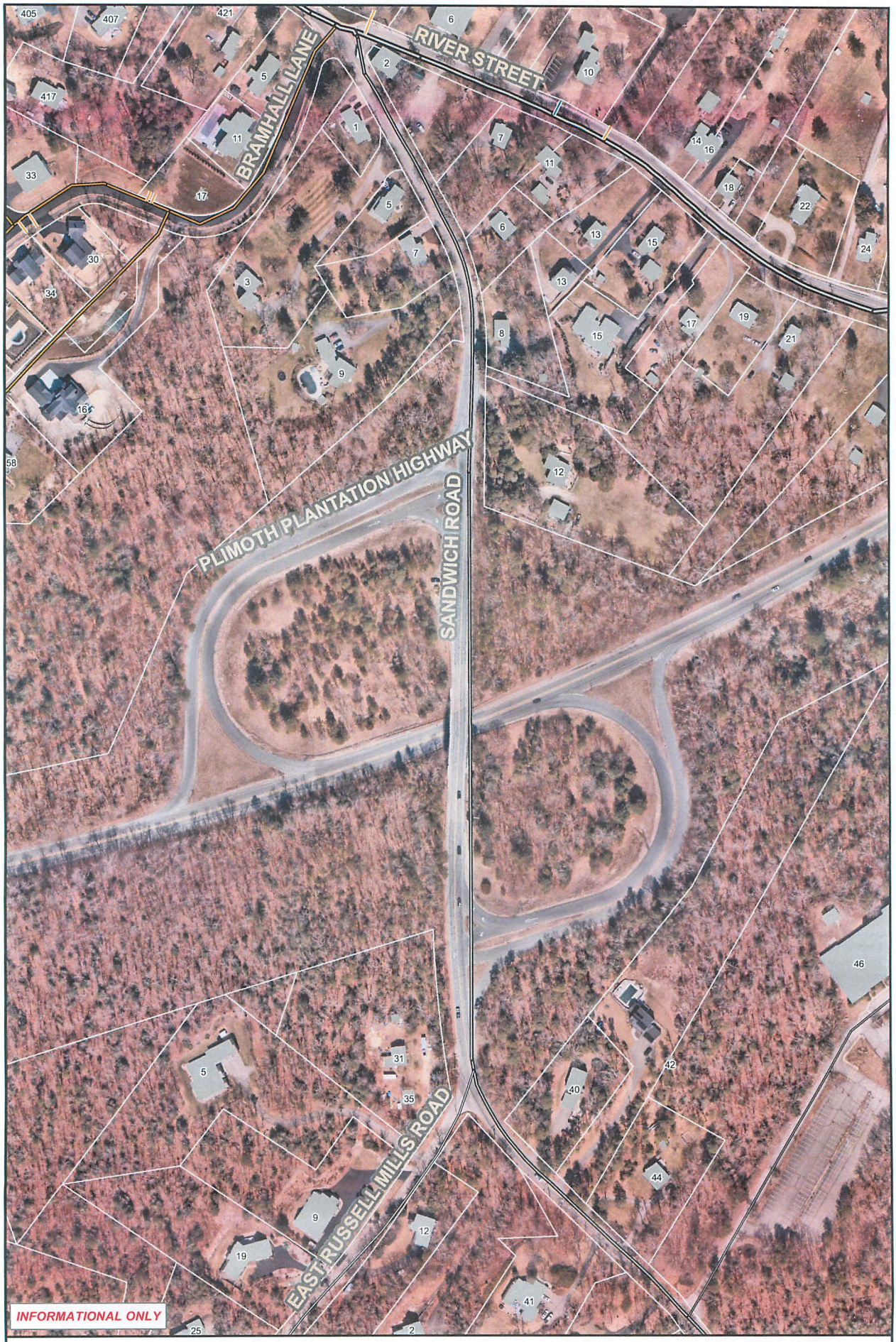

Sandwich St. Bridge
Bridge crossing over Rt. 3 access road between Rt. 3 and Rt. 3A
Legend
Feature 1
Google Earth
500 ft
N



TOWN OF PLYMOUTH
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

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