O'MALLEY ROAD
RECONSTRUCTION PROJECT
NEW SEWARD HIGHWAY
TO HILLSIDE DRIVE

PROJECT No. STP-0512(5)/53935

REVISED ENVIRONMENTAL ASSESSMENT

Prepared for:

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REVISED ENVIRONMENTAL ASSESSMENT

O'MALLEY ROAD RECONSTRUCTION
Project No. STP-0512(5)/53935

Submitted Pursuant to 42 U.S.C. 4332(2)(c)
by the
U.S. Department of Transportation
Federal Highway Administration
and the
State of Alaska
Department of Transportation and Public Facilities

This action complies with Executive Order 12898, Environmental Justice; Executive Order 11988, Floodplain Management; and Executive Order 11990, Protection of Wetlands.

12.2.05
Date of Recommendation

K. Kim Rio
ADOT&PF Preliminary Design & Environmental Chief

12.2.05
Date of Approval

ADOT&PF Central Region Pre-Construction Engineer

12.6.05
Date of Approval

FHWA

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The Alaska Department of Transportation and Public Facilities (ADOT&PF), in cooperation with the Federal Highway Administration (FHWA), proposes to reconstruct O'Malley Road in Anchorage, Alaska to bring conditions up to current standards. The proposed improvements include: reconstructing O'Malley Road to four lanes from the New Seward Highway east to Lake Otis Parkway, adding curb and gutter, standardizing roadway geometrics, providing a separated pedestrian and bicycle facility, upgrading drainage, and providing illumination; and reconstructing O'Malley Road from Lake Otis Parkway east to Hillside Drive to three lanes, adding a continuous two way left turn lane, standardizing road way geometrics, adding paved shoulders, providing a separated pedestrian and bicycle facility, and upgrading drainage.

FEDERAL HIGHWAY ADMINISTRATION

FINDING OF NO SIGNIFICANT IMPACT

For
O'Malley Road Reconstruction Project
New Seward Highway to Hillside Drive
Project No. STP-0512(5)/53935

The Alaska Department of Transportation and Public Facilities (Department) proposes to improve O'Malley Road between the New Seward Highway and Hillside Drive.

The Preferred Alternative will bring O'Malley Road up to current urban minor arterial design standards. The project design will widen shoulders, add left-turn lanes at major residential streets intersections, improve visibility, safety, and capacity and address intersection lighting and drainage needs.

The Preferred Alternative consists of an urban four-lane divided roadway between the New Seward Highway to Lake Otis Parkway (Segment A), and a three-lane, two-way roadway between Lake Otis Parkway to Hillside Drive (Segment B). In Segment A, the roadway will consist of four 3.6-meter (12-foot) lanes divided by a 4.9-meter (16-foot) median and have 1.8-meter (6-foot) shoulders with curb and gutter. Multi-use pathways between New Seward Highway and Lake Otis Parkway will include a 1.5-meter (5-foot) wide concrete sidewalk along the north side and a 3.0-meter (10-foot) separated paved pathway on the south side.

In Segment B, the roadway will be upgraded to current standards. Improvements will provide a rural three-lane, two-way roadway with 3.6-meter (12-foot) wide travel lanes and a 4.3-meter (14-foot) wide middle lane for left turns. The road would have 2.4-meter (8-foot) wide shoulders without curb and gutter and a 3.0-meter (10-foot) wide separated paved pathway along the south side of the road.

The Department proposes the following preliminary mitigation measures to minimize project impacts:

- Improve fish passage at the Little Campbell Creek crossing by constructing step-pools and installing a new culvert (Figure 19);
- Improve fish passage at the Craig Creek crossing by constructing step-pools and installing a new culvert (Figure 20);
- Improve drainage into Moose Meadows by removing a collapsed culvert and replacing it with a geomembrane-covered large rock subdrain to act as an equalization drain across the fill embankment;
- Enhance the water flow by directing storm water treated by mechanical means and/or biofiltration swales into the Moose Meadow wetlands;
- Donating fee-in-lieu of mitigation for loss of wetland values;
- Employ traffic management measures to minimize construction noise;
- When possible, limit operations of heavy equipment and other noisy procedures to daylight hours;
- Locate equipment and vehicle staging areas as far from residential areas as possible;

- Install and maintain effective mufflers on construction equipment;
- Limit unnecessary idling of equipment; and
- Prohibit clearing between May 1 and July 15.

The Federal Highway Administration (FHWA) has conducted an independent review of the revised EA and Alaska Department of Transportation & Public Facilities responses to comments received on the EA and has determined that the Preferred Alternative will not have a significant impact on the human environment. FHWA finds that the EA adequately and accurately discusses the need, environmental issues, and impacts of the proposed project, as well as the comments provided by the public and agencies during the EA review period. It complies with Executive Order 11990, Protection of Wetlands; Executive Order 11988, Floodplain Management; and Executive Order 12898, Environmental Justice.

The FHWA has determined that the EA provided sufficient evidence and analysis for determining that an Environmental Impact Statement will not be required. The FHWA takes full responsibility for the accuracy, scope, and content of the attached revised EA.

12.6.05
Date

For FHWA (Name & Title)

SUMMARY

The Alaska Department of Transportation and Public Facilities (ADOT&PF), in cooperation with the Federal Highway Administration (FHWA), is investigating alternative ways to improve O'Malley Road between the New Seward Highway and Hillside Drive. O'Malley Road is located in the southeast portion of Anchorage, Alaska; an area locally referred to as the "Hillside." As an east-west corridor, O'Malley Road connects the upper Hillside area in Anchorage to major north-south roadways such as New Seward Highway and the Minnesota Bypass, both of which provide access to the rest of Anchorage. This road also provides access to the Alaska Zoo and the Anchorage Golf Course.

The project corridor follows O'Malley Road eastward from its intersection with the New Seward Highway for 6.0 kilometers (3.7 miles) ends just uphill of Hillside Drive. O'Malley Road currently has two lanes with minimal shoulders and a separated pathway exists only on the north side of O'Malley Road between the New Seward Highway and Lake Otis Parkway. The road grade ranges between 1.0 percent and 7.0 percent. O'Malley Road has not been reconstructed since 1962, except for adding turning lanes, safety projects at major intersections and maintenance pavement overlays. Current and future traffic levels require a larger facility, left-turn lanes, and pavement improvements.

During the scoping for this project, the public identified congestion, trails and pathways, poor roadbed conditions, lighting, moose habitat, and safety as being important issues relevant to O'Malley Road. In addition, agency involvement introduced wetlands, fish passage, and water quality as important issues.

Three alternatives were investigated in the Environmental Assessment (EA) for O'Malley Road: two build alternatives and the no-action alternative. Alternative One widens the existing two-lane roadway in two segments: a four-lane divided roadway between the New Seward Highway and Lake Otis Parkway and a three-lane roadway between Lake Otis Parkway and Hillside Drive. The second build alternative, Alternative Two, also widens the existing two-lane roadway in two segments: a four-lane divided roadway between the New Seward Highway and Lake Otis Parkway and a two-lane roadway with left-turn lanes at major intersections between Lake Otis Parkway and Hillside Drive. Both build alternatives include a separated multi-use pathway, to be constructed concurrently with the roadway improvements, for the full length of the project and a sidewalk from New Seward Highway to Lake Otis Parkway. The third alternative investigated was the no-action alternative. The no-action alternative would maintain O'Malley Road in its current condition.

The purpose of an EA is to document the project elements and assess the potential environmental impacts to determine whether project impacts would be significant pursuant to Title 40, Code of Federal Regulations, Part 1508.27, the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA). If the impacts are found not to be significant, the Federal Highway Administration (FHWA) will issue a Finding of No Significant Impact. If there are significant impacts, an Environmental Impact Statement will be prepared. Significant environmental impacts are identified with the assistance of the public and resource agencies that have subject matter expertise or jurisdiction by law.

Compared to the no-action alternative, the build alternatives would increase capacity, enhance pedestrian and non-motorized transportation, increase safety, improve air quality, reduce the possibility of moose collisions, improve fish habitat, and lower total energy consumption. Both build alternatives meet the project purpose and need, and address public and agency concerns.

The following issues were evaluated for the build and no-action alternatives.

Land Use. The entire project is within the Municipality of Anchorage (MOA). Zoning adjacent to the roadway is designated as residential except for a small business district, the Anchorage Golf Course, Abbott-O-Rabbit Ball Fields, and the Alaska Zoo. Neither build alternative would change the existing land use of development patterns along the project corridor.

The no-action alternative would result in no change to the existing land use or development pattern.

Social. Neither build alternative would generate adverse impacts to any social group, school, recreation area, or church. The area population and ethnic structure is fairly cohesive and not segregated into diverse social groups. Since the road already exists and divides major neighborhoods, the project would not add to the divide or disruption of these established communities, impact planned community development, or create an appreciable change in employment.

The no-action alternative would not produce construction-induced impacts to the social setting. Impacts are currently occurring with the existing facility. These impacts include a less than acceptable level of service for motor vehicles and difficulties experienced by pedestrians and bicyclists from the lack of multi-use pathways.

Relocation. The Conceptual Stage Relocation Study for the project found that either build alternative would relocate two single-family residences and have minor impacts to one business; a private school; and one private non-profit organization, the Alaska Zoo. Additional right-of-way (ROW) will be required for both build alternatives.

The no-action alternative would not require the relocation of any residences or the reestablishment of businesses.

Economic. There will be negligible change in the local economy, tax base, or employment in the area as a direct result of either build alternative. The no-action alternative would preclude economic impacts from construction. Negative economic impacts could result from drivers avoiding congested business areas as the level of service (LOS) deteriorates over time.

Pedestrians and Bicyclists. To meet the purpose and need for the project and provide a good compromise with respect to community desires, each build alternative includes the same separated, paved, 3.0-meter (10-feet) wide multi-use pathway as identified in the Anchorage Areawide Trails Plan (MOA, 1997b) in addition to 1.8 to 2.4-meter (6 to 8-feet) shoulders throughout the length of the project corridor. In the segment from the New Seward Highway to

Lake Otis Parkway, both build alternatives also include a 1.5-meter (5-feet) wide concrete sidewalk. The roadway shoulders, separated pathway, and sidewalk will improve safety and mobility of pedestrian and bicycle traffic along the project corridor. ADOT&PF will not be constructing the unpaved multi-use trail on the north side of O'Malley Road as called for in the Trails Plan as part of this project. The construction of either alternative will not preclude future construction of the multi-use trail.

The no-action alternative offers no additional pedestrian and bicycle facilities.

Air Quality. The build alternatives would conform to the State and federal implementation plans as required under section 176(c)(4) of the Clean Air Act, as amended in 1990. Carbon monoxide concentrations generated by the build alternatives would essentially be the same as the no-action alternative and none of the anticipated values would be above EPA criteria. A notice of availability of the Environmental Assessment and the Draft Air Quality Conformity Document was sent to the public and regulatory agencies. The public and agencies had an opportunity to review the draft public review conformity determination during the EA review period, July 16, 2004 through August 30, 2004 and at the public hearing, July 29, 2004, no comments were received and the ADOT&PF finalized the document. The final conformity document is in Appendix C.

Temporary degradation of air quality during construction may occur during the operation of heavy equipment and the moving and placing of soil. Temporary impacts of dust generated during construction will be controlled with watering.

The no-action alternative would not produce temporary degradation of air quality due to construction.

Noise. Design year (2031) noise levels are predicted to be a maximum of 2.8 dBA higher under the build alternatives than the no-build alternative and 4.3 dBA higher than existing noise levels (2001). Changes in 3.0 dBA or less are not easily discerned by the human ear in field situations.

Noise barriers were analyzed and determined not to be feasible and reasonable throughout the corridor. They are not feasible due to the numerous breaks for cross streets and driveways, which make barriers ineffective. Other potential traffic noise mitigation measures included the following: creating buffer zones along the corridor; transportation demand and transportation system management; modifying the proposed alignment of the roadway; and insulation of noise sensitive public-use or non-profit institutional structures. Appendix C contains the ADOT&PF Noise Abatement Recommendation Checklists for the project.

The no-action alternative would not have a discernable difference in future noise levels.

Water Quality. Neither build alternative would change the contributing areas for the individual drainage basins along the corridor. All drainage patterns outside the right-of-way would remain as they currently exist. However, the build alternatives would increase the amount of paved surfaces and, therefore, increase the flow rates during rainstorm events. Development of any road improvements within the O'Malley Road corridor requires implementation of storm water runoff quality control measures.

During construction, ADOT&PF will implement Best Management Practices to control erosion and storm water runoff. On October 28, 1998, EPA issued a Municipal Separate Storm Sewer System (MS4) National Pollution Discharge Elimination System (NPDES) permit for the MOA and ADOT&PF (Permit No. AKS-05255-8) to discharge from municipal storm sewer system outfalls to Little Campbell Creek and Craig Creek. The project would comply with the terms of the MS4 NPDES permit and the NPDES General Permit for Construction Activities in Alaska.

The no-action alternative will not alter the existing drainage system.

Permits. After discussions with the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, and Environmental Protection Agency; this project was removed from the merged process as outlined in the "Interagency Working Agreement to Integrate Section 404 and Related Permit Requirements Into the National Environmental Policy Act." All agreed verbally that this project could be expedited outside the merged process. The merger agreement has since expired.

The following permits are needed for the project to continue and will be acquired during the design phase: U.S. Army Corps of Engineers Section 404 Permit; Alaska Department of Environmental Conservation (ADEC) Section 401 Water Quality Certification; Alaska Department of Natural Resources (ADNR) Office of Project Management and Permitting, Coastal Zone Management Consistency Determination; and ADNR Office of Habitat Management and Permitting, AS 41.14.840 Fish Passage Permit.

The no-action alternative would not require state or federal permits.

Wetlands. Wetland impacts appear unavoidable if the purposes of the project are to be achieved. Total avoidance of wetlands is not practicable because of the linear configuration of O'Malley Road and the perpendicular crossing of the wetlands. The proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Either build alternative would impact about 0.7 hectares (1.7 acres) of wetlands. To compensate for the loss wetland values the Department will donate a fee-in-lieu of mitigation to the Great Land Trust to replace the loss of an estimated 2.7 debits of wetlands.

The no-action alternative would not impact wetlands but also would not meet the purpose and need of the project.

Water Body Modifications. Two stream crossings were identified in the project corridor, Little Campbell Creek and Craig Creek. Both build alternatives will replace and improve the existing culvert crossings and will generate a positive impact by enhancing fish passage.

The no-action alternative would not improve the existing culvert deficiencies.

Wildlife. Both build alternatives predominantly occupy the existing O'Malley Road ROW. The build alternatives will have minor adverse impacts to wildlife resulting from increased traffic, a widened roadway, vegetation clearing, sidewalk and pathway construction, and lighting. The clearing, restricted to construction limits, will be accomplished outside the May 1 to July 15 bird nesting season. This clearing and pathway construction will help prevent the presence of moose near the roadway but may negatively impact other wildlife such as birds and small mammals due to loss of habitat. Both build alternatives also accommodate wildlife by increasing driver visibility at lighted intersections and where clearing will improve the motorist and wildlife visibility.

The no-action alternative would have no effect on the prevalence of moose collisions in the project corridor. Wildlife habitat would remain unaffected by the no-action alternative. The no-action alternative would not provide the reduction in moose kills anticipated with the build alternatives.

Fisheries. The build alternatives will enhance the Little Campbell Creek and Craig Creek fisheries habitat by removing the scour aprons and constructing step-pool outlet control structures to improve fish passage. All in stream work will be done according to ADNR permit stipulations.

The no-action alternative would not improve the existing culvert deficiencies.

Floodplain/Flood Hazards. Neither build alternative nor the no-action alternative would produce foreseeable changes to the existing flow characteristics or flood hazards along each respective creek. The MOA Flood Hazard and Watershed Management Divisions are not aware of any naturally occurring flooding problems along either of these creeks within the project corridor. The primary flood risk is associated with the Lake O' the Hills dam.

Coastal Zone. Both build alternatives will improve the culvert structures for both Little Campbell Creek and Craig Creek. These culvert installations will include improvement to fish passage. The proposed project is consistent with the goals of the Alaska Coastal Management Plan. A formal consistency review and determination would be made during the permit acquisition phase of the proposed project.

The no-action alternative would not cause construction-induced impacts in the coastal zone and would not improve fish passage.

Visual. The build alternatives will change adjacent property owners' and motorist's views of the roadway. Vehicle occupants will see more open space adjacent to the road and approximately the same views of the Chugach Mountains while traveling east along the road. The surrounding character of the area should not be substantially changed. The right-of-way will be cleared within the construction limits of the proposed build alternatives. Cut slopes and disturbed areas will be re-vegetated with grass.

Both build alternatives include continuous illumination from New Seward Highway to Lake Otis Parkway. This is supported by the type of facility proposed, the minimal impact to the adjacent residences, and the desire to avoid frequent, abrupt changes in light levels. Continuous illumination is not included in the build alternatives for the section from Lake Otis Parkway to Hillside Drive.

The no-action alternative will leave the view of the roadway and surrounding vistas unchanged.

Construction. Both build alternatives will have temporary construction impacts. Prior planning and proactive construction sequencing should minimize impacts normally associated with construction including: air quality, surrounding noise levels, water quality, and availability of gravel and topsoil from local material sources. All work will be done in compliance with the NPDES General Permit for Construction Activities in Alaska.

The no-action alternative would not cause construction-induced impacts.

Relationship of Short-Term Uses to Long Term Productivity. Use of local resources is anticipated to benefit the community productivity directly and on a long-term basis. Either build alternative would increase or maintain the existing productivity of the area. Both build alternatives are based on state and local government comprehensive planning that considers the need for present and future traffic requirements and land use development. Local short-term impacts and use of resources for the build alternative are consistent with the long-term maintenance of the improved road and the enhancement of the local area and state productivity.

The no-action alternative would have no effect on the short-term use of the human environment since lack of construction precludes utilization. Long-term productivity would decrease due to the absence of an effective and efficient transportation system.

Irreversible and Irretrievable Commitments of Resources. The build alternatives would impact resource supplies in the area with a one-time withdrawal. Use of gravel for this project is not expected to impact resource utilization on a long-term basis as it would likely be transported from the Matanuska-Susitna Borough. The build alternatives would permanently remove material from availability. Other construction materials such as pavement, topsoil, grass seed, and concrete are also readily available but would be irretrievably committed. The commitment of these resources could be justified by residents benefiting from the improved overall quality of the transportation in the area. These benefits would consist of improved safety, accessibility, and access for pedestrians and bicyclists.

The no-action alternative would not require any commitment of resources.

Secondary and Cumulative. Secondary impacts are those impacts caused by reconstruction of O'Malley Road that will occur in the reasonably foreseeable future. When improved, O'Malley Road will attract additional vehicle trips, additional bicycle, pedestrian and equestrian trips until other parallel routes (Abbott Road and Huffman Road) are also improved. The build alternatives will also provide a safer street by improving visibility of wildlife and road users. None of these secondary impacts is considered adverse.

Cumulative impacts result from incremental consequences of an action when added to other past and reasonably foreseeable future actions. The Hillside area, where O'Malley Road is located, is a fast-growing area. The long-term development in the area has had a cumulative impact on the natural environment. Wetlands have been filled, streams have been crossed and the rural character has been supplanted by large-lot subdivision development. The O'Malley Road reconstruction project is one of many projects being planned in response to the development and population growth. When constructed to current standards, both O'Malley Road build alternatives will serve current and future growth in the area.

No adverse cumulative impacts to wetlands along the project corridor are anticipated. It would result in cumulative effects to the wetlands within the Anchorage Bowl, but these impacts are not expected to be significant. Wetland impacts will be offset by improvements to Little Campbell Creek and Craig Creek water quality and fisheries habitat contained in the build alternatives.

The direct impact of the project would be to ease congestion and facilitate safe access to and from the Hillside neighborhoods. Increased ease and quicker access to grocery stores, work, schools, and the daily needs of the residents may make the neighborhood feel more like an urban area, and less like a rural neighborhood.

The EA was approved on June 25, 2004 for public distribution. The public comment period extended 45 days beginning July 16, 2004 and ending August 30, 2004. The Department held a public hearing on July 29, 2004 in Anchorage. During the document review period, numerous public and agency comments were received. Public comment supported improving capacity by developing a four-lane divided roadway along Segment A (New Seward Highway to Lake Otis Parkway). Comments were divided regarding Segment B (Lake Otis Parkway to Hillside Drive). Public comments not supporting the preferred alternative in this area indicated that this portion of the O'Malley Road functions well as is and no-action should be taken. Comments supporting the roadway improvements generally ranged from being in support of the preferred alternative to calling for additional road capacity, pedestrian, and safety improvements. Comments regarding safety primarily concerned travel speeds and location of intersection traffic control. Additional comments were received pertaining to noise, right-of-way, and visual impacts.

Public comments generally supported enhancements to pedestrian and non-motorist facilities; however, comments were divided on the need for pedestrian facilities along both sides of the roadway. Specific comments addressed the type and placement of the pathway facilities and the desire for grade-separated crossings.

Regulatory agencies commented primarily on the need for additional delineation of wetlands within Moose Meadows, opportunities to avoid or mitigate wetland impacts, and the desire to address redirecting drainage across O'Malley Road towards Moose Meadows wetlands. MOA Trails Coordinator also commented that ADOT&PF should follow the Areawide Trail Plan by incorporating a paved path on south side of O'Malley Road and unpaved equestrian trail on north side.

The Department evaluated the formal comments received in conjunction with environmental consequences, required project permits and approvals, and construction costs. Based upon these factors, the Department selected Alternative One, urban four-lane from New Seward Highway to Lake Otis Parkway and rural three-lane from Lake Otis Parkway to Hillside Drive, as the preferred alternative. Reference Appendix A for complete list of public comments received and corresponding responses to comments.

The no-action alternative would not change the existing road or pedestrian facilities.

SUMMARY

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(Bound separately)

VOLUME II -- APPENDICES
(Bound separately)

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ac	Acre/Acres
ACMP	Alaska Coastal Management Plan
ACS	Alaska Communications Systems
ADA	Americans with Disabilities Act
ADCED	Alaska Department of Community and Economic Development
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ADNR-OHMP	Alaska Department of Natural Resources-Office of Habitat Management and Permitting
ADNR-OPMP	Alaska Department of Natural Resources-Office of Project Management and Permitting
ADPOR	Alaska Division of Parks and Outdoor Recreation
AHRS	Alaska Heritage Resource Survey
Alt./Alts.	Alternative/Alternatives
AMATS	Anchorage Metropolitan Area Transportation Solutions (formerly Anchorage Metropolitan Area Transportation System)
AWWU	Anchorage Water and Wastewater Utility
BMPs	Best Management Practices
CE	Categorical Exclusion
CEA	Chugach Electric Association, Inc.
CFR	Code of Federal Regulations
CO	Carbon Dioxide
CTWLT	Continuous Two-Way Left-Turn
Cu yd	cubic yard/cubic yards
DA	Department of Army
dBA	A-weighted sound level (Frequency weighted sound pressure level approximating the frequency response of the human ear.)
ADOT&PF	Alaska Department of Transportation and Public Facilities
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Environmental Site Assessment
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
Ft	Feet
GIS	Geographical Information System
ha	hectares
HALO	Hillside Area Land Owners
HCM	Highway Capacity Manual
Hwy	Highway
in	Inch
ISTEA	Intermodal Surface Transportation Efficiency Act

km	Kilometer
kph	kilometers per hour
LOS	Level of Service
LRTP	Long-Range Transportation Plan
m	meter/meters
mi	Mile
mph	Mile per Hour
MOA	Municipality of Anchorage
mm	Millimeter
PER	Preliminary Engineering Report
Pwy	Parkway
NEPA	National Environmental Policy Act
ROW	Right-of-Way
SOV	Single Occupancy Vehicle
STA	Station
TDM	Travel Demand Management
TIP	Transportation Improvement Program
TSM	Transportation System Management

1.0 INTRODUCTION

The Alaska Department of Transportation and Public Facilities (ADOT&PF), in cooperation with the Federal Highway Administration (FHWA), is investigating alternatives to improve O'Malley Road between the New Seward Highway and Hillside Drive (Figure 1). O'Malley Road is located in the southeast portion of Anchorage, Alaska; an area known locally as the "Hillside". O'Malley Road connects the upper Hillside area in Anchorage to three major north-south roadways (Lake Otis Parkway, Old Seward Highway, and New Seward Highway). It also channels traffic directly into the Minnesota Bypass facility that provides convenient access to the Anchorage International Airport and the downtown area. Because it is a major link to many routes, Hillside residents find O'Malley Road to be an important facility providing access to the entire Anchorage area. The road also provides access to the Alaska Zoo and the Anchorage Golf Course.

O'Malley Road has not been reconstructed since 1962, except for adding turning lanes and other safety projects at major intersections. Current and future traffic levels require a larger facility, left turn lanes, and pavement improvements.

The project corridor extends east from the New Seward Highway for 6.0 kilometers (3.7 miles) and ends just uphill of the Hillside Drive/O'Malley Road intersection. The 1.21-km (0.75-mile) section of O'Malley Road between the New Seward Highway and Lake Otis Parkway is characterized by rolling terrain with grades ranging between 4.5 and 7.0 percent. The road rises approximately 35 meters (115 feet) to an elevation of 85 meters (279 feet) at Lake Otis Parkway. The existing road width varies between 8.54 meters (28 feet) and 9.75 meters (32 feet) except at the New Seward and Lake Otis intersections where additional turning lanes widen the roadway. Drainage is conveyed by V-ditches and cross culverts. A detached 2.3-meter (7.5-feet) asphalt pathway exists along the entire north side of this section of O'Malley Road.

The 1.61-km (1.0-mile) section of O'Malley Road between Lake Otis Parkway and Elmore Road climbs an additional 35 meters (115 feet) above Lake Otis Parkway to an elevation of 120 meters (394 feet) at the intersection with Elmore Road. The terrain is generally rolling with grades ranging between 1.0 and 7.0 percent. This section is strip paved with V-ditches and cross culverts to convey runoff. The average pavement width is approximately 9.3 meters (31 feet). No dedicated pedestrian facilities exist along this section. Driveways and streets occur along this section at an average rate of about 14 access points/km (22 access points/mile).

The last 3.2-km (2.0-mile) section of O'Malley Road begins at Elmore Road and ends just above Hillside Drive. From Elmore Road to the east, O'Malley Road climbs an additional 137 meters (449 feet). O'Malley Road reaches its final elevation of approximately 257 meters (843 feet) at the eastern most intersection of O'Malley Road and Hillside Drive. For approximately 880 meters (2,886 feet) between Rock Ridge Drive and Stony Brook Drive, the road grade is 7.0 percent. This section is paved with V-ditches and cross culverts to convey runoff. The average pavement width is approximately 9.0 meters (29.5 feet). This section provides lower traffic mobility and places an increased emphasis on access to driveways and side streets. Driveways and streets occur along this section at an average rate of about 24 access points/kilometer (38 access points/mile). No pedestrian facilities are provided along the section (Lounsbury, 2001).

In recent years, public transportation to the Hillside area has been intermittent due to low ridership and operational funding constraints. The People Mover, the local transportation service operated by the Municipality of Anchorage (MOA), resumed service January 2, 2001 on O'Malley Road at Lake Otis Parkway and Hillside Drive. The current People Mover public transportation stops on O'Malley Road include Hillside Drive and the Alaska Zoo.

ADOT&PF initiated this Environmental Assessment (EA) to study the impacts of various alternatives to upgrade O'Malley Road and solicit comments from the public and resources agencies. Several detailed studies were conducted in support of this EA. These included the Conceptual Stage Relocation Study, a Wetlands Functional Analysis, Phase I Environmental Site Assessment, a Traffic Noise Analysis, an Air Quality Analysis, and a Preliminary Engineering Report. All these studies, except the Preliminary Engineering Report are bound in Volume II Appendices.

The supporting studies for the EA were completed prior to the approval of Senate Bill 226. The bill amended Alaska Statute 19.10.160, and became effective in January 2003. The amended statute requires, "…design for proposed major upgrade and new construction projects for highways in federally recognized metropolitan areas…provide for capacity that will adequately serve planned future traffic…" and, "…projects that are estimated to cost…more than $10,000,000 must be designed to adequately serve planned future traffic for at least the next 25 years after construction of the project." The O'Malley Road Reconstruction project is estimated to cost in excess of 10 million dollars, and must be designed for a 25-year life to comply with the amended statute. The supporting studies were originally based on a 2005 construction year and a 2015 design year or a 10-year life and many had to be updated to comply with the new statute. The EA has in turn been updated to reflect a 2006 construction year and a 2031 design year, or a 25-year life.

Senate Bill 226 was rescinded by Senate Bill 260 effective July 1, 2004, four days after the release of the Environmental Assessment for public distribution. Despite the changes in laws, the design life and traffic volumes remain valid.

2.0 PURPOSE AND NEED

The purpose of improving O'Malley Road is to provide a roadway that accommodates projected 2031 traffic levels, provides enhanced transportation for pedestrian and non-motorized traffic, and improves safety. Reconstruction would improve pavement, drainage, and road foundations, and improve line-of-sight by widening shoulders, flattening and clearing side slopes, and reducing steep grades. Left turn lanes would be added to improve intersection safety and capacity.

Public comments revealed the need for a user-friendly paved pathway for non-motorized traffic on both sides of the road. An increasing number of bicyclists, pedestrians, skiers, and horseback riders use this area for recreation. Some bicycle commuters use the O'Malley corridor during the summer months. Providing a separate pathway for recreational traffic improves mobility for these users and satisfies the need for safety improvements.

The proposed project addresses three needs for O'Malley Road:

- Increased O'Malley Road capacity;
- Enhancement of pedestrian and non-motorized transportation; and
- Safety.

The following paragraphs further detail the needs for O'Malley Road improvements.

2.1 INCREASED O'MALLEY ROAD CAPACITY

According to the MOA, Hillside is the fastest growing residential area in Anchorage. The population of the Hillside area grew about 96 percent from 1980 to 1990 and 19 percent between 1990 and 1996 (MOA, 1997a). The MOA expects the Hillside area population to continue growing at an average annual rate of three percent over the next 20 years (1998 to 2018). The Anchorage Bowl Comprehensive Plan (MOA, 2000a) cites the fact that the Hillside area contains two-thirds of the residential developable land in Anchorage as the reason for the growth (Fig 2).

As noted in Section 1.0, Introduction, Senate Bill 226 required that the design life for the project be 25 years. Re-evaluated traffic forecasts for O'Malley Road provide for a 2006 construction year and a 2031 design year for the 25-year life specified in the new state statute. Table 1 displays the annual average daily traffic (AADT) volumes for 2001 and projected AADT volumes for construction year 2006 and design year 2031.

TABLE 1
FORECAST ANNUAL AVERAGE DAILY TRAFFIC*

		Average Daily Traffic (Vehicles per day)		
Facility	Link	Current Year (2001)	Construction Year (2006)	Design Year (2031)
O'Malley Road	New Seward Hwy to Lake Otis Pkwy	15,253	16,600	20,600
	Lake Otis Pkwy to Elmore Road	12,883	13,200	15,000
	Elmore Road to Hillside Drive	8,668	9,000	11,200

*With Abbott Loop (Bragaw) Extension
Source: Lounsbury & Associates, Operational Analysis Addendum, June 2003

Current and projected traffic volumes indicate that the capacity of O'Malley Road should be increased to obtain an adequate level of service. The American Association of State Highway and Transportation Officials (AASHTO) characterizes existing and planned roadway conditions by the "Level of Service" (LOS) provided. LOS value is a qualitative measure describing operational conditions within a traffic stream as perceived by motorists. AASHTO defines six levels of traffic conditions (Table 2). ADOT&PF established a planning objective for Hillside roads as LOS D or better. The 2001-2003 Transportation Improvement Program (MOA, 2000b) recommends that O'Malley Road be upgraded to accommodate future traffic levels.

TABLE 2
AASHTO ROADWAY CONDITION DESCRIPTIONS

LOS	Traffic Condition
A	Free flow with low volumes and speeds controlled by the speed limit
B	Stable flow, but drivers have reasonable freedom to select speed and lane of operation
C	Stable flow, but most drivers are restricted in their freedom to select speed or change lanes
D	Approaching unstable flow with little room to maneuver
E	Capacity, unstable flow, momentary disruptions, stoppages
F	Forced flow, stoppages, and low speeds

O'Malley Road currently operates at capacity (LOS D to E) during evening peak hours between the New Seward Highway and Lake Otis Parkway. This means that traffic is congested and the road does not allow for efficient travel. As traffic increases, vehicle movement slows and travel times increase. Some residents felt that an extension of Huffman Road to Hillside Drive would alleviate some of this congestion (Appendix A). However, traffic forecasts still place O'Malley

Road in the LOS D category in 2031 with this and other improvements to Hillside roads including Elmore Road extension between Huffman and Rabbit Creek. These improvements were modeled during development of the Municipality of Anchorage Long-Range Transportation Plan (LRTP) and the subsequent evaluation included in the Hillside Roads Traffic Forecast Report (Lounsbury, 2000b) and again in 2003 to comply with changes in state statute (Lounsbury, 2003). Figure 3 displays the Hillside Roads traffic forecasts for 2001, 2006, and 2031 average daily traffic volumes.

Traffic models predict O'Malley Road from New Seward Highway to Lake Otis Parkway will operate at a LOS D in the vicinity of Lake Otis Parkway by 2031 and from Lake Otis Parkway to Hillside Drive will continue to operate under capacity through the design year (Lounsbury 2003). However, from Lake Otis Parkway to Hillside Drive, numerous access points create a demand for left turn movements into residential neighborhoods, private residences, churches, and public parks. Exclusive left turn lanes do not exist along the corridor except at Lake Otis Parkway, Elmore Road, and Birch Road. Other than the two signalized intersections, all public roads intersecting O'Malley Road are stop controlled. As the traffic along O'Malley Road increases, the LOS on these minor approaches will deteriorate.

A left-turn warrant analysis was performed at intersections with major residential streets. Both proposed build alternatives develop left-turn treatments where warranted at these public streets. The primary operational difference between the two build alternatives is the treatment of mid-block left turns. Left-turn treatments will increase the capacity and safety of both alternatives by providing a means of safe deceleration outside the through lanes and providing a means of separating movements at unsignalized intersections. However, the extent of mid-block improvements is difficult to quantify with current capacity analysis modeling.

2.2 ENHANCEMENT OF PEDESTRIAN AND NON-MOTORIZED TRANSPORTATION

Hillside residents use informal pathways within the road ditches and the road shoulders for walking, biking, and horseback riding. These informal pathways and shoulders provide access to bus stops for school buses and public transportation (when routes serve the area); bicycle and pedestrian access to the Alaska Zoo and equestrian access to the Ruth Arcand Park and the equestrian center near Placer Place. Residents expressed a need for pedestrian and non-motorized facilities that would be used for transportation purposes (i.e., commuting to work). The public also expressed support for pedestrian and non-motorized facilities for recreational purposes. The Anchorage Area Wide Trails Plan (MOA, 1997b) acknowledged these uses and proposed a separated multi-use pathway along the south side of O'Malley Road.

2.3 SAFETY

An important goal of street and highway projects is improving safety. The Preliminary Engineering Report (Lounsbury, 2001) provides an evaluation of safety based on collision history for O'Malley Road, existing roadway geometry and features. In addition, the public provided anecdotal safety concerns at public meetings and in correspondence, which are documented in the Scoping Summary (Appendix A) and the Public Participation Summary (Brooks, 2001). The following is a summary of the safety problems along O'Malley Road.

Between 1995 and 1997, the Anchorage Police Department reported 205 collisions along O'Malley Road. The collision analysis looked at segments and intersections where data demonstrated problems occur. Of the collisions, 153 were intersection related and 22 involved vehicle/moose collisions. The analysis showed the Lake Otis Parkway and O'Malley Road intersection was the only intersection exceeding both the statewide collision average and the critical accident rate. The public, however, identified safety concerns where the following roadways intersect O'Malley Road: Commodore, Cange, Birch, Our Road, Elmore Road, Rock Ridge Drive and entrances to at the Alaska Zoo and Anchorage Golf Course. The public noted that much of the safety concern stems from the combination of left turning traffic and high-speed through traffic.

Hillside residents also reported concerns about the many vehicle/moose encounters (Appendix A). Vehicle/moose collisions occurred near Commodore Drive, mid-block at various locations along O'Malley Road with concentrations near Hane Street (3 collisions), Jerome Street (2 collisions), Alaska Zoo driveway (2 collisions), and east of Birch Road (3 collisions).

In the portion of O'Malley Road between Seward Highway and Lake Otis Parkway, all the vertical curves are below current standards, the roadway has minimal shoulders, and a separated pathway exists only on the north side. In the portion of O'Malley Road between Lake Otis Parkway and Hillside Drive, five vertical curves are below current standards, there are minimal shoulders along the road and no formal pedestrian facilities. Intersections along O'Malley Road with illumination include Lake Otis Parkway, Elmore Road, Birch Road and Hillside Drive. Throughout the roadway vegetation encroaches within the right-of-way. The lack of roadway shoulders, poor lighting and visibility, encroaching vegetation and poor sight distances within hilly areas contribute to the safety problems for vehicles.

Residents using O'Malley Road suggested adding street lights at the intersections without causing light pollution (Appendix A) as a solution to perceived and documented safety problems at intersections and driveways. Residents in the O'Malley area have also stated their concern with the 50 mile per hour (mph) speed limit. Residents believe that pulling out onto O'Malley Road with poor lighting and visibility is dangerous with oncoming traffic traveling at this speed.

Another public safety concern was vehicles driving at high speeds during icy conditions while children are waiting at bus stops in the dark months of the school year. Residents believe that the potential for accidents along O'Malley Road is high in the winter and suggest the speed limit be reduced near schools and school bus stops.

There is no recorded history of pedestrian accidents along O'Malley Road, although the majority of the roadway lacks separated pedestrian facilities. The roadway safety would be improved by implementing a portion of the Anchorage Area-Wide Trails Plan (MOA, 1997b) which proposes a separated multi-use paved pathway on the south side of the road. This feature is included in the proposed build alternatives.

The proposed build alternatives would bring O'Malley Road up to current urban minor arterial design standards. The project design would widen shoulders, add left-turn lanes at major residential streets intersections, improve visibility, safety, and capacity and address intersection lighting and drainage needs.

3.0 ALTERNATIVES

The O'Malley Road Reconstruction Project proposes to improve O'Malley Road between the New Seward Highway and Hillside Drive (Figure 2). Several roadway improvement alternatives were investigated. Three alternatives were eliminated from further consideration, while three viable alternatives were studied in detail. Two build alternatives, along with the no-action alternative, are being considered and form the basis for the comparative analysis of environmental consequences presented. The three alternatives considered are compared for their ability to meet the purpose and the need for the project, as described in Section 2.0, while minimizing impacts to the human and natural environment.

3.1 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The O'Malley Road Reconstruction Preliminary Engineering Report (Lounsbury, 2002) evaluated several project alternatives for different segments of the roadway. If these alternatives did not address the purpose and need, had unacceptable environmental issues, or were contrary to public input, they were eliminated. The following is a list of alternatives that were considered but eliminated. Full descriptions of these alternatives can be found in the Preliminary Engineering Report (Lounsbury, 2002).

- 4-lane Rural Segment A – New Seward Highway to Lake Otis Parkway
- 3-lane and 2-lane Urban Segment B - Lake Otis Parkway to Hillside Drive
- Transportation Systems Management and Transportation Demand Management (TSM and TDM)

The following paragraphs detail the eliminated Segment A, Segment B, and Transportation Management alternatives.

The 4-lane rural Segment A—New Seward Highway to Lake Otis Parkway alternative consisted of a rural section with paved shoulders, V-ditches, separated sidewalk and pathway and cleared clear zone. While this alternative would meet the purpose and need for the project, it was eliminated for several reasons—1) It would generate an abrupt transition from the urban section west of New Seward Highway, to the rural section east of the highway; 2) The segment carries the highest volume of traffic of the two project segments and a rural section would not provide the high degree of channelization needed year-round. This is due to the absence of curb, gutter, and raised medians; and 3) the rural section would not provide the flexibility in design to minimize wetlands and right-of-way impacts because of the requirement for rural typical sections to include 6-meter clear zones in the cut areas and 9-meter clear zone in fill areas. For Segment A, the curb and gutter option/urban section was determined a more viable option to reduce the migration of storm water onto the structural section and it minimizes wetlands and right-of-way impacts as noted above.

The 3-lane and 2-lane Urban Segment B—Lake Otis Parkway to Hillside Drive consisted of an urban section with installation of curb and gutter in a configuration with either 3-lanes or 2-lanes. An urban section was eliminated for several reasons—1) access point density and frequency of turning movements increase in this segment and the LOS would decrease as the turning vehicles delay through traffic; 2) the urban section would eliminate the continuity present on O'Malley

Road since all intersecting roads are gravel or paved with V-ditches; and 3) engineered ditches can be developed to treat and divert runoff away from the road where curb and gutter require expensive storm drains.

When traffic congestion problems are identified, the most common solution is to widen the roadway and add more travel lanes. TSM and TDM are techniques that may be used to overcome roadway congestion without widening the roadway to increase the number of travel lanes. TSM strategies improve the capacity of the existing roadway though methods such as signal system improvement, intersection improvement, and access management. TDM strategies attempt to manage the demand on the system with initiatives such as ridesharing programs, alternative work hours, park-and-ride facilities, and improved transit systems. Since one of the identified needs for the O'Malley Road Reconstruction Project is increased capacity, TSM and TDM techniques were investigated to determine if their implementation alone would result in an acceptable LOS. The single occupancy vehicle analysis, contained in the Preliminary Engineering Report (Lounsbury, 2002), showed that additional travel lanes are needed on O'Malley Road to obtain an acceptable LOS despite the implementation of TSM and TDM strategies.

3.2 ALTERNATIVE ONE: URBAN FOUR-LANE FROM THE NEW SEWARD HIGHWAY TO LAKE OTIS PARKWAY AND RURAL THREE-LANE FROM LAKE OTIS PARKWAY TO HILLSIDE DRIVE (PREFERRED ALTERNATIVE)

The EA was approved on June 25, 2004 for public distribution. The public comment period extended 35 days beginning July 16, 2004 and ending August 30, 2004. During this time the Department held a public hearing in Anchorage. Agency and public comments are summarized in Section 5.0 Comments and Coordination. The Department evaluated the formal comments received in conjunction with environmental consequences, required project permits and approvals, and construction costs. Based upon these factors, the Department selected Alternative One as the preferred alternative.

Alternative One consists of an urban four-lane divided roadway between the New Seward Highway and Lake Otis Parkway and a three-lane, two-way roadway between Lake Otis Parkway and Hillside Drive. From the New Seward Highway to Lake Otis Parkway the roadway would consist of four 3.6-meter (12-foot) lanes divided by a 4.9-meter (16-foot) median and have 1.8-meter (6-foot) shoulders with curb and gutter. Multi-use pathways between New Seward Highway and Lake Otis Parkway would include a 1.5-meter (5-foot) wide concrete sidewalk along the north side and a 3.0-meter (10-foot) separated paved pathway on the south side (Figure 5).

Between Lake Otis Parkway and Hillside Drive, the roadway would be upgraded to current standards. Improvements would provide a rural three-lane, two-way roadway with 3.6-meter (12-foot) wide travel lanes and a 4.3-meter (14-foot) wide continuous two-way left-turn lane (CTWLT) for left turns. The road would have 2.4-meter (8-foot) wide shoulders without curb and gutter and a 3.0-meter (10-foot) wide separated paved pathway along the south side of the road (Figure 6).

Providing a left-turn lane will prevent motorists from passing left-turning vehicles on the shoulder. According to public comments, this has been a problem in the past on O'Malley Road because of the two-lane roadway (Appendix A).

The design speed and proposed posted speed under this alternative is 50 mph. This alternative will generate a LOS of D or better during peak traffic flows in the design year 2031 (Lounsbury, 2003). The separated pathway will increase pedestrian/recreation safety by moving users away from the roadway.

This alternative would meet the purpose and need for the project. Lane additions, shoulders and channelization provide increased capacity. The multi-use pathway, lighting and clearing will provide enhanced pedestrian and non-motorized access and improve safety.

3.3 ALTERNATIVE TWO: URBAN FOUR-LANE FROM NEW SEWARD HIGHWAY TO LAKE OTIS PARKWAY AND RURAL TWO-LANES FROM LAKE OTIS PARKWAY TO HILLSIDE DRIVE

The urban four-lane option for Segment A, New Seward Highway to Lake Otis Parkway, is the same for both Alternative One and Alternative Two. Alternative Two (Segment B), Lake Otis Parkway to Hillside Drive, is a rural two-lane roadway with exclusive left-turn pockets at the major intersections. This differs from Alternative One (Segment B) which is a three-lane roadway with a CTWLT lane in the center.

Alternative Two would bring the roadway up to current standards. Improvements would consist of a rural two-lane, two-way roadway with 3.6-meter (12-foot) travel lanes and left-turn lanes at major intersections. The road would have 2.4-meter (8-foot) shoulders without curb and gutter and a 3.0-meter (10-foot) separated paved pathway along the south side (Figure 6).

Providing channelized left-turn pockets at the major intersection will prevent motorists from passing left-turning vehicles on the shoulder. According to public comments, this has been a problem in the past on O'Malley Road because of the lack of left-turn treatment along the existing two-lane roadway (Appendix A).

The design speed and proposed posted speed under this alternative is 50 mph. This alternative will generate a LOS of D or better during peak traffic flows in the design year 2031 (Lounsbury, 2003). The separated pathway will increase pedestrian/recreation safety by moving users away from the roadway.

This alternative would meet the purpose and need for the project. Lane additions, shoulders and channelization provide increased capacity. The multi-use pathway, lighting and clearing will provide enhanced pedestrian and non-motorized access and improve safety.

3.4 NO-ACTION ALTERNATIVE

The no-action alternative would maintain O'Malley Road in its current condition. No improvements other than normal maintenance. This alternative would not provide pedestrian walkways, improve drainage, or improve traffic flow along O'Malley Road. With the expected increase in peak-hour volumes by the year 2031, traffic would deteriorate to a LOS F between New Seward Highway and Lake Otis Parkway (Lounsbury, 2003). The no-action alternative would not address the project purpose and need—increased capacity, enhanced intermodal transportation, or safety.

4.0 ENVIRONMENTAL CONSEQUENCES

This section documents the probable beneficial and adverse social, economic, and environmental effects of each alternative and describes the measures proposed to mitigate adverse impacts. The impact areas listed in FHWA guidance (FHWA, 1987) and evaluated in this environmental assessment are starred in the following table. All other impact categories have been determined to be non-issues for this project as described in this section.

TABLE 3
IMPACT CATEGORIES INCLUDED IN THIS ENVIRONMENTAL ASSESSMENT

Land Use Impacts	*	Coastal Zone Impacts	*
Farmland Impacts		Threatened & Endangered Species/Wildlife	
Social Impacts	*	Historic and Archaeological Preservation	
Relocation Impacts	*	Hazardous Materials	
Economic Impacts	*	Visual Impacts	*
Joint Development		Construction Impacts	*
Pedestrian and Bicyclists	*	Short-Term Use vs. Long-Term Productivity	*
Air Quality Impacts	*	Irreversible & Irretrievable Commitment of Resources	*
Noise Impacts	*	Environmental Justice	
Water Quality Impacts	*	Secondary and Cumulative Impacts	*
Wetland Impacts	*	Section 4(f) Lands	
Water Body and Floodplain Impacts	*	Floodplain/Flood Hazards	*
Wild & Scenic Rivers Impacts		Permits	*
Coastal Barriers			

* Included in the EA discussion of environmental consequences because it has been identified as an "issue" warranting discussion—either because of potential for impact, public comment, or agency interest.

The following paragraphs cover each non-issue category and explain why these are determined "non-issues" for this project.

Farmland Impacts. There is no farmland found along the O'Malley Road project corridor. None of the alternatives would impact any prime farmland, unique farmland, or farmland of state or local importance.

Joint Development. The O'Malley Road project is not being done in conjunction with any other project to "preserve or enhance an affected community's social, economic, environmental, and visual values." There is no joint development along the corridor.

Wild and Scenic Rivers. There are no rivers designated wild, scenic, or recreational within the project area.

Coastal Barrier Resources. The project will not result in the use of properties designated as coastal barriers in the State of Alaska.

Threatened or Endangered Species. Section 7 of the Endangered Species Act requires consultation with the U.S. Fish and Wildlife Service (USFWS) on projects that could affect protected or sensitive species. No permanent resident species of plants or animals within the project area are listed as endangered or protected under the Endangered Species Act, as revised in 1988 (Balogh, 2000).

Historic and Archaeological Preservation. Review of Alaska Heritage Resource Survey (AHRS) indicates that no known historic properties are located within the project's study area. Through consultation with the State of Alaska Department of Natural Resources State Historic Preservation Office (SHPO), it was determined that the area is unlikely to contain historic properties. Therefore, SHPO recommended that no cultural survey be conducted. The FHWA has determined that Alternative One and Alternative Two would have no effect on historic properties. On August 5, 1999, SHPO concurred with this finding (Bittner, 1999).

Hazardous Materials. A Phase I Environmental Site Assessment (ESA) was conducted along the project corridor to determine the potential of encountering hazardous substances during construction. The ESA included an on-site review, a historical records search, evaluation of aerial photographs, property owner and citizen interviews, and an electronic search of state and federal agency databases. The ESA concluded that a low potential exists for contamination of the project corridor from adjacent properties and that the potential for adverse environmental impacts resulting from construction activities of the build alternatives would be minimal (TPECI, 1999a, Appendix E).

Environmental Justice. No alternative will disproportionately affect minority or low-income populations. (Executive Order 12898, DOT Order 50125)

Section 4(f) Lands. The project will not physically take properties designated as parks, recreation areas, wildlife refuges, or historic sites under "Section 4(f)". Section 4(f) Lands and proposed project right-of-way takes are shown on Figures 8 through 18.

4.1 LAND USE

Land uses along O'Malley Road include residential, private and public schools, churches, the Alaska Zoo, Anchorage Golf Course, a fire station, private and public parks, two greenbelt zones along two separate creeks, and a moderate value wetland area. There is limited commercial development near the New Seward Highway intersection. Commercial development includes the Castle On O'Malley east of the New Seward Highway intersection and a new indoor water park south of the Castle. The Castle houses a sporting goods store, a coffee shop, and a few offices. The water park uses Chelea Street and Brayton Drive next to the Castle for access. Two known businesses exist within private homes along the corridor. Electrical, gas, telephone, water, sewer, and cable utilities exist along the roadway.

The entire project is within the MOA. Zoning adjacent to the roadway is designated as residential except for a small business district on the southern side of O'Malley Road at its intersection with the New Seward Highway, the Anchorage Golf Course (MOA land leased to Seibu Alaska), Abbott-O-Rabbit Fields (part of MOA parks and recreation division), and the Alaska Zoo (a private non-profit organization). The Abbott-O-Rabbit parking facilities are constructed partially within the ADOT&PF right-of-way. The right-of-way permit has recently expired and ADOT&PF will not renew the permit because O'Malley Road improvements are planned.

Neither build alternative would change the existing land use or development patterns along the project corridor. The no-action alternative would result in no change to existing land use or development patterns.

4.2 SOCIAL IMPACTS

Neither build alternative would generate adverse impacts to any social group, school, recreation area, or church. The area population and ethnic structure is fairly cohesive and not segregated into diverse social groups. There are no identified social groups (i.e., elderly, physically impaired, non-drivers, minority, or ethnic groups) that would be adversely affected by the project. Since the road already exists and divides major neighborhoods, the project would not add to the divide or disruption of these established communities, impact planned community development, or create an appreciable change in employment.

Traffic safety would be improved by both build alternatives since both propose to upgrade the roadway with widened shoulders, accommodations for left-turning vehicles, and increased sight distance in hilly areas. Both build alternatives also propose to construct a multi-use pathway along the south side of O'Malley Road for the entire project length. In addition, the segment from the New Seward Highway to Lake Otis Parkway would include a 1.5-meter (5 foot) wide concrete sidewalk. These amenities would be beneficial to all social groups, including the elderly and the physically impaired. Inclusion of a sidewalk and multi-use pathway would increase pedestrian and bicycle safety and promote recreational use.

Minor changes in access points to residences and businesses would occur and be identical to both build alternatives. One such access change will impact users of the Abbott-O-Rabbit ball fields have been parking in the ADOT&PF right of way along O'Malley Road. ADOT&PF permitted this use in July 1995 and the permit expired July 14, 2000. Since ADOT&PF plans to upgrade O'Malley Road in the near future, the Department will not renew the permit.

The no-action alternative would preclude construction-induced impacts to the social setting. Negative social impacts are currently occurring with the existing facility. These impacts include a less than acceptable level of service for motor vehicles and difficulties experienced by pedestrians and bicyclists from the lack of multi-use pathways.

4.3 RELOCATION IMPACTS

The Conceptual Stage Relocation Study for the O'Malley Road Corridor (Appendix B) found that the project would relocate two single-family residences and have minor impacts to one business; a private school; and one private non-profit organization, the Alaska Zoo (Figure 7).

Two single-family household residences will be relocated under both build alternatives. These residences have an estimated value of $225,000 and $500,000. Each residence is owner-occupied and it is estimated that five (5) individuals will have to be relocated. There is an adequate supply of replacement housing for sale or for rent currently on the market. Replacement housing for sale or for rent is expected to continue to be available through the relocation phase.

The business is a partnership called Aero Video Ventures. Based on available information, the business does not occupy the affected structure, does not have any employees other than the individual partners, and may continue to occupy the remainder property. A principal partner owns the land and the affected single family home. There is an adequate supply of replacement business property for sale or rent currently on the market.

In addition to the affected residential properties, there is a private school and a non-profit organization that will be affected by the project. The Tom Thumb Montessori School currently has some improvements (fence and playground swing set) that are extremely close to or encroach upon the existing right-of-way. No employees would be affected by this relocation and every effort will be made to assist the school in relocating these encroachments. An adequate area exists to do so.

A similar situation exists with the Alaska Zoo, a private non-profit organization. The zoo currently has some significant improvements that encroach upon the existing right-of-way. The improvements consist of a paved customer parking area. No employees would be affected by the relocation and every effort will be made to assist the zoo in relocating these encroachments. An adequate area exists to do so.

Takes will be required for both build alternatives. Since the proposed roadway configuration is the same for both build alternatives within Segment A (New Seward Highway to Lake Otis Parkway) the right-of-way impact, 3.76 hectares (9.29 Acres), is also the same. The impacts include minor takes (8 properties), total takes (3 properties), and access/structure modification (2 properties). In Segment B (Lake Otis Parkway to Hillside Drive) the right-of-way takes are all minor takes and amount to 0.3 hectares (0.74 acres) for Alternative One and 0.2 hectares (0.49 acres) for Alternative Two as documented in the PER (Lounsbury, 2001). No minor takes will result in the relocation of private residences. The impacts associated with minor takes will result in filling some wetlands. The area of wetlands filled is described in the Wetland Impact Section of this document. The details will be determined in the final design.

As a federal-aid highway project, relocation assistance and advisory services will be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 P.L. 91-646; 42 U.S.C. 4601 *et. seq)*, as amended, 49 CFR Part 24, 23 CFR Part 710 and AS 34.60.

The no-action alternative would preclude the relocation of any residences or the reestablishment of businesses.

4.4 ECONOMIC IMPACTS

There will be negligible change in the local economy, tax base, or employment in the area as a direct result of either build alternative.

The no-action alternative would preclude economic impacts from construction. Negative economic impacts could result from drivers avoiding congested business areas as the LOS deteriorates over time.

4.5 PEDESTRIANS AND BICYCLISTS

Modes of non-motorized transportation within the project corridor include bicycling, skiing, horseback riding, and walking. Popular non-motorized transportation destinations within the corridor include Abbott O'Rabbit ball fields, the Alaska Zoo, the Anchorage Golf Course and Ruth Arcand Park. Ruth Arcand Park contains equestrian facilities including trails, a show arena and other arena facilities. Public comments consistently supported improved pedestrian, bike and equestrian facilities within the corridor (Appendix A). Public comments also revealed that the bicycle traffic is predominantly recreational within the project corridor (Appendix A). There are few bicycle commuters. Commuting by bicycle occurs mainly in the summer. Public comment was divided on the need for and location of pathways called for in the MOA Areawide Trails Plan. The Trails Plan recommends a separated paved multi-use pathway along the south side of O'Malley Road and a separated unpaved pathway along the north side of the roadway.

Some members of the public preferred the paved pathway placement on the north side to allow for earlier use in the spring because of solar clearing. Other members preferred its placement on the south side for access to O'Malley Elementary School and to eliminate conflicts with current equestrian uses. To meet the purpose and need for the project and provide a good compromise with respect to community desires, each build alternative includes the same separated, paved, 3.0-meter (10-feet) wide multi-use pathway along the south side of the roadway as identified in the Anchorage Areawide Trails Plan (MOA, 1997b) and shoulder improvements throughout the length of the project corridor In the segment from the New Seward Highway to Lake Otis Parkway, both build alternatives also include a 1.5-meter (5-feet) wide concrete sidewalk along the south side of the roadway. The roadway shoulders, separated pathway, and sidewalk will improve safety and mobility of pedestrian and bicycle traffic along the project corridor. The proposed project would not preclude future development of a trail along the north side of O'Malley Road or future development of a grade separated pedestrian crossing.

Furthermore, public comments have shown an interest in a pedestrian crossing overpass at congested intersections and schools on O'Malley Road (Appendix A). Explicitly, the public suggested the Birch Road and Lake Otis Parkway intersections as candidates for aerial crossings. Hillside residents believe that a separate non-motorized walkway will increase pedestrian/recreational safety. No grade-separated crossings are proposed because the

effectiveness of over/underpasses has been in debate for years. The proposed build alternatives include pedestrian crossings at all existing and proposed traffic signals. Additional pedestrian crossings will be added at new signal locations when signal warrants are met.

The no-action alternative offers no additional pedestrian and bicycle facilities.

4.6 AIR QUALITY IMPACTS

This section discusses the air quality impacts for the O'Malley Road project. Portions of the project area are within an air quality non-attainment area. Beginning at Hillside Drive to 500 feet east of the O'Malley Road/Lake Otis Boulevard, the proposed project is located outside the air quality non-attainment area. This means that the air quality within this section meets or exceeds the U.S. Environmental Protection Agency (EPA) criteria for healthy air. However, beginning 500 feet east of the O'Malley Road/Lake Otis Boulevard and continuing to the New Seward Highway, the proposed project is within a non-attainment zone for carbon monoxide (CO). This means that the air quality in this section sometimes may not meet the EPA standards for CO.

The analysis of CO concentrations for the build alternatives was based on the FHWA CAL3QHC Dispersion Model with emission rates obtained from the EPA Mobile 6B emission rate model. Two different air quality analyses were modeled to determine impacts to ambient CO concentrations along O'Malley Road. The first analysis was a corridor study that reviewed air quality impacts along O'Malley Road. Appendix C contains the model inputs and results of this study. The study found that the CO concentrations generated by the build alternatives were essentially the same as the No Build alternative and none of the anticipated values were above EPA criteria.

The second study concentrated on the Lake Otis/O'Malley Road intersection. The study was called a Hot Spot Analysis. This intersection is the only major intersection within the non-attainment zone that would become congested during the project life if not upgraded. The ADOT&PF coordinated the analysis with the EPA, ADEC, and the MOA. The study found that the CO concentrations developed by the Build and No Build Alternatives to be the same and none of the anticipated values exceeded EPA criteria. Appendix C contains a copy of the Hot Spot Analysis of the Lake Otis/O'Malley Road intersection and agency comments.

The analyses found that the Build Alternatives would conform to the State and federal implementation plans as required under section 176(c)(4) of the Clean Air Act, as amended in 1990. The ADOT&PF developed a draft Public Review Conformity Determination based on the latest planning assumptions and the use of the latest emission model available. A conforming transportation plan and Transportation Implementation Plan were in effect at the time of this study and the Build Alternatives were identified in the conforming transportation plan and program. According to the hot-spot analyses, the proposed project would not cause or contribute to any new localized CO violations in the CO non-attainment area.

The regulatory agencies have reviewed the conformity document and determined that the project is consistent with the implementation plan. The public reviewed the draft public review conformity determination during the final EA review period, July 16, 2004 through August 30, 2004 and at the public hearing, July 29, 2004. No comments were received and ADOT&PF finalized the document. Appendix C contains a copy of the final conformity document.

Temporary degradation of air quality during construction may occur during the operation of heavy equipment and the moving and placing of soil. Temporary impacts of dust generated during construction will be controlled with watering.

4.7 NOISE IMPACTS

A detailed noise analysis of the O'Malley Road corridor was performed in 2001. The full report is contained in Appendix C. The following is a summary of the noise study.

The criteria for evaluating noise impacts are contained in Title 23 of the Code of Federal Regulations, Part 772 - *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (23 CFR 772, 1992) and the ADOT&PF *Noise Abatement Policy* dated March 1996. The FHWA Design Noise Level/Activity Relationships used for determining the noise abatement criterion for specific land uses (e.g., residential, commercial, etc.) show that O'Malley Road falls within Category B and Category C. Category B criterion applies to residences, churches, schools, recreation areas and similar uses. Category C criterion corresponds to developed lands such as commercial and business properties. FHWA and ADOT&PF consider a traffic noise impact to occur if predicted peak-hour traffic noise levels approach or exceed 67 dBA. ADOT&PF defines "approach" as noise levels within 2 dBA of 67 dBA. In other words, if the noise levels reach or exceed 65 dBA, then a noise impact is said to exist and noise abatement must be considered.

Existing and project future (2031) traffic noise levels were evaluated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) Version 1.0. In this study, traffic noise levels calculated by the TNM were validated using on-site traffic noise level measurement data and concurrent traffic counts obtained at seven locations, M1 through M7, in the project corridor (Table 4). To model the roadways, receptor locations, and intervening topography within the project area, existing and proposed terrain information and roadway geometry data were obtained.

Traffic noise level measurements and concurrent traffic counts were conducted within the project corridor in the afternoons of July 25 and 26, 2001. Measurement equipment consisted of a Metrosonics Metrologger DB 380 Noise Measurement Meter.

The noise monitoring locations are described below.

M1. Independence Park - This site is just west of Commodore Drive, the entrance to the Independence Park residential area on the existing multi-use pathway. The site is located about 16 meters (52.5 feet) north of centerline. The site elevation is approximately the same as the roadway.

M2. Montessori School, West building - This site is located on a small deck of the western-most building at the Tom Thumb Montessori School. The noise meter was placed about 32 meters (105 feet) north of centerline. The deck elevation is approximately the same as the roadway.

M3. Abbott-O-Rabbit Ball Fields - This site is located at the entrance to the Abbott-O-Rabbit sports fields. The noise meter was placed about 49 meters (161 feet) north of centerline. The elevation of the site is approximately 3 meters (10 feet) above the roadway.

M4. 4110 O'Malley Road - This site is in the back yard of the duplex residence at 4110 O'Malley Road. Noise was measured approximately 22 meters (72 feet) south of centerline. The elevation is about two meters (6 feet) higher than the roadway.

M5. Alaska Zoo - This site is near the entrance to the Alaska Zoo approximately 60 meters (198 feet) north of centerline at an elevation approximately 5 meters (16 feet) lower than the roadway.

M6. Rock Ridge Drive - This site is in the ditch north of O'Malley Road and across from Rock Ridge Drive. The noise meter was placed approximately 20 meters (66 feet) north of the centerline. This location was chosen because it is very close to a private deck and residence. The site elevation was approximately two meters (6 feet) lower than the roadway.

M7. 10800 Ridgecrest Road - This site is on the front porch facing O'Malley Road for the house at 10800 Ridgecrest Road. Noise was measured approximately 28 meters (92 feet) south of centerline at an elevation about six meters (20 feet) higher than the roadway.

Table 4 is a summary of noise levels obtained during the traffic noise measurements and their comparison to levels predicted by the FHWA TNM.

TABLE 4
COMPARISON OF MEASURED AND PREDICTED TRAFFIC NOISE LEVELS

Location	Centerline Station	Distance to Roadway (meters)	Measured Leq (dBA)	Predicted Leq (dBA)	Difference (dbA)
M1. Independence Park	10+640	16	71.2	72.9	+1.7
M2. Montessori School	11+400	32	69.6	67.4	-2.2
M3. Abbott-O-Rabbit	11+820	49	63.2	63.2	0
M4. 4110 O'Malley Rd	13+160	22	67.3	65.6	-1.7
M5. Alaska Zoo	13+920	60	57.8	58.0	0.2
M6. Rock Ridge Drive	15+280	20	67.1	65.4	-1.7
M7. 10800 Ridgecrest	15+600	28	67.1	64.2	-2.9

From the data in Table 4, it is apparent that noise levels predicted by the TNM were within +1.7 and -2.9 dBA of those measured. Such small differences are within acceptable tolerances and show agreement between measured and calculated noise levels. Therefore, the FHWA TNM may be used to accurately calculate traffic noise exposure for existing and projected future conditions.

Twelve receptor locations were selected for estimating existing and future traffic noise levels. Seven of the receptor locations are identified as M1 through M7 and are the same as those measured in July 2001. The other five, R8 through R12, are sites that represent worst-case scenarios for Category B land uses along O'Malley Road (Figure 7). The noise at these additional receptors was not measured, but was modeled using data collected and calibrated from sites M1 through M5. These sites are described below:

R8. Greek Orthodox Church - This site is just outside of the Holy Transfiguration Greek Orthodox Church at 2800 O'Malley Road. The point modeled is located approximately 32 meters (105 feet) south of centerline and at an elevation approximately equal with the roadway.

R9. 4820 O'Malley Road - This site is a residence just south of the Alaska Zoo. The point modeled is located approximately 40 meters (131 feet) south of centerline at an elevation approximately equal with the roadway.

R10. 10770 Spada Circle - This site is a residence located approximately 35 meters (115 feet) north of centerline at an elevation approximately 3 meters (10 feet) below the roadway.

R11. 6900 O'Malley Road - This site is a residence located 3 meters (10 feet) above the roadway at centerline. The location is approximately 45 meters south of the roadway centerline.

R12. 7001 O'Malley Road - This site is a residence located approximately 40 meters (131 feet) north of the roadway and approximately 1 meter (3 feet) below the roadway.

To calculate existing peak-hour noise levels for 2001, ADT traffic volumes provided in the PER (Lounsbury, 2003) were used. Only traffic along O'Malley Road was considered in this modeling. In the case of Independence Park (M1), the modeling showed that the noise along O'Malley Road completely overwhelmed the noise generated from the New Seward Highway. Models with and without traffic from the New Seward Highway resulted in identical noise levels for site M1. Peak-hour traffic noise levels in 2001 for the selected receptor locations are summarized in Table 5.

The data in Table 5 show that the existing peak-hour noise levels for 2001 on O'Malley Road exceeded the ADOT&PF Noise Abatement Criteria (NAC) at all locations modeled except M5, R11, and R12.

TABLE 5
EXISTING 2001 PEAK-HOUR NOISE LEVELS

Location	Centerline Station	Distance to Roadway (meters)	2001 Noise Level (dBA)	Approach/Exceed FHWA NAC (67 dBA)
M1. Independence Park	10+640	16	76.8	Yes
M2. Montessori School	11+400	32	70.8	Yes
M3. Abbott-O-Rabbit*	11+820	49	67.2	Yes
M4. 4110 O'Malley Rd	13+160	22	71.4	Yes
M5. Alaska Zoo	13+920	60	62.3	No
M6. Rock Ridge Drive	15+280	20	70.3	Yes
M7. 10800 Ridgecrest	15+600	28	69.1	Yes
R8. Greek Orthodox Church	11+980	32	69.3	Yes
R9. 4820 O'Malley Rd	13+890	40	66.8	Yes
R10. 10770 Spada Circle	14+355	35	66.7	Yes
R11. 6900 O'Malley Road	15+955	45	64.2	No
R12. 7001 O'Malley Road	16+060	40	64.8	No

* This noise receiver represents the Abbott-O-Rabbit/Ruth Arcand Park/Anchorage Golf Course recreation complex.

TABLE 6
PROJECT FUTURE (2031) PEAK-HOUR NOISE LEVELS

		Future (2031)		
Location	Existing (2001)	No-Action Alternative (dBA)	Alternative One (dBA)	Alternative Two(dBA)
M1. Independence Park	76.8	79.4	79.5	79.5
M2. Montessori School	70.8	69.9	70.4	70.4
M3. Abbot-O-Rabbit*	67.2	66.4	68.9	66.4
M4. 4110 O'Malley Road	71.4	72.5	74.3	72.5
M5. Alaska Zoo	62.3	63.9	63.2	63.9
M6. Rock Ridge Drive	70.3	70.7	70.5	70.7
M7. 10800 Ridgecrest Road	69.1	70.3	72.3	70.3
R8. Greek Orthodox Church	69.3	69.1	72.1	69.1
R9. 4820 O'Malley Road	66.8	68.6	69.5	68.6
R10. 10770 Spada Circle	66.7	67.6	66.9	67.6
R11. 6900 O'Malley Road	64.2	65.7	68.5	65.7
R12. 7001 O'Malley Road	64.8	66.7	67.0	66.7

* This noise receiver represents the Abbott-O-Rabbit/Ruth Arcand Park/Anchorage Golf Course recreation complex.

Both build alternatives will bring traffic closer to some of the receptor sites. In these cases, the noise will increase. The roadway improvements allow for free flow of traffic along the corridor. Traffic moving at a higher speed makes more noise than traffic at a lower speed. The results show that both build alternatives would generate almost equal noise levels. The build alternatives increase the 2031 noise levels over the no-action alternative by a maximum of 2.8 dBA and increase the 2001 noise levels by a maximum of 4.3 dBA. However, in many instances as shown in Table 6, the 2031 build alternatives noise levels are less than the no action noise levels. Changes in noise levels of 2.0 dBA or less are not discernible by the human ear. Consequently, changes in noise levels are not expected to be easily discernible in the design year whether the project is constructed or not.

The noise level at the Abbott-O-Rabbit ball fields and Ruth Arcand Park/Anchorage Golf Course complex is not projected to change substantially as a result of the proposed project. Design year noises for Alternative One are projected to be 2.5 dBA greater than the 2031 no-action levels. This change would not be easily perceived by the human ear. Under Alternative Two, the project design year noise levels would be equal to the design year no-action levels. In conclusion, while existing and future noise levels at the ball park and golf course exceed the federal NAC, the resulting change in noise levels from the proposed project would not be perceptible to the human ear.

Federal regulations (23 CFR 772) dictate that when the NAC are approached and/or exceeded that noise abatement must be considered. As such, noise abatement measures were evaluated for the corridor according to the 1996 ADOT&PF Noise Policy. The following noise abatement measures were considered, but are not proposed for the reasons given.

Transportation Demand and Transportation System Management (TDM/TSM) are techniques that may be used to overcome roadway congestion without widening the roadway to increase the number of travel lanes. Since one of the identified needs for the O'Malley Road Reconstruction Project is increased capacity, TSM and TDM techniques were investigated to determine if their implementation alone would result in an acceptable LOS. The single occupancy vehicle analysis, contained in the Preliminary Engineering Report (Lounsbury, 2002), showed that additional travel lanes are needed on O'Malley Road to obtain an acceptable LOS despite the implementation of TSM and TDM strategies. Further strategies, such as alternative work hours, rideshare programs, education programs, etc., can only be implemented by the MOA on a system wide bases and are not considered as abatement measures within this analysis.

Alternatives of horizontal and vertical alignments were considered. O'Malley Road is a horizontally straight road with deep cuts and high fills. The existing right of way varies from approximately 38 m (125 ft) to 53 m (175 ft). Nearly all the adjacent lots are served by private onsite wells and septic systems. Due to these onsite systems, right of way impacts resulting in remainder lots being less than 0.4 ha (1 ac) are considered total takes. Deviating from the existing alignment substantially increases the number of total takes and residential relocations and was determined to be unreasonable.

Acquisition of real property to serve as a buffer was considered but determined unrealistic. Vegetation in the project corridor is primarily deciduous with little undergrowth and would offer a minimal noise buffer. A buffer (in the case of O'Malley Road) would need to be a densely wooded area with tree growth at least 5 meters (16 feet) above the line of sight with a depth of 30 meters (98 feet). These conditions would reduce the noise levels by 5 dba. If the wooded area was deeper than 30 meters (98 feet), the reduction would be greater with a maximum reduction of 10 dba (FHWA, 1980). Property acquisition of this magnitude is impractical and the right-of-way impacts would outweigh the reduction in noise levels. Vegetation that currently shields a residence from the road does provide a visual barrier, and thus, a perceived benefit.

Noise barriers were analyzed and determined not feasible throughout the corridor. It was not feasible due to the numerous breaks for cross streets and driveways. No noise abatement measures are proposed as part of the project because they are not considered feasible. Structural noise insulation (e.g., storm windows, wall insulation, etc) was considered for the churches along the corridor, however, it is not proposed. Peak hour noise impacts typically do not correspond with regular church services. This recommendation is based upon the best information at this time and will be reevaluated during the design phase of the project. See Appendix C for more detail.

4.8 WATER QUALITY IMPACTS

Two options for the collection and conveyance of storm water runoff were evaluated for use within the O'Malley Road project corridor. The first is an urban design that consists of a piped storm drain collection system with curb intakes. The second is a rural design with paved roadway shoulders and vegetated V-ditches. The build alternatives include a combination of these two storm water conveyance methods. Neither option would change the contributing areas for the individual drainage basins along the corridor. All drainage patterns outside the right-of-way would remain as they currently exist. However, the build alternatives would increase the amount of paved surfaces and, therefore, increase the flow rates during rainstorm events.

The two build alternatives, from New Seward Highway to Lake Otis Parkway, would have a curb and gutter storm drain system. Where grades allow, drainage would flow to the Moose Meadows wetlands to help recharge the area. The runoff not directed towards Moose Meadows would discharge into an existing vegetated swale along the New Seward Highway.

From Lake Otis Parkway to Hillside Drive, both build alternatives would collect and convey storm runoff via vegetated ditches to existing drainage ways and wetlands along the roadway. Portions of the vegetated ditches would be engineered as biofiltration swales to treat the storm water prior to leaving the right-of-way. Additionally, the ditches allow for infiltration and recharge of the subsurface water table.

Development of any road improvements within the O'Malley Road corridor requires implementation of storm water runoff quality control measures. Storm runoff from road surfaces usually contains small quantities of roadway contaminants such as oil, grease, exhaust residues, and trace metals. According to the FHWA design manual, Pollutant Loading and Impacts for Highway Stormwater Runoff, (FHWA-RD-88-006), significant contaminant runoff does not

occur until the AADT exceeds 30,000 vehicles per day. Traffic projections for O'Malley Road do not exceed this threshold (Table 1).

During construction, ADOT&PF will implement Best Management Practices to control pollution and storm water runoff. On October 28, 1998, EPA issued a Municipal Separate Storm Sewer System (MS4) National Pollution Discharge Elimination System (NPDES) permit for the MOA and ADOT&PF (Permit No. AKS-05255-8) to discharge from municipal storm sewer system outfalls to Little Campbell Creek and Craig Creek. The project would comply with the terms of the MS4 NPDES permit and the NPDES General Permit for Construction Activities in Alaska.

During a public meeting in September 2000, some Spring Forest Subdivision homeowners abutting O'Malley Road between Birch Road and the fire station commented on the flooding along their property during spring breakup. Based on existing contour data, it appears that the problem is a result of development within a natural drainage way. Portions of the drainage along O'Malley Road east of Birch Road will be contained in a ditch and discharged west of Birch Road. This would minimize the problem but not eliminate it. The drainage within this area will be fully evaluated in the design phase.

4.9 PERMITS

Both build alternatives would require the following permits:

- U.S. Army Corps of Engineers Section 404 Permit;
- Alaska Department of Environmental Conservation (ADEC) Section 401 Water Quality Certification;
- Alaska Department of Natural Resources(ADNR) – Office of Project Management and Permitting, Coastal Zone Management Consistency Determination; and
- ADNR, Office of Habitat Management and Permitting, Title 41.14.840 Fish Passage Permit.

The no-action alternative would eventually require permits to maintain some drainage structures including Little Campbell Creek, Craig Creek, and the crossing of the Moose Meadows wetland. The existing drainage structures could become restricted and fail to adequately pass annual discharges. Fish passage through the Little Campbell Creek and Craig Creek would gradually become restrictive and hamper summer migrations of resident fish. Water in Moose Meadows wetland would become restricted and saturate the road embankment. This would aggravate the existing road subsidence and adversely impact the wetlands downstream. Work within any of these wetlands would require design-specific permits from theADNR, ADEC, and the U.S. Army Corps of Engineers.

4.10 WETLAND IMPACTS

Wetlands were delineated in the project corridor in 1999 and the report was supplemented in 2004 (TPECI, 2000a, and 2004, Appendix D). Two wetland systems, palustrine and riverine, were identified. The palustrine wetlands along the project corridor include scrub/shrub, broad-leaved deciduous, forested needle-leaved evergreen, and moss-lichen wetlands. The majority of the palustrine wetlands are ditches that were created during the initial construction of O'Malley Road. The riverine wetlands systems in the project corridor include Little Campbell Creek and Craig Creek.

The primary function of the wetlands along O'Malley Road was assessed using methods developed by the U.S. Army Corps of Engineers. The primary function of the palustrine wetlands along the project corridor is the storage of flood flows and rainfall runoff. The primary function of the riverine wetlands along the project corridor is fish habitat. Appendix D contains a detailed functional analysis for each wetland area in the project corridor.

The wetlands along O'Malley Road are regionally of low value with the exception of the two riverine systems associated with Little Campbell Creek and Craig Creek and the palustrine Moose Meadows wetland system. The total estimated acreage of wetlands within 150-feet of the centerline of the existing road is 1.4-hectares (3.4-acres) with 87 percent or 1.2-hectares (2.9-acres) of the total being palustrine and the remainder being riverine. Artificially created wetlands account for 0.3-hectares (0.6-acres) or approximately 22 percent of the palustrine wetland total.

Either build alternative would widen the road, including separated pathways on both sides, to 31.9 meters (105 feet) from the New Seward Highway to Lake Otis Parkway and would impact the same amount of wetlands in this segment. This impact would occur at the Moose Meadows wetland (Figures 9 and 10). The types of wetlands found at Moose Meadows, as well as within the entire project corridor, are described in the following table.

Table 7
Wetland Descriptions

TYPE	SYSTEM	WETLAND DESCRIPTION
PEM1K	Palustrine	Persistent emergent, perennial, artificially flooded
$PF^{O4}/_{SS}1B$	Palustrine	Forested, needle leaved evergreen, scrub shrub saturated
$P^{FO4}B$	Palustrine	Forested green needle leaved evergreen, saturated wetlands
$P^{SS}/_{EM}1B$	Palustrine	Scrub shrub/emergent, broad leaved, deciduous, saturated wetlands
$PF^{O4}/_{SS}BK$	Palustrine	forested, needle leaved evergreen, scrub shrub saturated wetlands (ditch)
R2US1	Riverine	Lower perennial, unconsolidated shore, cobble-gravel (Little Campbell Creek)
R2US5	Riverine	Lower perennial, unconsolidated shore, vegetated (Craig Creek)

The Moose Meadows palustrine wetland consists of two specific wetland types--PEM1K and $PF^{O4}/_{SS}1B$. The impacts within the construction limits would be 1,700 square meters (0.4 acres) PEM1K and 4,500square meters (1.1 acres) $PF^{O4}/_{SS}1B$. The first wetland type, PEM1K is a persistent emergent, perennial, artificially flooded wetland located at the toe of the slope on the western portion of the affected wetlands and near the northeast quadrant of Independence Drive and O'Malley Road. Observable seepage indicated that infiltration and groundwater flow through the road fill. The PEM1K is a separate hydraulic system, not connected to a wildlife corridor (Appendix D). The second wetland type, $PF^{O4}/_{SS}1B$, consists of a forested, needle leaved evergreen, scrub shrub saturated wetland, also part of a separate hydraulic system not connected to a wildlife corridor. For both wetland types, the function of the unfilled portion would improve after construction because a new drainage structure would allow water to pass under the roadway embankment.

Alternative One (Preferred Alternative), from Lake Otis Parkway to Hillside Drive, will widen the road to approximately 22.3 meters (73 feet) and impacts a total of approximately 0.07 hectares (0.18 acres) of palustrine and riverine wetlands. Of this total, all 0.07 hectares (0.18 acres) would result from the filling of the wetlands.

Alternative Two, from Lake Otis Parkway to Hillside Drive, will widen the road to approximately 18 meters (59 feet). However, this width would be increased by the proposed left-turn lanes at major intersections; resulting in impacts to a total of approximately 0.06 hectares (0.16 acres) of palustrine and riverine wetlands.

Alternatives One and Two impact the same palustrine and riverine wetlands in the segment from Lake Otis Parkway to Hillside Drive, each to a varying degree. The wetlands are shown on Figures 10 through 18. The palustrine wetland in this segment consists of one specific wetland type , $P^{FO4}B$. The segment also contains two riverine wetland types R2US1 (Little Campbell Creek) and R2US5 (Craig Creek).

The impacts to $P^{FO4}B$ type wetlands will be 240 square meters (0.06 acres) for Alternative One and 170 square meters (0.04 acres) for Alternative Two. The $P^{FO4}B$ wetland type consists of forested green needle leaved evergreen, saturated wetlands that receives and retains overland or sheet flow from surrounding uplands. It can retain higher volumes of water.

The impacts to the R2US1(Little Campbell Creek) type wetlands for Alternatives One and Two are 150 square meters (0.04 acres) and 140 square meters (0.03 acres) respectively. For the R2US5 (Craig Creek) type wetlands these figures are 340 square meters (about 0.08 acres) for both Alternatives One and Two. The riverine wetland types, R2US1 (Little Campbell Creek) and R2US5 (Craig Creek), are both associated with a perennial or intermittent water course.

Both build alternatives will have equal impacts on wetland functions. Under the build alternatives, the fill applied to palustrine wetlands from construction will diminish flood retention. However, the build alternatives will improve the filtration function of the palustrine wetlands by directing the storm water runoff into biofiltration swales located along the reconstructed roadway. As mandated by the Clean Water Act, site development or

redevelopment requires implementation of storm water runoff quality control measures. These measures are designed to protect the receiving waters by reducing pollution loads and concentrations, by reducing stream bank erosion, and by protecting stream and wetland habitat. Along Segment A (New Seward Highway to Lake Otis Parkway), both build alternatives will develop a storm drain system that consists of curb/gutter, storm pipe, and curb intakes to convey the runoff. In an effort to provide additional wetland hydration opportunities, the drainage subbasins within the project corridor that allow gravity flow to the Moose Meadows wetland will be collected, treated by either a mechanical means (i.e.: oil/grit separator) or biofiltration swales and conveyed to these wetlands.

At the low point of O'Malley Road adjacent to the Moose Meadows wetlands, an original cross culvert installed to convey drainage collected within the O'Malley right-of-way has failed and water ponds along the north road embankment. Both build alternatives will reestablish the flow beneath the roadbed by developing a geomembrane covered coarse rock subdrain at the bottom of the road embankment. Placement of a conventional cross culvert under the existing roadbed and through a surcharge fill will prove to be difficult and require high maintenance. Fish passage is not a concern in this area, the only function of the cross drain is water migration. As the road embankment experiences differential settlement, water will continue to migrate through the porous subdrain. This cross drainage structure should not impede any future mitigation efforts to redirect additional flows towards the Moose Meadows wetlands.

Along Segment B (Lake Otis Parkway to Hillside Drive), both build alternatives will be essentially the same as currently exists. Both build alternatives will continue to collect and convey storm runoff via cross culverts and ditches. Water quality treatment will be by means of vegetated ditches and biofiltration swales. The build alternatives will also improve the riverine wetland function of providing fish habitat by upgrading the Little Campbell Creek and Craig Creek drainage structures to provide fish passage for migrating fish.

The no-action alternative will not fill additional wetlands. However, the natural drainage flow of the Moose Meadows wetlands could become increasingly restricted as the drainage structure fails under the road.

Guidelines established under Section 404(b)(1) of the Clean Water Act require project proponents to consider means to minimize the impacts to wetlands through avoidance, minimization, mitigation, and/or compensation. Each of these mechanisms for minimizing the impacts to wetlands along O'Malley Road corridor is considered in subsections 4.10.1, 4.10.2, 4.10.3, and 4.10.4.

4.10.1 Wetlands Avoidance

Possible wetlands avoidance techniques include:

- Realignment of the roadway; and
- Retaining walls.

Realignment of O'Malley Road to avoid the Moose Meadows wetlands is not possible at this location because O'Malley Road extends east and west while the wetland area extends north and south. Alignment options to avoid the higher value wetlands adjacent to O'Malley Road along the south side were evaluated and rejected. Shifting the roadway to the north would result in greater impacts to the overhead utilities, Tom Thumb Montessori School and Abbott O' Rabbit Ball Fields.

Installation of retaining walls was considered as a means to avoid impacts to the Moose Meadows wetland. Two types of retaining walls were considered and both were rejected for two reasons: 1) retaining wall structures would be large, expensive, and continue to impact wetlands; and 2) retaining wall structures would create an impermeable barrier that would further disturb hydrology in the area.

Within the Moose Meadows wetland adjacent to O'Malley Road, several boreholes were advanced that indicate the peat depths to be in the range of 5.5 m (18 ft) to 7.3 m (24 ft). Installing a cantilever type retaining wall would require deep excavation to key the spread footing into sound material. This would disturb a larger area than the proposed fill slopes. Sheet pile type walls were also investigated. The sheet piles would have to be embedded to a depth well below the peat to resist the forces developed by placement of the backfill. Both types of retaining walls would create an impermeable barrier that would essentially eliminate any possibility of the north/south water migration beneath the roadbed.

The no-action alternative is the only means by which the proposed project would avoid further impacts to adjacent wetlands. The failure of the culvert at the Moose Meadows wetland crossing will impede water flow and significantly impair the storm water conveyance and flood discharge attenuation functions of the wetland. The no-action alternative does not resolve the failing culvert at Moose Meadows nor improve fish passage at the Little Campbell Creek and Craig Creek culverts.

4.10.2 Minimization of Wetland Impacts

Possible techniques that will minimize impacts to wetlands are:

- Slope steepening;
- Reducing the separation distance between the pedestrian facilities and the roadway; and
- Treating stormwater runoff prior to entering wetlands.

Slope steepening will be performed as far as is practicable. The separation distances between the pedestrian facility and roadway have been minimized with the selection of an urban section through the New Seward Highway to Lake Otis Parkway section of O'Malley Road, which minimizes the project footprint. Both build alternatives have only standard lane and median widths. Narrowing lanes and median widths beyond the proposed was not considered practicable because it could not be done and still maintain the desirable standards for new arterial construction and it would reduce roadway capacity. In addition, the build alternatives will improve the filtration function of the palustrine wetlands by directing storm water runoff treated by mechanical means and/or biofiltration swales into adjacent wetlands.

4.10.3 Wetlands Mitigation

Both build alternatives incorporated wetlands mitigation into the design of O'Malley Road. Proposed mitigation includes:

- Improving fish passage at the Little Campbell Creek crossing by constructing step-pools and installing a new culvert (Figure 19);
- Improving fish passage at the Craig Creek crossing by constructing step-pools and installing a new culvert (Figure 20);
- Improving drainage into Moose Meadows by removing a collapsed culvert and replacing it with a geomembrane-covered large rock subdrain to act as an equalization drain across the fill embankment;
- Enhancing the water flow by directing storm water treated by mechanical means and/or biofiltration swales into the Moose Meadow wetlands; and
- Donating fee-in-lieu of mitigation for loss of wetland values.

The no-action alternative will not improve fish passage in Craig Creek, Little Campbell Creek or flow into Moose Meadows.

4.10.4 Only Practicable Alternative Finding

Executive Order, 11990, Protection of Wetlands, requires that there be no practicable alternative to the proposed action and that the project includes all practicable measures to minimize harm to wetlands.

Wetland impacts appear unavoidable if the purposes of the project are to be achieved. As described in the previous sections, both proposed build alternatives, while meeting the purpose and need of the project, would impact wetlands. Total avoidance of wetlands is not practicable because of the linear configuration of O'Malley Road and the perpendicular crossing of the wetlands. Although the wetland impacts for the alternative preferred by ADOT&PF, Alternative One, are slightly greater; this alternative provides increased mobility by accommodating all left-turning traffic, enhanced safety by reducing rear-end collisions and separating opposing traffic, as well as a continuity of roadway width. The no-action alternative would not impact wetlands but would also not meet the purpose and need of the project.

The impact of these wetland losses is considered minor since they are regionally of low value with the exception of the two riparian systems associated with Little Campbell Creek and Craig Creek. The alternative preferred by ADOT&PF, Alternative One, includes all practicable measures to minimize harm to wetlands as well as mitigation at Moose Meadows, Craig Creek, and Little Campbell Creek. Based upon the considerations outlined above and in the previous sections, it is determined that there is no practicable alternative to the proposed construction in wetlands. The proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. To compensate for the loss wetland values the Department will donate a fee-in-lieu of mitigation to the Great Land Trust to replace the loss of an estimated 2.7 debits of wetlands. Reference Appendix F for the Anchorage Debit-Credit evaluation of this project. Based on current prices, the fee is estimated to be approximately $150,000. ADOT&PF will negotiate final wetland debits/credits with the applicable resource agencies for all impacts to wetlands.

4.11 WATER BODY MODIFICATION

Two stream crossings were identified in the project corridor (Figures 19 and 20). Little Campbell Creek crosses O'Malley Road between Birch Road and Baronik Street. Craig Creek crosses O'Malley Road between Rock Ridge Drive and Ridgecrest Drive. Little Campbell Creek is classified by the ADF&G as an anadromous stream (AWC#247-60-10340-2018) from tidewater to downstream of O'Malley Road. The anadromous designation does not extend across O'Malley Road. The anadromous fish are found downstream of the project below several dams and stream obstructions (Seaberg, 2001). Craig Creek is not classified by ADF&G as an anadromous stream in this area, but does provide resident Dolly Varden habitat within this reach.

Little Campbell Creek drains the area south of O'Malley Road between Hillside Drive and Birch Road. At its crossing of O'Malley Road, the creek is approximately three meters (10 feet) wide and flows to the northwest. The creek flows under the roadway through a 0.914-meter (36-inch) diameter culvert. The project corridor was visually inspected in June 1999 (TPECI, 2000a). Project personnel observed no sediment in the creek. The streambed material consisted of coarse, unsorted gravel with some sand. The creek was confined to the channel.

The culvert outfall for Little Campbell Creek was perched two feet above the stream channel. Normally, a plunge pool below a culvert enhances fish passage, but in this case, an erosion control apron had been installed on the culvert. The sill extends two to three feet downstream of the culvert. The flat bottom sill appeared to cause very fast flow conditions. During the field investigation, a six-inch Dolly Varden was observed feeding approximately 31 meters (100 feet) above the O'Malley Road culvert. Since no over-wintering habitat occurs in this section of Little Campbell Creek, the fish must have negotiated the culvert.

Both build alternatives will replace and improve the culvert crossing at Little Campbell Creek. Both build alternatives will generate a positive impact by enhancing fish passage at Little Campbell Creek by installing step pools at the culvert outlet. Headwalls will be installed at the inlet and outlet of the culvert to shorten the crossing. The culvert size will remain the same because this crossing attenuates flood flow from possible dam break upstream (see section 4.13). The Little Campbell Creek crossing the length of the impacted area (culvert length plus step pools) will be the same for both build alternatives. Alternative One has a longer culvert length (54 meters/177 feet) but a lesser number of step pools to reach the desirable stream gradient for fish passage. Alternative One will fill 21 meters (69 feet) of the creek to place the culvert. Alternative Two has a shorter culvert length (46 meters/151 feet) but additional step pools are needed to reach the desirable stream gradient for fish passage. Alternative Two will fill 20 meters (66 feet) of the creek to place the culvert. (See Figure 19)

Craig Creek drains the area along the south side of O'Malley Road between Hillside Drive and Rock Ridge Drive. At its crossing of O'Malley Road, the creek is approximately three meters (10 feet) wide and flows to the north. The creek flows under the roadway through a 0.61-meter (24-inch) diameter culvert. No evidence of sediment was observed in the creek. The bed appeared to be coarse, unsorted gravel with some sand. The creek was confined to the channel.

The culvert outfall for Craig Creek was in poor condition. The outfall sill had separated from the culvert and was in the stream channel approximately 6 meters (20 feet) downstream. The culvert itself appeared to be failing under the weight of backfill. The upstream opening of the culvert could not be seen during a visual inspection for alignment. This indicates that the culvert is no longer horizontally aligned.

Both build alternatives will replace and improve the Craig Creek culvert crossing and will not change the creek course or alter its ability to flow under the road. Alternative One will place a culvert 49 meters (161 feet) in length and fill 30 meters (98 feet) of the creek. Alternate Two has a shorter culvert length, 48 meters, (156 feet) and will also fill 30 meters (161 feet) of the creek (Figure 20). For both build alternatives, step pools will be installed at the outlet of creek crossing to reach a more desirable stream gradient for fish passage.

The no-action alternative would not improve these deficiencies.

4.12 WILDLIFE AND FISHERIES

4.12.1 Wildlife

Wildlife frequents the greater Anchorage bowl. According to the Living with Wildlife in Anchorage (ADF&G, 1999), 52 species of mammals and at least 230 bird species use the Anchorage area for permanent or seasonal habitat needs. Within the O'Malley Road corridor, residents occasionally see black and brown bears and moose. Other furbearers and small mammals within the corridor may include: coyote, lynx, snowshoe hare, red fox, mink, weasel, martin, porcupine, red squirrels, northern flying squirrels, little brown bats, mice voles and shrews. Bird species exist along the O'Malley Road corridor, however; their species and numbers are not quantified even though the local residents would confirm the presence of songbirds, owls, hawks and bald eagles. The wildlife habitat within the O'Malley Road right-of-way consists of second growth uplands (previously cleared road right-of-way), and a minor amount of riparian habitat adjacent to wetlands along Little Campbell Creek and Craig Creek. Much of the wildlife is supported in the Hillside area because of the predominance of large-lot development. The value of this wildlife habitat within the O'Malley Road rights-of-way is low due to the high volume of traffic and human presence within this residential area.

Project scoping found that the public was mostly concerned about vehicle collisions with moose and preserving moose habitat. O'Malley Road has been ranked number 14th in the state for moose-vehicle collisions (DOT&PF, 1995). Eleven percent (11%) of the collisions between 1995 and 1997 were moose/vehicle collisions. The build alternatives include widening the roadway corridor, constructing trails, flattening some road grades, lighting at major intersections, and clearing and removing vegetation within the construction limits, and where needed to provide intersection sight distance.

Both build alternatives predominantly occupy the existing O'Malley Road ROW. This existing road and utility corridor is occasionally maintained (brushed) by both the ADOT&PF and individual utility companies. Both build alternatives will have minor adverse impacts to wildlife resulting from increased traffic, a widened roadway, vegetation clearing, sidewalk and pathway

construction and lighting. The clearing, restricted to construction limits, will be accomplished outside the May 1 to July 15 bird nesting season. This clearing and pathway construction will help prevent the presence of moose near the roadway but may negatively impact other wildlife such as birds and small mammals due to loss of habitat. Both build alternatives also accommodate wildlife by increasing driver visibility at lighted intersections and where clearing will improve the motorist and wildlife visibility.

Build alternatives will not impact riparian habitat. Alternative One will require clearing of 19 hectares (47 acres). Alternative Two will require clearing of 18 hectares (46 acres). Clearing along both build alternatives accommodates wildlife, primarily moose, by improving the motorist and wildlife visibility and creating a larger buffer between the wildlife food source and adjacent travel lanes. However, it would result in loss of some habitat for these species. The roadway widening and left turn channelization will require wildlife crossing the roadway to negotiate a wider road.

The no-action alternative would have no effect on the prevalence of moose collisions in the project corridor. Wildlife habitat would remain unaffected by the no-action alternative. The no-action alternative would not provide the reduction in moose kills anticipated with the build alternatives.

4.12.2 Fisheries

According to the ADF&G Anadromous Stream Catalogue (ADF&G, 1998), fish species that use some portion of Little Campbell Creek include:

- Coho salmon;
- Dolly Varden;
- Round whitefish; and
- Spiny sculpin.

Little Campbell Creek provides rearing habitat and fish access to wetlands and small tributaries along the stream. At its crossing of O'Malley Road, Little Campbell Creek flows underneath the roadway through a 0.914-meter (36-inch) culvert. The culvert outfall for Little Campbell Creek is perched two feet above the stream channel. Normally, a plunge pool below a culvert enhances fish passage, but in this case, a scour apron had been installed on the culvert. Both build alternatives will remove the scour apron and construct a step-pool outlet control structure to improve fish passage. Both build alternatives will impact approximately same 20 m (66ft) length of the stream (culvert plus step pool). All in-stream work will be done according to ADNR permit stipulations.

Both build alternatives will enhance the Little Campbell Creek fisheries habitat.

The reach of Craig Creek in the project area supports resident Dolly Varden. Both build alternatives will replace the existing culvert and construct a step-pool outlet control structure to improve fish passage. All in-stream work will be done according to ADNR permit stipulations.

4.12.3 Essential Fish Habitat Assessment

Discussions with Voss (2001) of the National Marine Fisheries Service, indicated no essential fish habitat exists within the study area or in the affected portions of Little Campbell Creek and Craig Creek.

4.13 FLOODPLAIN/FLOOD HAZARDS

As stated in Section 4.11 "Water Body Modifications," both build alternatives will replace and improve existing culvert crossings at Little Campbell Creek and Craig Creek. The build alternatives are within the 100-year base floodplain of each respective creek. National Flood Insurance Program (NFIP) maps are not available for this area and no drainage studies have been performed along the upper reaches of these creeks.

Neither build alternative nor the no-action alternative would produce foreseeable changes to the existing flow characteristics or flood hazards along each respective creek. The MOA Flood Hazard and Watershed Management Divisions are not aware of any naturally occurring flooding problems along either of these creeks within the project corridor. The primary flood risk is associated with the Lake O' the Hills dam.

O'Malley Road is located downstream of an impounded water body (Lake O' the Hills) (Figure 21). Lake O' the Hills-East Homeowners Association owns, operates, and maintains the low earth fill dam. The Lake O' the Hills dam retains approximately 62,000-cubic meters (50-acre-feet) of water. The dam has an approximate maximum crest length of 244-meters (800-feet) and rises to a maximum height of approximately 4-meters (13-feet).

Construction of the original dam was completed in 1954. The original structure is reported to have failed during the Good Friday Earthquake in 1964. The structure was reconstructed and on April 29, 1972, it failed again causing the death of a 10-year old boy along O'Malley Road. The dam was rebuilt between 1975 and 1980.

According to the Alaska Department of Natural Resources (ADNR), Dam Safety Division the dam rebuilt between 1975 and 1980, "… was not built in accordance with the plans [submitted to the Corps of Engineers and the ADNR]" (PN&D, 1991). The ADNR required the Lake O' the Hills-East Homeowners Association to correct these deficiencies. Corrective work was completed between 1980 and 1981. The potential downstream effect of a catastrophic failure of this structure could affect the O'Malley Road Reconstruction Project.

A dam break analysis of the Lake O' the Hills Dam was performed by Peratrovich, Nottingham & Drage, Inc. (PN&D, 1991). This analysis predicts a peak discharge of 31 to 42-cubic meters per second (1,100 to 1,500-cubic feet per second) above base flow. According to the analysis, a flood wave between 1 and 1.2-meters (3 and 4-feet) high above the normal stage would reach O'Malley Road within 30-minutes following failure of the dam. PN&D found that the flood wave generated by the 1972 failure split at O'Malley Road. Part of the discharge flowed north through the Little Campbell Creek culvert with the remainder channeled into the ditch along the south side of O'Malley Road. The flow along the southern side of O'Malley Road, "…flowed

over Totem Road and Our Road and collected in the low area across from the Dimond H Ranch between Our Road and Lipscomb Street. The flows continued to the north side of O'Malley Road, both over the top of O'Malley Road and through a culvert. The flows then continued north across the Dimond H Ranch property and eventually back to the Little Campbell Creek Channel" (PN&D, 1991).

Due to this potential flood risk associated with the dam and no known naturally occurring flood problems, the hydraulic capacity of the Little Campbell Creek culvert crossing should remain the same. Both build alternatives include construction of headwalls on Little Campbell Creek to withstand a surge of floodwaters from a dam break. Constructing adequate ditches along both sides of the road facilitates channeling of surge of water from a dam break. A cursory review of the upstream drainage basin for Craig Creek indicates the proposed crossing improvements will convey a 100 year storm without backing up. The recommendation not to increase the culvert flow capacity at Little Campbell Creek and Craig Creek is based upon the most current information available at this time and will be reevaluated during the design phase of the project.

The build alternatives will also have minimal impacts on the creeks' natural floodplain values. The effects to the R2US1(Little Campbell Creek) type wetlands for Alternatives One and Two are 112 square meters and 120 square meters (about 0.03 acres) respectively. Impacts to the R2US5 (Craig Creek) type wetlands are 267 square meters (about 0.07 acres) and 280 square meters (0.07 acres) for Alternatives One and Two respectively. The riverine wetland types, R2US1 (Little Campbell Creek) and R2US5 (Craig Creek), are both associated with a perennial or intermittent water course. Neither build alternative will not open up or encourage additional incompatible development with in the floodplain.

The no-action alternative would not change the current conditions with respect to breach discharge conveyance.

4.14 COASTAL ZONE MANAGEMENT

The Alaska Department of Natural Resources – Office of Project Management and Permitting (ADNR-OPMP) determined the project is in the coastal district in two areas, where it crosses Little Campbell Creek and Craig Creek. ADNR-OPMP will implement a formal consistency review during the permit phase of the project. The project appears to be consistent with the policies and standards of the Alaska Coastal Management Plan (ACMP).

Both build alternatives will improve the culvert structures for both Little Campbell Creek and Craig Creek. These culvert installations will include improvement to fish passage.

The no-action alternative would preclude construction-induced impacts in the coastal zone.

4.15 VISUAL IMPACTS

The build alternatives will change adjacent property owners' views of the roadway. Residents on the south side would see a multipurpose path close to their property. Right of way brush clearing will make the road more visible and provide more open space. Lighting at major intersections will provide more visibility. The build alternatives do not have grade-separated interchanges or frontage roads that would cause a dramatic change.

Vehicle occupants will see more open space adjacent to the road and approximately the same views of the Chugach Mountains while traveling east along the road. The surrounding character of the area should not be substantially changed. The right-of-way will be cleared within the construction limits of the proposed build alternatives. . Cut slopes and disturbed areas will be re-vegetated with grass.

Both build alternatives will change the lighting levels thereby affecting some property owners. Currently, none of O'Malley Road is continuously illuminated. High-tower lighting exists at the New Seward Highway/O'Malley Road interchange. Standard luminaires exist at the Lake Otis Parkway, Elmore Road, and Birch Road intersections. Single luminaires on wooden utility poles are located at the Rockridge Drive, East Tree Drive, and Crooked Tree Drive intersections.

Both build alternatives include continuous illumination from New Seward Highway to Lake Otis Parkway. This is supported by the type of facility proposed, the minimal impact to the adjacent residences, and the desire to avoid frequent, abrupt changes in light levels.

Continuous illumination is not included in the build alternatives for the section from Lake Otis Parkway to Hillside Drive. A cursory review of the preliminary design plans identified 87 residences that would be impacted by continuous illumination.

The no-action alternative will leave the view of the roadway and surrounding vistas unchanged.

4.16 CONSTRUCTION IMPACTS

Construction equipment, by its nature, is a disturbance to the normal everyday activities of neighborhoods and urban centers. Both build alternatives will have temporary construction impacts. Prior planning and proactive construction sequencing should minimize impacts normally associated with construction including: air quality, surrounding noise levels, water quality, and availability of gravel and topsoil from local material sources.

During construction, both build alternatives will temporarily impact the local economy. Businesses in construction areas may experience a temporary decrease in activity due to disturbances from heavy equipment and traffic detours. This is anticipated to be short-term and there are currently few businesses in the project area. In the long-term, the upgraded roadway will improve customer access for existing and future businesses. Some Anchorage businesses, outside the project area, may benefit from the purchase of construction material and supplies, construction related jobs, and providing services to construction workers.

Air quality could temporarily deteriorate along the project corridor due to the increased dust and vehicle emissions from construction equipment during construction of either build alternative. Dust will be controlled through regular watering. Construction equipment will be required to meet state standards for emissions.

Temporary increases in noise levels could be expected during construction. Measures to minimize construction noise could include:

- Traffic management measures;
- Whenever possible, limit operations of heavy equipment and other noisy procedures to the daylight hours;
- Locate equipment and vehicle staging areas as far from residential areas as possible;
- Install and maintain effective mufflers on construction equipment; and
- Limit unnecessary idling of equipment.

Clearing will be prohibited between May 1 to July 15. Once the area has been cleared and rendered unusable as bird habitat in the allowed time frame, work may continue on the road prism without time restrictions.

Water would be required for compaction and dust control. If the contractors desire to use water bodies close to the project for water, they must acquire an ADNR Temporary Water Use Permit before withdrawing the water from any source including Little Campbell Creek or Craig Creek.

Little Campbell Creek, Craig Creek, and bordering wetlands would be protected from sediment through use of silt fences and other erosion control measures. To protect against erosion and water damage to exposed surfaces during construction, the Contractor would follow the ADOT&PF Best Management Practices as outlined in the DOT&PF Storm Water Pollution Guide, January 2005.

All work will be done in compliance with the NPDES General Permit for Construction Activities in Alaska.

To minimize construction related traffic delays and detours, a traffic control plan would be prepared by the contractor and approved by ADOT&PF. The plan would also maintain safety during construction. Access to businesses and residences would be maintained during construction. The impacts would be minimized by directional detours, large "reader" signs with daily messages, 1-800 phone numbers, and notices in newspapers describing the construction activities and possible alternate routes, as appropriate.

Material required consists of unclassified fill, gravel, riprap, crushed rock, and topsoil. Material would be Contractor supplied. Any permits required for material acquisition or disposal of unusable or waste material would be the responsibility of the Contractor.

Although the probability is low, if hazardous substances are encountered during construction, the ADEC would be contacted and appropriate measures taken. All contaminated soils would be handled and disposed of per ADEC and EPA corrective action plan, as appropriate.

During construction there is a potential for fuel spills. The Contractor would be required to develop and implement a hazardous materials control plan prior to the beginning of construction. The plan would detail how construction generated waste oil and other hazardous substances would be contained, cleaned up and disposed of, and how fueling operations would be carried out, and accidental spills handled. The plan would also include a list of the quantities and types of materials available on site for hazardous substance containment and cleanup. The plan would comply with the requirements of 18 AAC 75 and Title 46 of the Alaska Statutes.

The no-action alternative would preclude any construction impacts.

4.17 RELATIONSHIP OF SHORT-TERM USES TO LONG-TERM PRODUCTIVITY

Local short-term uses of the human environment refer to utilization of resources from the area of the reconstruction project. Resources include gravel, concrete, topsoil, construction equipment, labor, and funds. Use of these resources is anticipated to benefit the community productivity directly and on a long-term basis.

Either build alternative would increase or maintain the existing productivity of the area. With additional travel lanes, commercial business activities would be completed in a more efficient manner. Vehicle engine efficiency would be increased with fewer stops and starts in congested traffic.

Both build alternatives are based on state and local government comprehensive planning that considers the need for present and future traffic requirements and land use development. Local short-term impacts and use of resources for the build alternative are consistent with the long-term maintenance of the improved road and the enhancement of the local area and state productivity.

The no-action alternative would have no effect on the short-term use of the human environment since lack of construction precludes utilization. Long-term productivity would decrease due to the absence of an effective and efficient transportation system.

4.18 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The build alternatives would impact resource supplies in the area with a one-time withdrawal. Use of gravel for this project is not expected to impact resource utilization on a long-term basis. The build alternatives would permanently remove material from availability. Other construction materials such as pavement, topsoil, grass seed, and concrete are also readily available but would be irretrievably committed. The commitment of these resources could be justified by residents benefiting from the improved overall quality of the transportation in the area. These benefits would consist of improved safety, accessibility, and access for pedestrians and bicyclists.

The no-action alternative would preclude any commitment of resources.

4.19 SECONDARY AND CUMULATIVE IMPACTS

Secondary impacts are those that are impacts caused by reconstruction of O'Malley Road that will occur in the reasonably foreseeable future. Currently all the east-west arterial streets in Anchorage's Hillside area are in similar condition. They are generally two-lane facilities, with minimal shoulders, limited left turn channelization, etc. The build alternatives will lead to O'Malley Road being one of the first parallel east-west arterial streets reconstructed in the Hillside area. In addition, the north-south arterial roadway grid is missing some planned links, such as Bragaw between O'Malley Road and Abbott Road. The reconstruction of O'Malley Road will cause short-term impacts due to increased traffic on Abbott, Huffman, and DeArmoun Road during construction. When improved, O'Malley Road will attract additional vehicle trips, additional bicycle, pedestrian and equestrian trips until other parallel routes (Abbott Road and Huffman Road) are also improved. Future construction of Bragaw Street (O'Malley to Abbott) will again redistribute Hillside area traffic. The build alternatives will also provide a safer street, improve visibility of wildlife and road users. None of these secondary impacts is considered adverse.

Cumulative impacts result from incremental consequences of an action when added to other past and reasonably foreseeable future actions. The Hillside area, where O'Malley Road is located, is a fast growing area. The long-term development in the area has had a cumulative impact on the natural environment. Wetlands have been filled, streams have been crossed and the rural character has been supplanted by large-lot subdivision development. The O'Malley Road reconstruction project is one of many projects being planned in response to the development and population growth. When constructed to current standards, both O'Malley Road build alternatives will serve current and future growth in the area.

East-west arterials, DeArmoun Road, Abbott Road, and Huffman Road are all scheduled for improvement; as are changes to the north-south arterials including the extension of Abbott Loop from Tudor to Abbott and Bragaw Street from O'Malley to Abbott. These projects will be subject to separate environmental reviews. There will be impacts such as wetlands and habitat losses, increased noise and stream impacts, reduction in the rural character of the neighborhoods and increase the urban nature of the corridor.

No adverse cumulative impacts to wetlands along the project corridor are anticipated. About 92% of the wetland fills will occur in Moose Meadows. This wetland does not share a common drainage with Little Campbell Creek or Craig Creek. Therefore, no incremental damage will occur to a single watershed. Wetland impacts will be offset by improvements to Little Campbell Creek and Craig Creek water quality and fisheries habitat contained in the build alternatives. The no-action alternative would have larger impacts on air quality and safety in the future than the build options.

The direct impact of the project would be to ease congestion and facilitate safe access to and from the Hillside neighborhoods. Increased ease and speed of access to grocery stores, work, schools, and the daily needs of the residents may make the neighborhood feel more like an urban area, and less like a rural neighborhood.

5.0 COMMENTS AND COORDINATION

The Agency Scoping Plan (TPECI, 1999b) detailed the methodology for the scoping process for the O'Malley Road Reconstruction Project.

5.1 AGENCY SCOPING

Coordination with agencies was initiated through a request for scoping comments on July 29, 1999. Comments were received from federal and state agencies and the local government. An agency scoping meeting was held on August 18, 1999. Table 8 lists the agencies attending the meeting and a summary of scoping comments.

TABLE 8
SUMMARY OF AGENCY ISSUES

Issues	Agency
Wetlands Minimization (Moose Meadows) North side improvements less damaging Wetlands delineation Avoidance	U.S. Fish and Wildlife Service U.S. Environmental Protection Agency U.S. Army Corps of Engineers
Little Campbell Creek Maintenance of fish passage and flow	U.S. Fish and Wildlife Service U.S. Environmental Protection Agency Alaska Department of Fish & Game U.S. Army Corps of Engineers
Water Quality	U.S. Fish and Wildlife Service
Project Terminus (before 90-degree turn on Hillside Drive)	U.S. Fish and Wildlife Service
Traffic Signal Location	U.S. Fish and Wildlife Service
Right of Way	U.S. Environmental Protection Agency
Floodplain	U.S. Army Corps of Engineers
Craig Creek – removal of downstream obstacles	U.S. Army Corps of Engineers
Correct perched culvert under Birch Road at the south fork of Little Campbell Creek.	U.S. Army Corps of Engineers
Roadway Configuration—would it include left turn channelization	Alaska Department of Environmental Conservation
Alaska Coastal Management Plan/Coastal District	U.S. Army Corps of Engineers
Essential Fish Habitat	National Marine Fisheries Service
Accommodate planned development near project corridor—Castle on O'Malley and church on southern end of O'Malley	Municipality of Anchorage, Department of Public Works

5.2 PUBLIC SCOPING

Public scoping was initiated through newsletters, advertisements, a World Wide Web site, two public meetings, and several community council meetings. The public provided input through written surveys, a project telephone hotline number, and e-mail communication. Public meetings regarding this project were held on November 1, 1999 and September 6, 2000. Appendix A includes comments received from the public and agency scoping process. Table 9 contains a summary of issues raised by the public during scoping.

TABLE 9
SUMMARY OF THE PUBLIC'S ISSUES DURING SCOPING

Issues Raised	
Access and Driveways	Maintain access to businesses and personal property along corridor. Property owners concerned about changes to their driveways.
Aesthetics	Project should improve roadway aesthetics including vegetation, appearance.
Berms	Some berms exist to protect private property.
Curb and Gutter	Curb and gutter may be necessary to handle storm water and snow melt water.
Distribution of Hillside Traffic	Hillside traffic should be distributed throughout Hillside Roadways.
Grades	The roadway has steep grades in some areas.
Intersections	Intersections need improvements along O'Malley Road.
Left Turn Lanes	Provide left turn lanes at businesses and busy intersections to help flow of traffic.
Lighting	The issue is whether to provide additional street lighting along O'Malley road for safety, mitigation of moose/vehicle collisions, etc. Some members of the public favored additional lighting, others were opposed to it.
Mail Boxes	Public expressed an interest that mailboxes be clustered at intersections and pullouts.
Moose	Hillside resident's encounters with moose have increased.
Noise	Increased traffic results in increased street noise in adjacent businesses and residential neighborhoods.
Pathways/Pedestrians	Provide for pedestrian, bicycle, and equestrian uses alongside O'Malley Road.
Public Transportation	Provide provisions in the roadway reconstruction for current and future public transportation needs.
Right of Way	Roadway projects often require additional right-of-way.
Roadway Condition/Maintenance	The road is in poor condition—upgrade is needed.
Roadway Widening	To accommodate projected traffic the roadway may need to be widened.
Shoulders	Roadway shoulders on O'Malley Road vary in width. Improvements

Issues Raised	
	could affect roadway safety.
Signage	Streets signs along O'Malley Road could be larger type similar to the signs installed during the Rabbit Creek upgrade.
Speed	Traffic speeds along O'Malley Road are a concern.
Traffic Forecasts	Traffic forecast model should be understood.
Traffic Signals	Traffic Signals may be warranted on some intersections on O'Malley Road. Don't use stoplights as a means to control traffic on Hillside. Signals supported at Birch and Commodore.
Transportation Demand Management	Explore strategies for changing traffic demand.
Two-Way Continuous Left Turn Lanes	Provide for left turn movements on O'Malley Road.
Utilities	Overhead utilities are present on O'Malley Road, would it be possible to move them underground.
Wetlands	Protection of Hillside wetlands habitat is important.

Appendix A contains the formal comments received on the EA and ADOT&PF's responses. Public comment during scoping and project development is contained in Appendix A.

5.3 AGENCY AND PUBLIC REVIEW OF EA

The June 204 O'Malley Road Reconstruction Project EA was approved on June 25, 2004 for public distribution and made available to the public beginning on July 16, 2004. The public comment period extended 45 days beginning July 16, 2004 and ending August 30, 2004. A notice of availability of the EA and public hearing date were published in the Anchorage Daily News on July 16, July 22 and July 28, 2004. The document was also available for review at ADOT&PF, the Z.J. Loussac Library and on-line at www.hillsideroads.com. During this time the Department held a public hearing, July 29, 2004 in Anchorage. A project newsletter that summarized the project alternatives, informed the public on how to obtain a copy of the EA and how to comment on the EA, announced the public hearing date, and requested public input was sent to everyone on the project mailing list during the week of July 19, 2004. In addition, copies of the EA were sent to current agency representatives for the project and individuals that requested copies.

During the document review period, numerous public and agency comments were received. Public comment supported improving capacity by developing a four-lane divided roadway along Segment A (New Seward Highway to Lake Otis Parkway). Comments were divided regarding Segment B (Lake Otis Parkway to Hillside Drive). Public comments not supporting the preferred alternative in this area indicated that this portion of the O'Malley Road functions well as is and no-action should be taken. Comments supporting the roadway improvements generally ranged from being in support of the preferred alternative to calling for additional road capacity, pedestrian, and safety improvements. Comments regarding safety primarily concerned travel speeds and location of intersection traffic control. Additional comments were received pertaining to noise, right-of-way, and visual impacts.

Public comments generally supported enhancements to pedestrian and non-motorist facilities; however, comments were divided on the need for pedestrian facilities along both sides of the roadway. Specific comments addressed the type and placement of the pathway facilities and the desire for grade-separated crossings.

Regulatory agencies commented primarily on the need for additional delineation of wetlands within Moose Meadows, opportunities to avoid or mitigate wetland impacts, and the desire to address redirecting drainage across O'Malley Road towards Moose Meadows wetlands. MOA Trails Coordinator also commented that ADOT&PF should follow the Areawide Trail Plan by incorporating a paved path on south side of O'Malley Road and unpaved equestrian trail on north side.

Agency and public comments are summarized in Appendix A.

6.0 EA PREPARERS

Table 10 summarizes the team that prepared this environmental assessment.

TABLE 10
LIST OF EA PREPARERS

Name	Affiliation/Role	Professional Discipline/Experience
COORDINATION AND SUPERVISION		
Miriam Tanaka, P.E.	ADOT&PF Project Manager Document direction and review	Civil Engineer 16 years experience
Cynthia Ferguson, P.E.	ADOT&PF Project Administrator Document Review	Civil Engineer 9 years experience
Brad Sworts	ADOT&PF Environmental Analyst EA and Permit Review	Environmental Analyst 10 years experience
Jerry O. Ruehle	ADOT&PF Environmental Coordinator Review Noise and Air Quality, EA Review	Environmental Coordinator 28 years experience
Loren L. Becia, P.E.	Lounsbury & Associates, Inc. Engineering leader	Civil Engineering, Consultant 11 years experience
Jim Sawhill, P.E.	Lounsbury & Associates, Inc. Project management	Civil Engineering, Consultant 18 years experience
Michael D. Travis, P.E. M.S. Environmental Quality Science	Travis/Peterson Environmental Consulting, Inc. Project management, document review	Environmental Engineering 22 years experience
Bruce W. Campbell B.S. Geology B.Ed. Secondary Earth Science	Travis/Peterson Environmental Consulting, Inc. Document preparation	Environmental Scientist 17 years experience
Kerri L. Martin B.S. Biology	Travis/Peterson Environmental Consulting, Inc. Document preparation	Environmental Scientist 1 year experience
Eddie C. Packee, CPSSc. M.S. Mine Reclamation Science	Travis/Peterson Environmental Consulting, Inc. Wetlands Delineation, Floodplain Analysis	Environmental Scientist 10 years experience
M. Anne Brooks, P.E. B.S. Civil Engineering	Brooks & Associates Public Involvement/EA Review	Civil Engineering/Public Participation Consulting 13 years experience
Mark Piedra B.S. Physics	Travis/Peterson Environmental Consulting, Inc. Noise and Air Modeling	Environmental Scientist 7 years experience
Tim Haugh B.S. Wildlife Science	FHWA Environmental/Right-of-Way Programs Manager	Environmental Specialist 12 years experience

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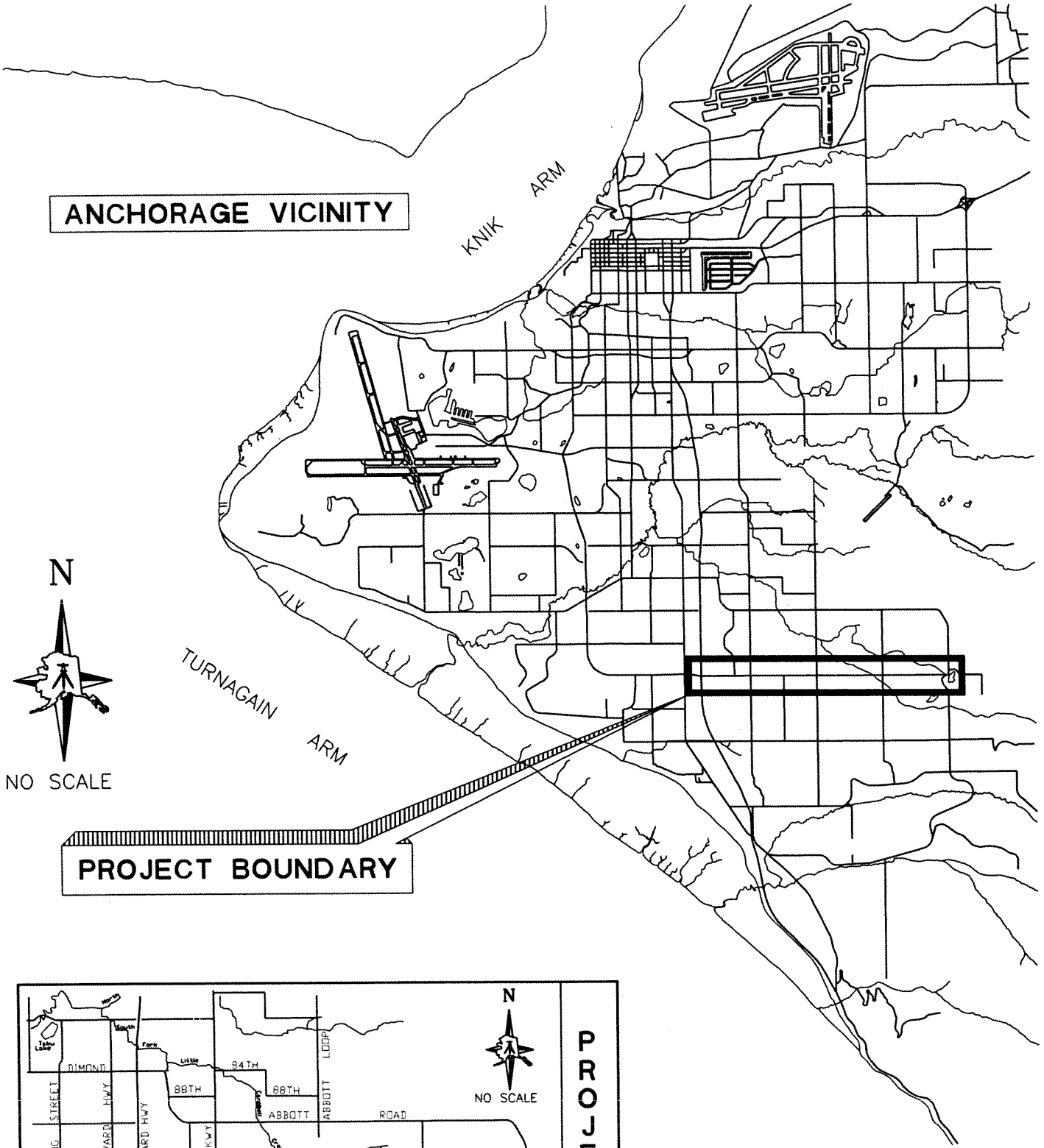
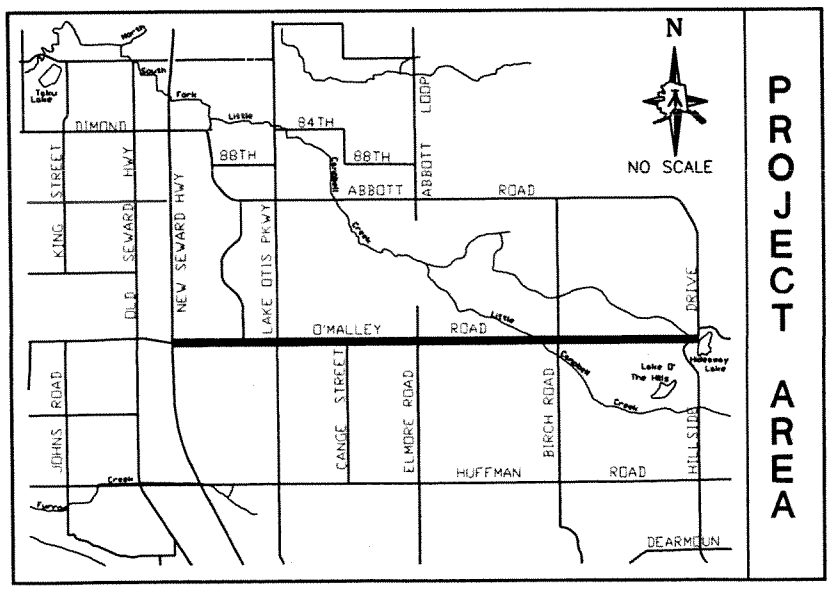
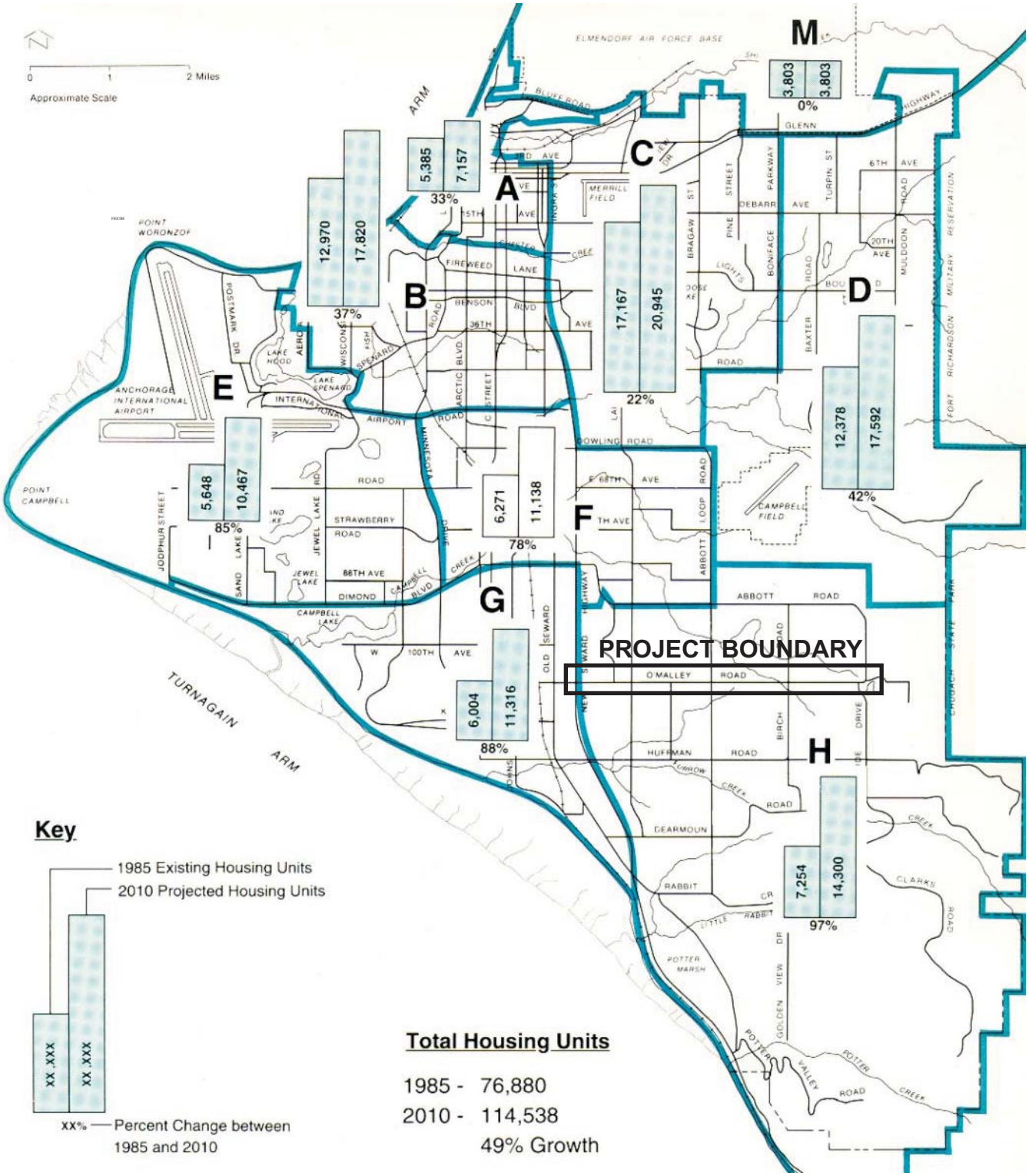




O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HWY TO HILLSIDE DR
PROJECT NO. STP-512(5)/53935

LOCATION AND VICINITY MAP

FIGURE 1

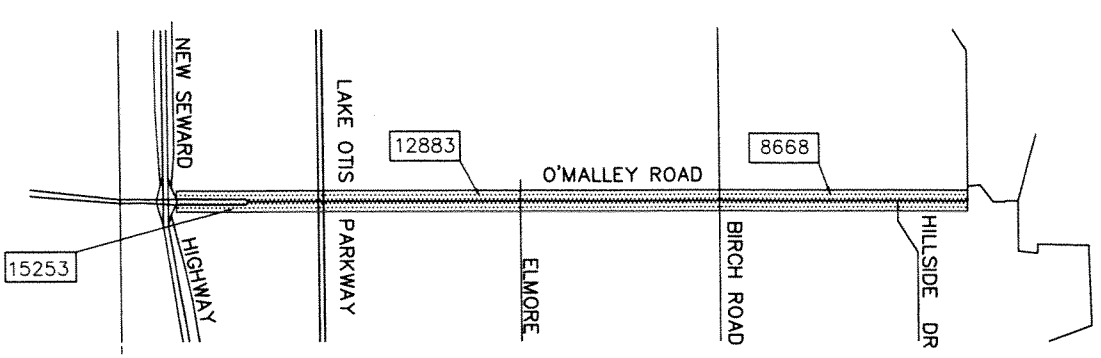


Source: 1991 Long -Range Transportation Plan.
Prepared by the Department of Community Planning and Development, November 1991

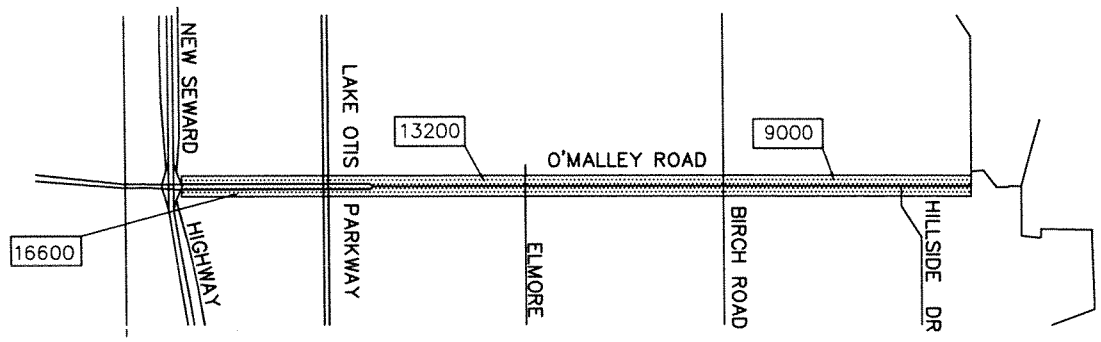
O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE
PROJECT NO. STP-512(5)/53935

RESIDENTIAL DEVELOPABLE LAND
EXISTING AND PROJECTED

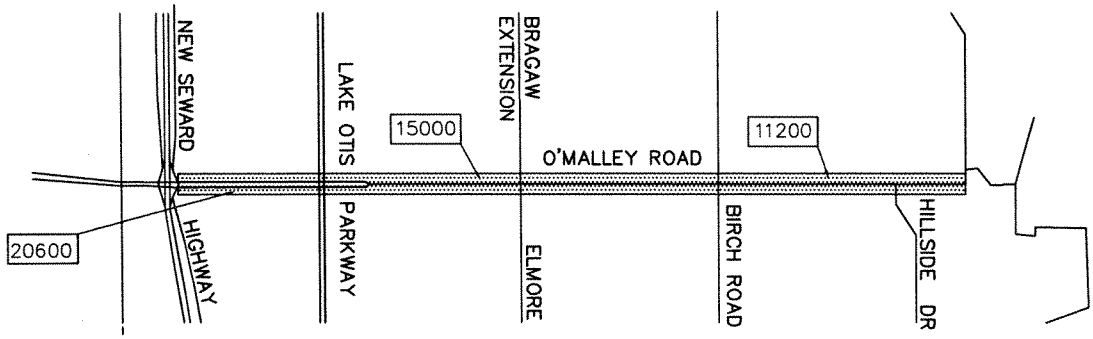
FIGURE 2



CURRENT YEAR - 2001



CONSTRUCTION YEAR - 2006



DESIGN YEAR - 2031

LEGEND

- Two-Lane Roadway
- Four-Lane Roadway
- 1234 Average Daily Traffic (ADT)
- Project Boundary

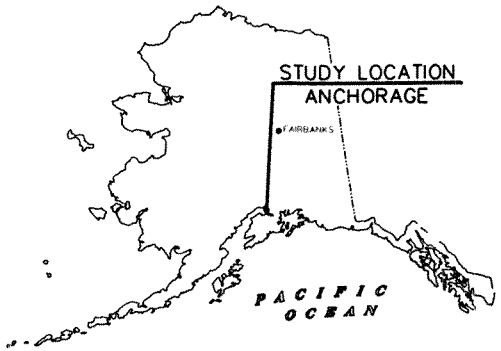
DESIGN YEAR 2031 LANE ANALYSIS

		SEGMENT	LEVEL OF SERVICE (LOS)
NO BUILD	AM	NSH to LAKE OTIS	D
		LAKE OTIS to ELMORE	A
		ELMORE to HILLSIDE	A
	PM	NSH to LAKE OTIS	F
		LAKE OTIS to ELMORE	A
		ELMORE to HILLSIDE	A
BUILD	AM	NSH to LAKE OTIS	C
		LAKE OTIS to ELMORE	A
		ELMORE to HILLSIDE	A
	PM	NSH to LAKE OTIS	C
		LAKE OTIS to ELMORE	A
		ELMORE to HILLSIDE	A

O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE
PROJECT STP-0512(5)/53935

LRTP ROAD NETWORK ADT VOLUMES and LOS

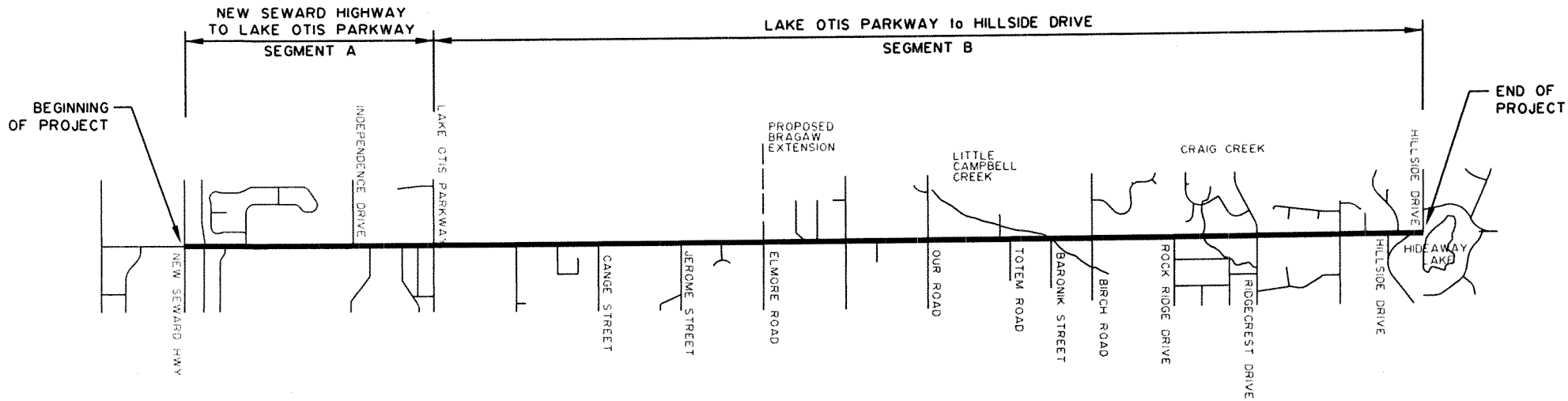
FIGURE 3



LOCATION MAP

N

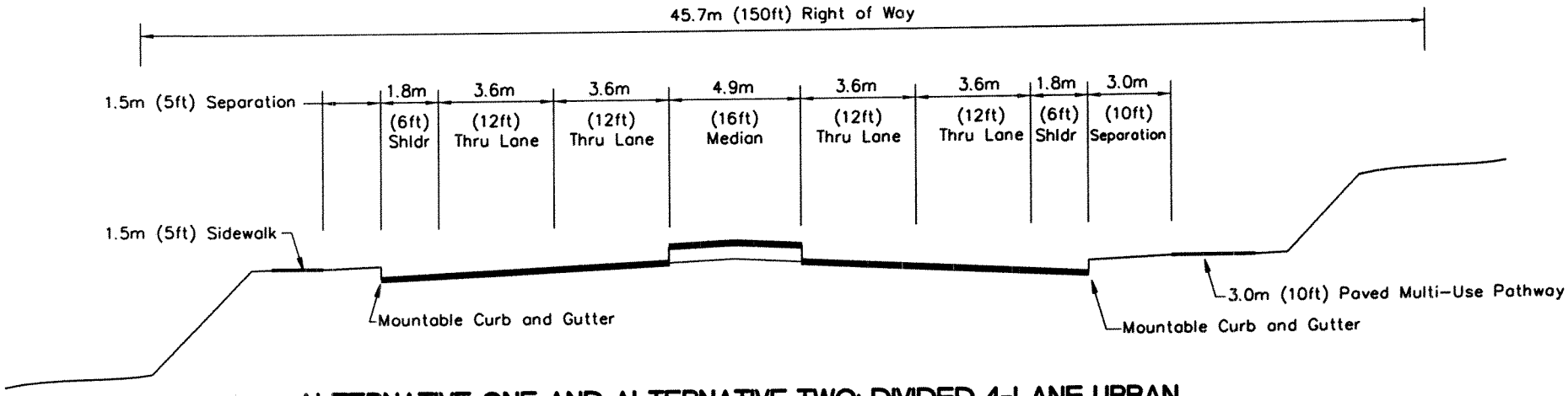
NO SCALE



O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE
PROJECT STP-0512(5)/53935

SITE PLAN

FIGURE 4



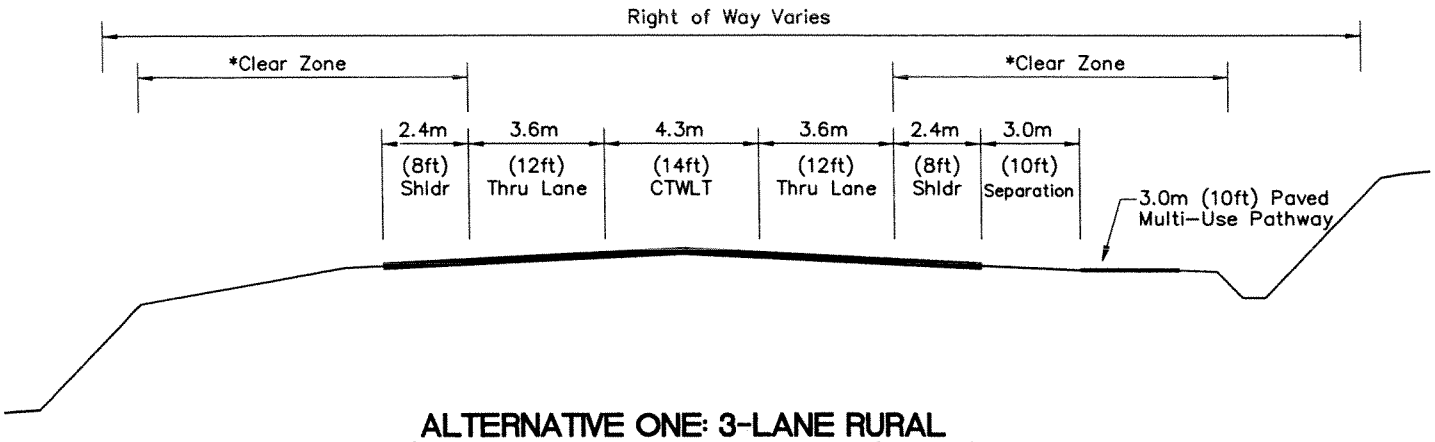
ALTERNATIVE ONE AND ALTERNATIVE TWO: DIVIDED 4-LANE URBAN

Probable width of Improvements: 33.5 m (110 ft) to 65m (213 ft)

O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE
PROJECT STP-0512(5)/53935

BUILD ALTERNATIVES TYPICAL SECTION NEW SEWARD HWY TO LAKE OTIS PWY

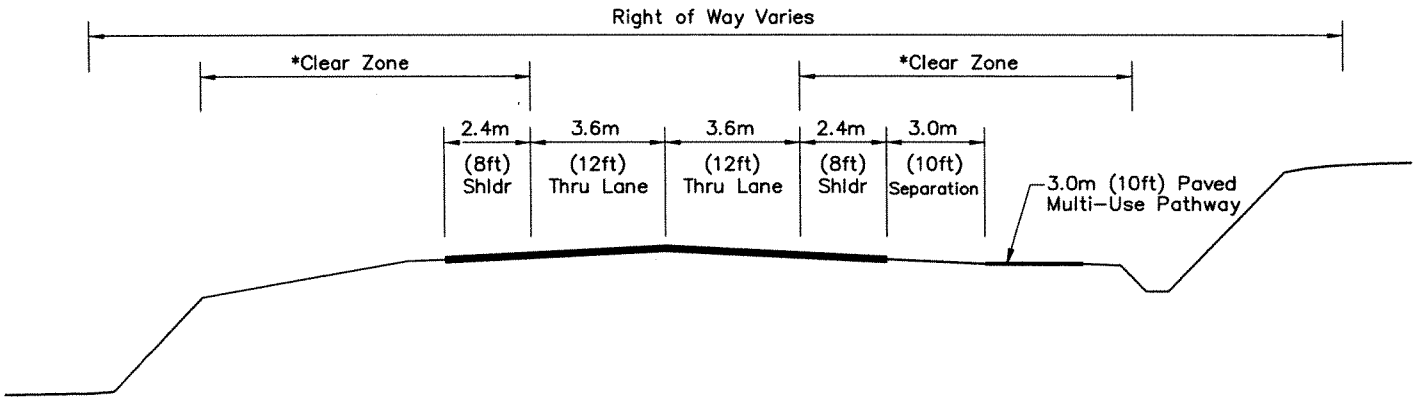
FIGURE 5



ALTERNATIVE ONE: 3-LANE RURAL
w/Continuous Two-way Left-Turn Lane (CTWLT)

*Clear Zone shall be at minimum 6.0m (20ft) in cut area and 9.0m (30ft) in fill area.

Probable width of Improvements: 26.8 m (88 ft) to 48m (158 ft)



ALTERNATIVE TWO: 2-LANE RURAL

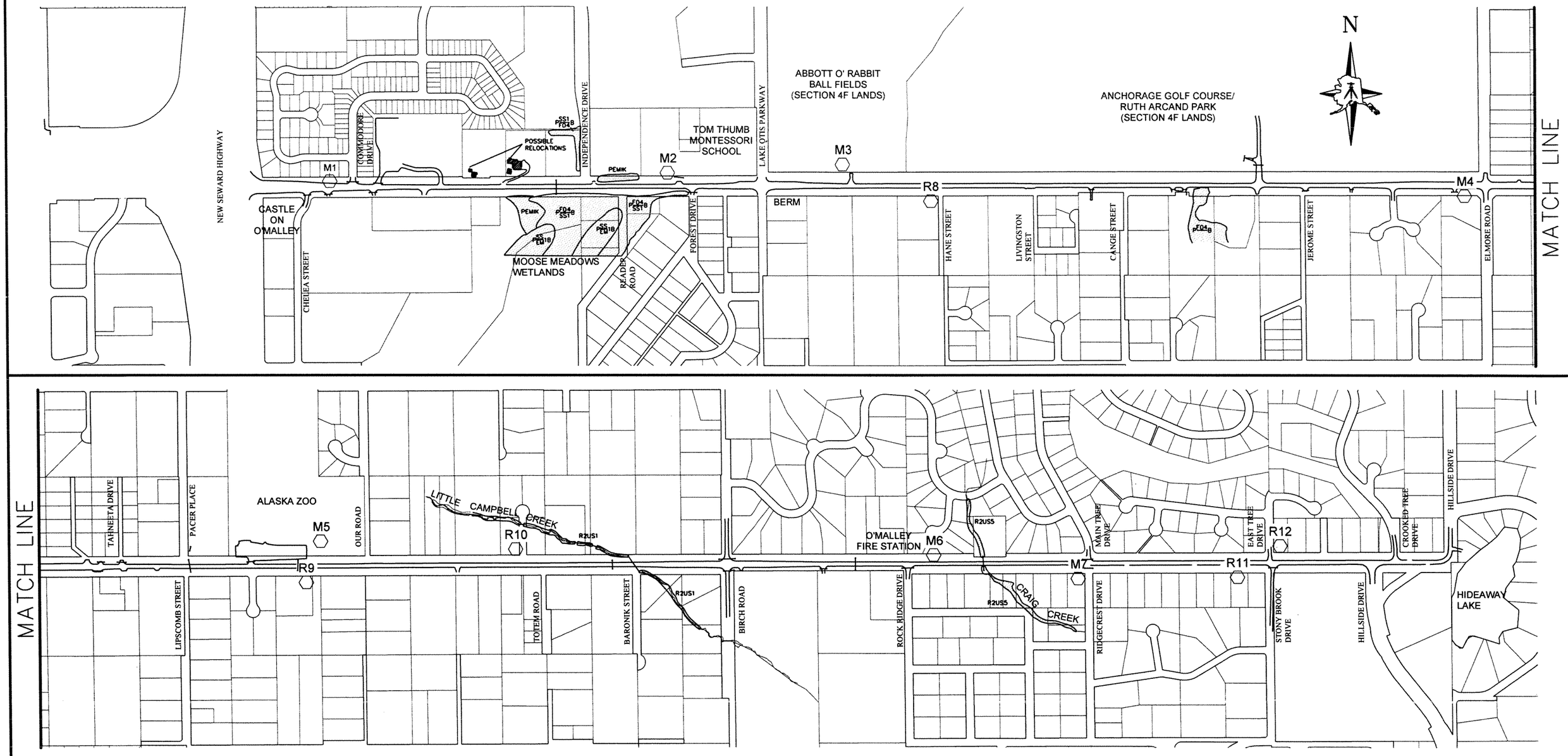
*Clear Zone shall be at minimum 6.0m (20ft) in cut area and 9.0m (30ft) in fill area.

Probable width of Improvements: 22.5 m (74 ft) to 46m (151 ft)

O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE
PROJECT STP-0512(5)/53935

BUILD ALTERNATIVES TYPICAL SECTION
LAKE OTIS PWY TO HILLSIDE DRIVE

FIGURE 6



LEGEND

- WETLANDS
- M# NOISE MONITORING LOCATION
- R# NOISE RECEPTOR SITE
- POSSIBLE RESIDENTIAL/BUSINESS RELOCATION
- EXISTING CULVERT

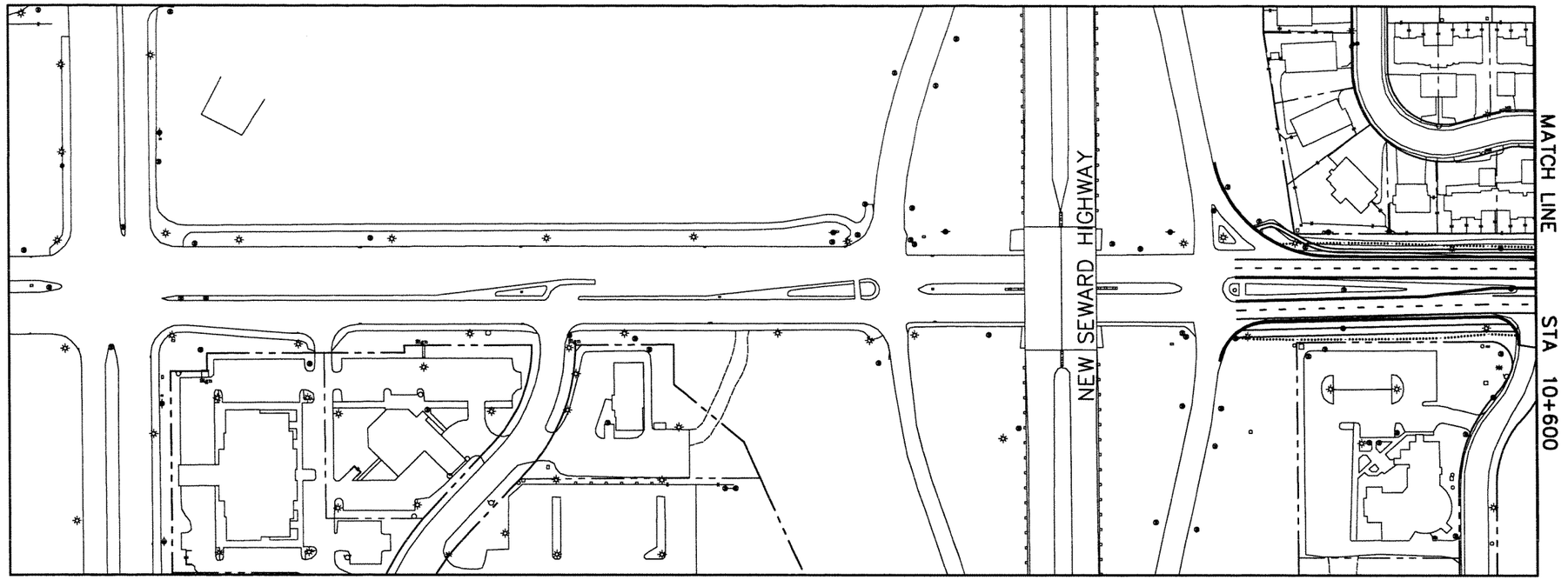
WETLANDS CLASSIFICATION

PEM1K	PERSISTENT EMERGENT, PERENNIAL, ARTIFICIALLY FLOODED
R2US1	LOWER PERENNIAL, UNCONSOLIDATED SHORE, COBBLE-GRAVEL
R2US5	LOWER PERENNIAL, UNCONSOLIDATED SHORE, VEGETATED
$P\frac{SS}{EM}1B$	SCRUB SHRUB/EMERGENT, BROAD LEAVED, DECIDUOUS, SATURATED WETLANDS
$P\frac{F04}{SS1}B$	FORESTED, NEEDLE LEAVED EVERGREEN, SCRUB SHRUB SATURATED WETLANDS
$P\frac{SS1}{F04}B$	FORESTED, NEEDLE LEAVED EVERGREEN, SCRUB SHRUB SATURATED WETLANDS
PF04B	FORESTED, NEEDLE LEAVED EVERGREEN, SATURATED WETLANDS

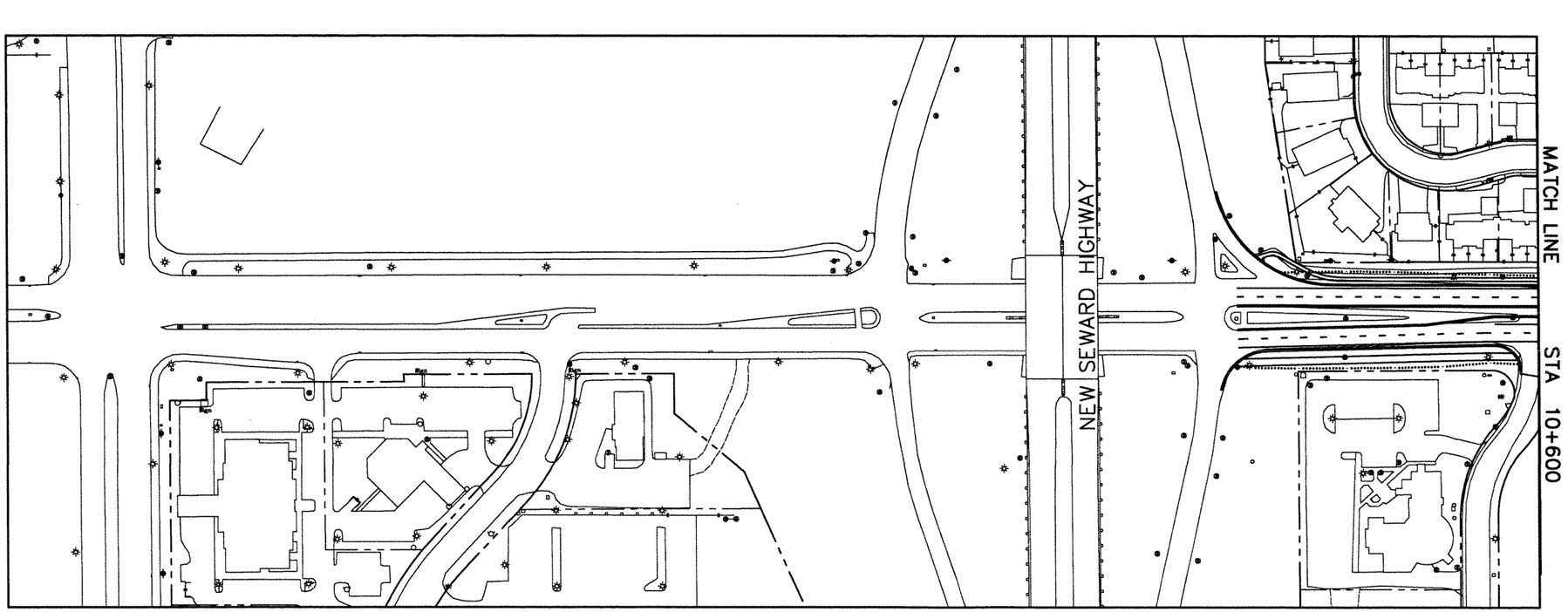
O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HWY TO HILLSIDE DR
PROJECT NO. STP-512(5)/53935

AFFECTED ENVIRONMENT

FIGURE 7



ALTERNATIVE 1



ALTERNATIVE 2

N

FIGURE 8

STATE	YEAR
ALASKA	2002

PROJECT DESIGNATION

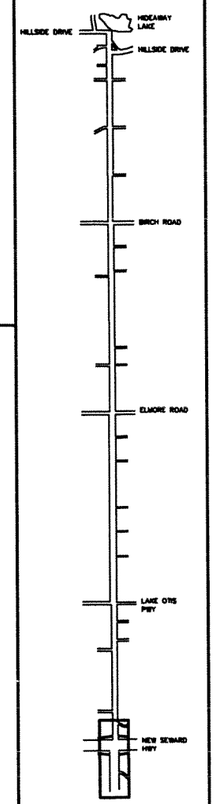
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

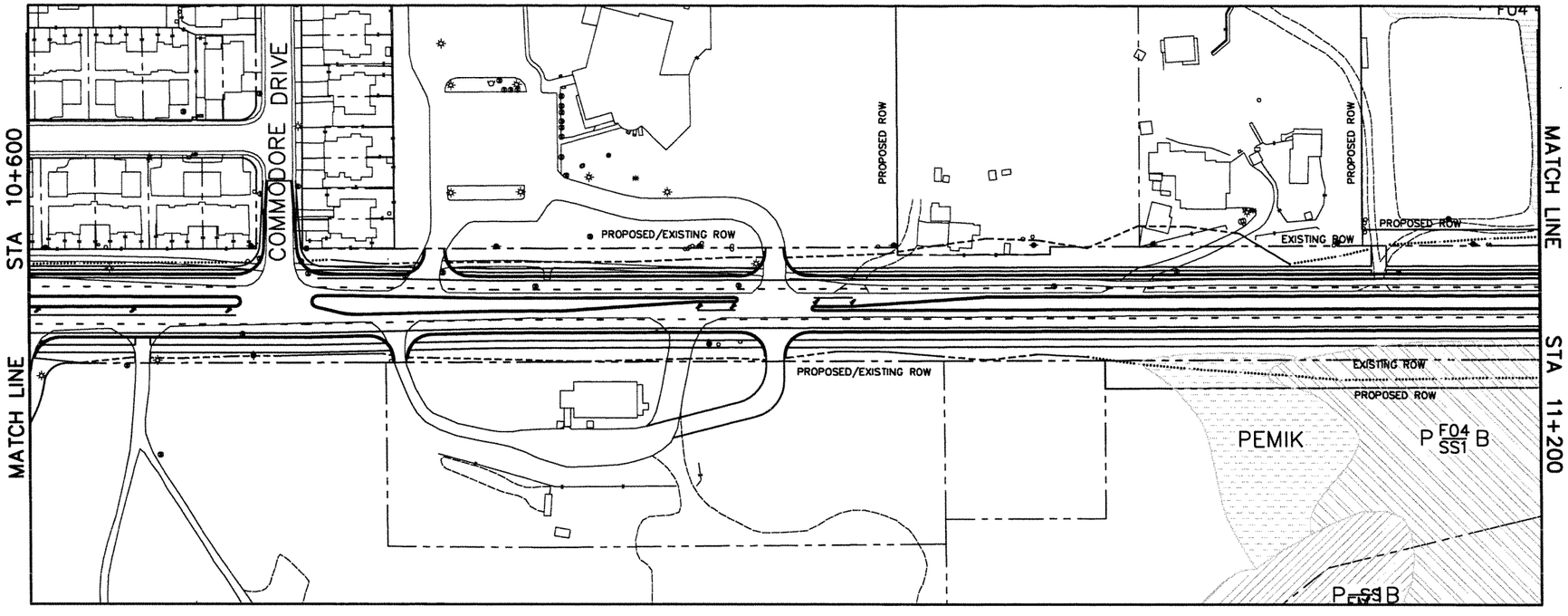


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

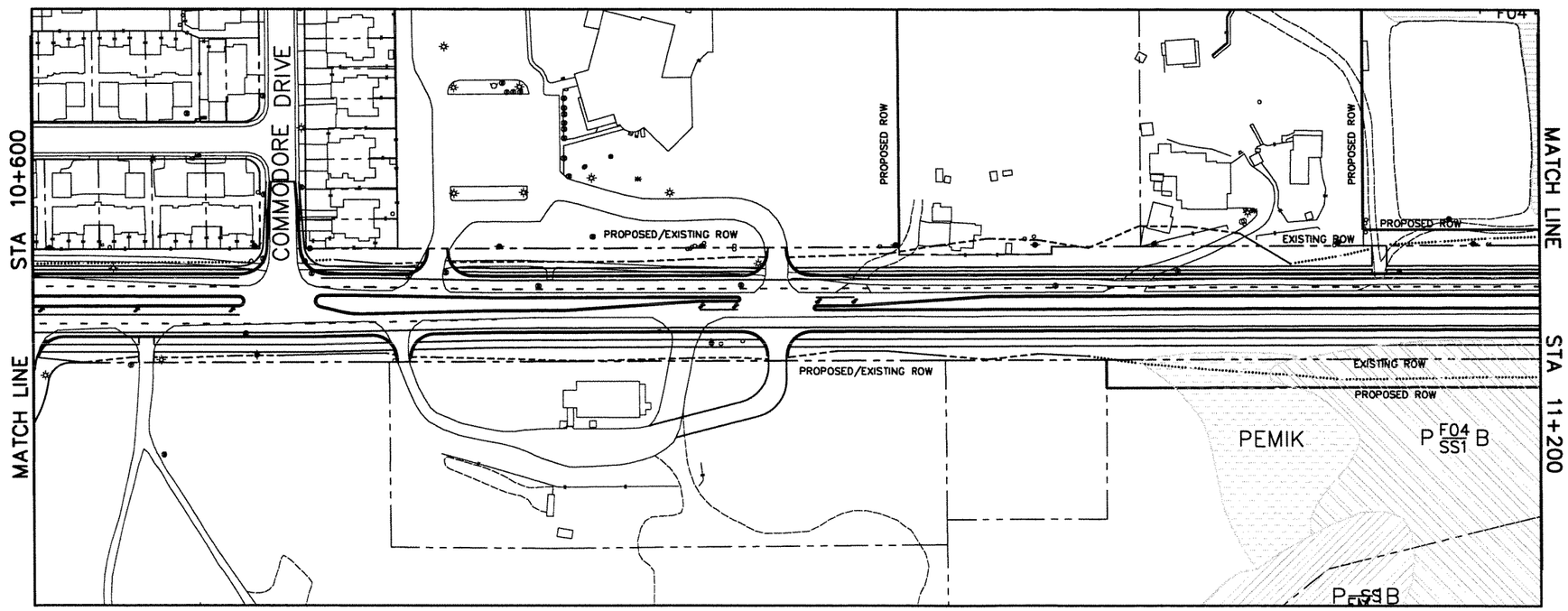
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 10+000 TO STA 10+600



ALTERNATIVE 1



ALTERNATIVE 2

N

FIGURE 9

STATE	YEAR
ALASKA	2002

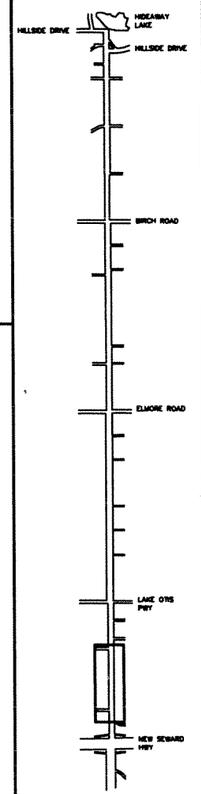
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

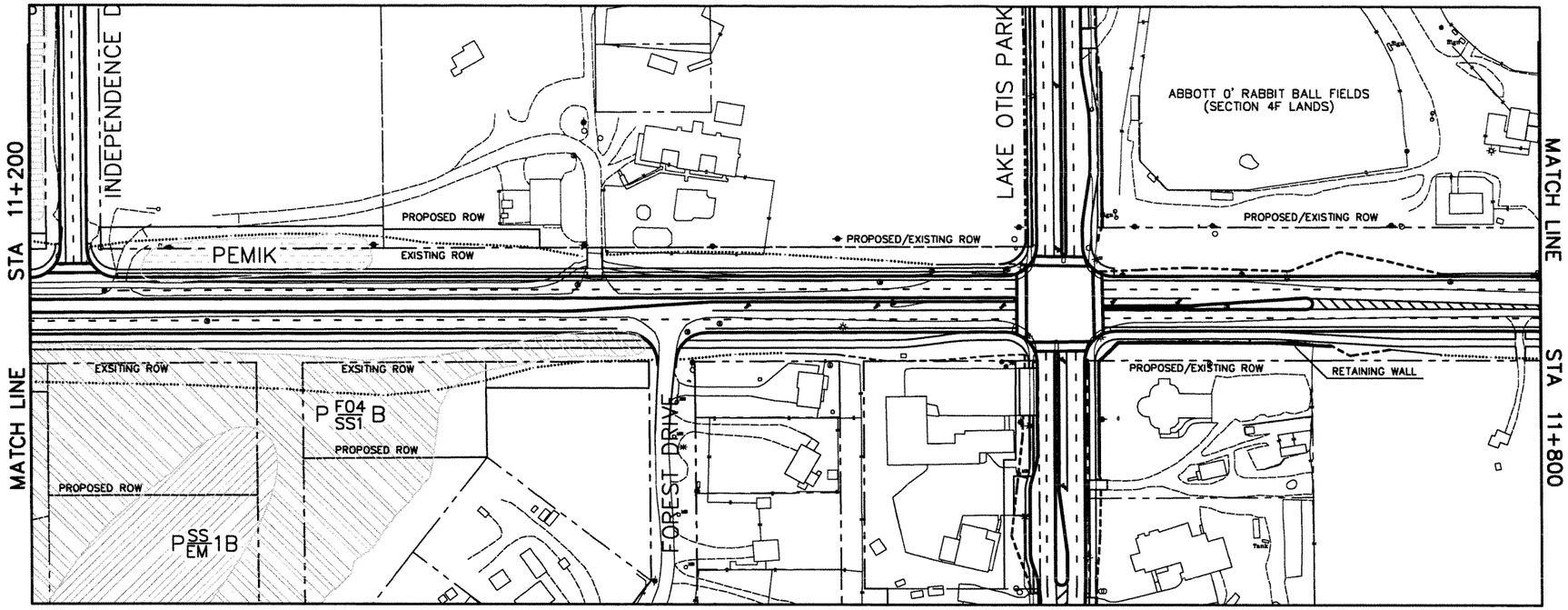


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

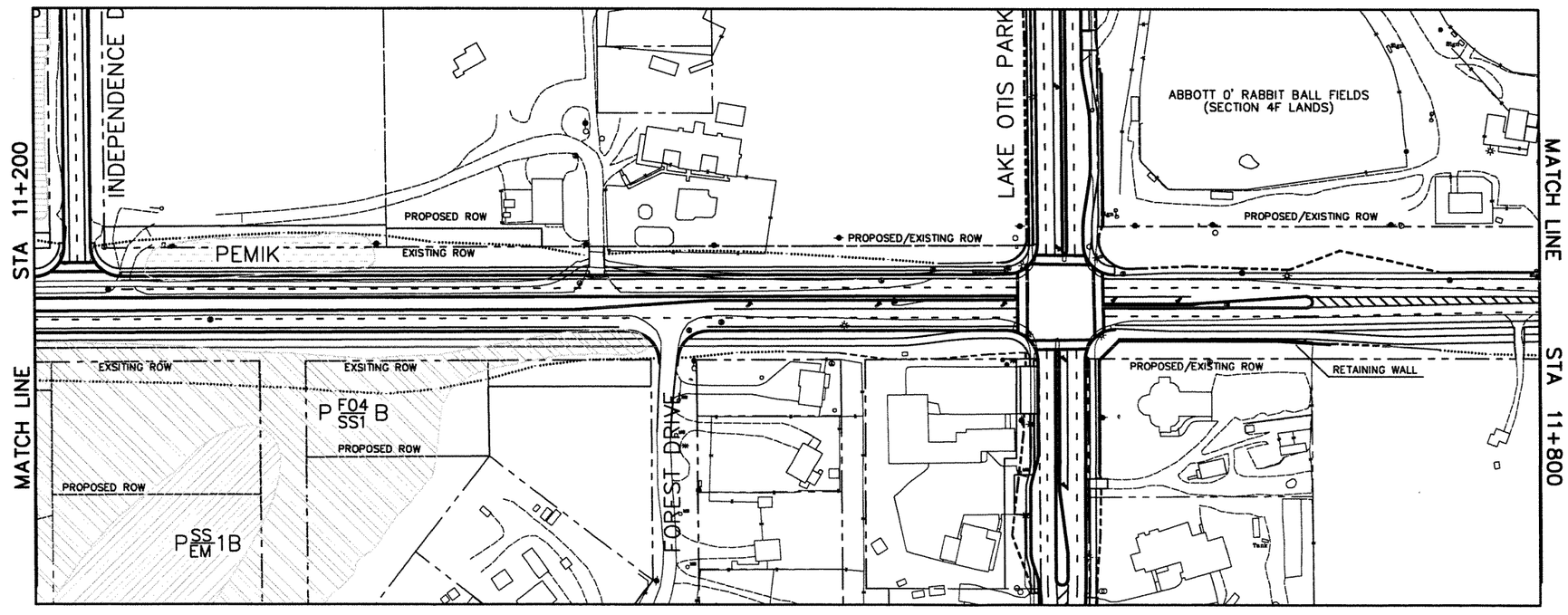
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 10+600 TO STA 11+200



ALTERNATIVE 1



ALTERNATIVE 2

N

FIGURE 10

STATE	YEAR
ALASKA	2002

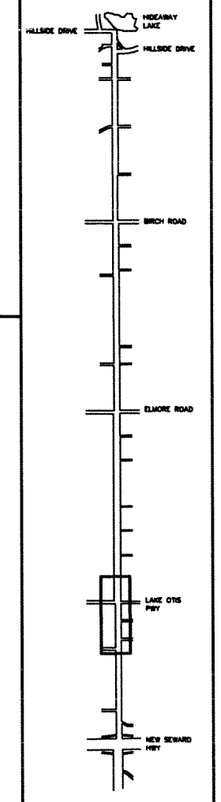
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

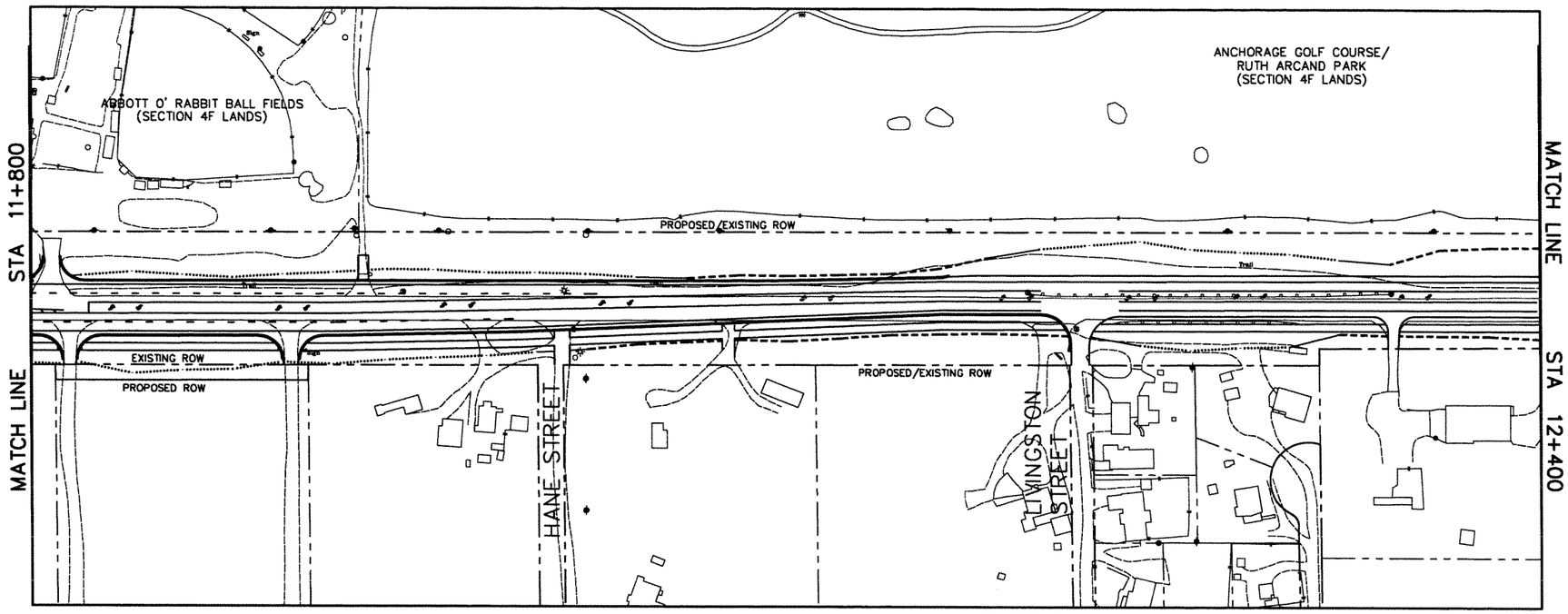


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

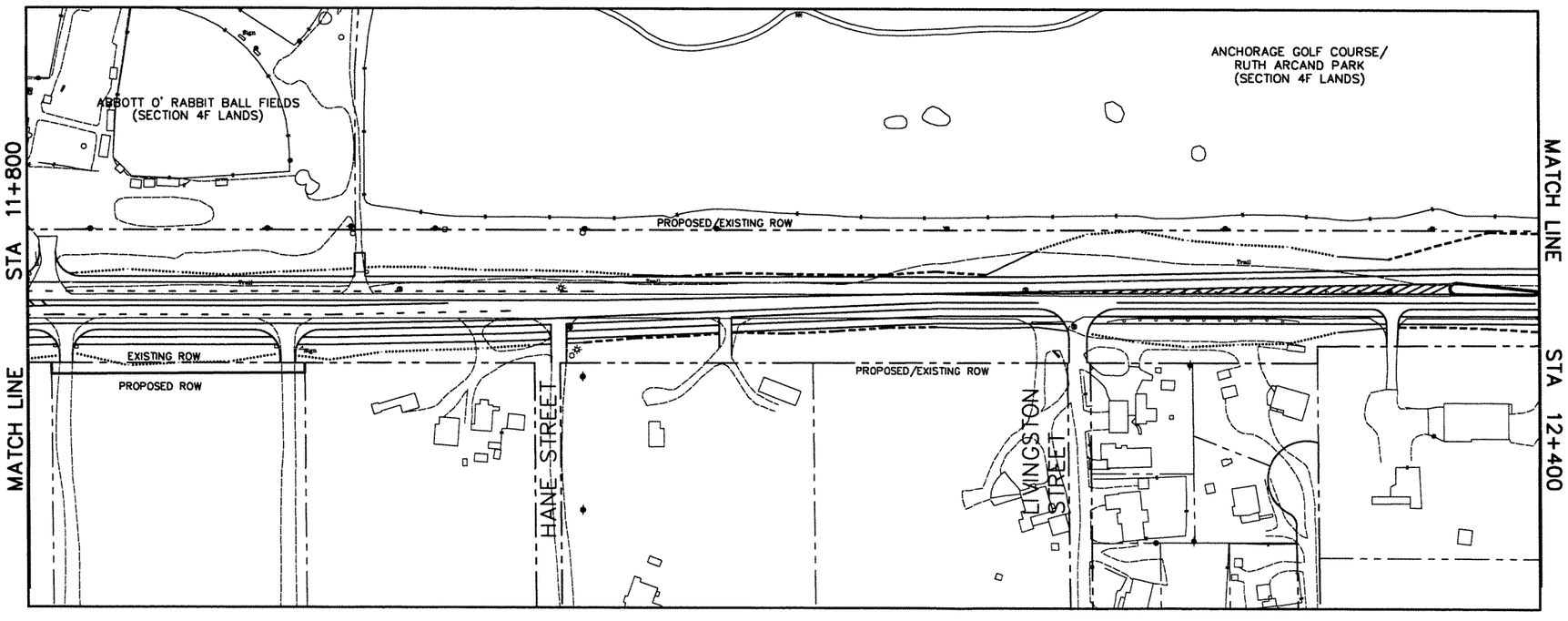
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 11+200 TO STA 11+800



ALTERNATIVE 1



ALTERNATIVE 2

FIGURE 11

STATE	YEAR
ALASKA	2002

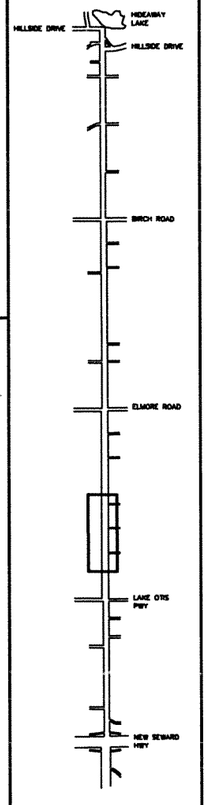
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

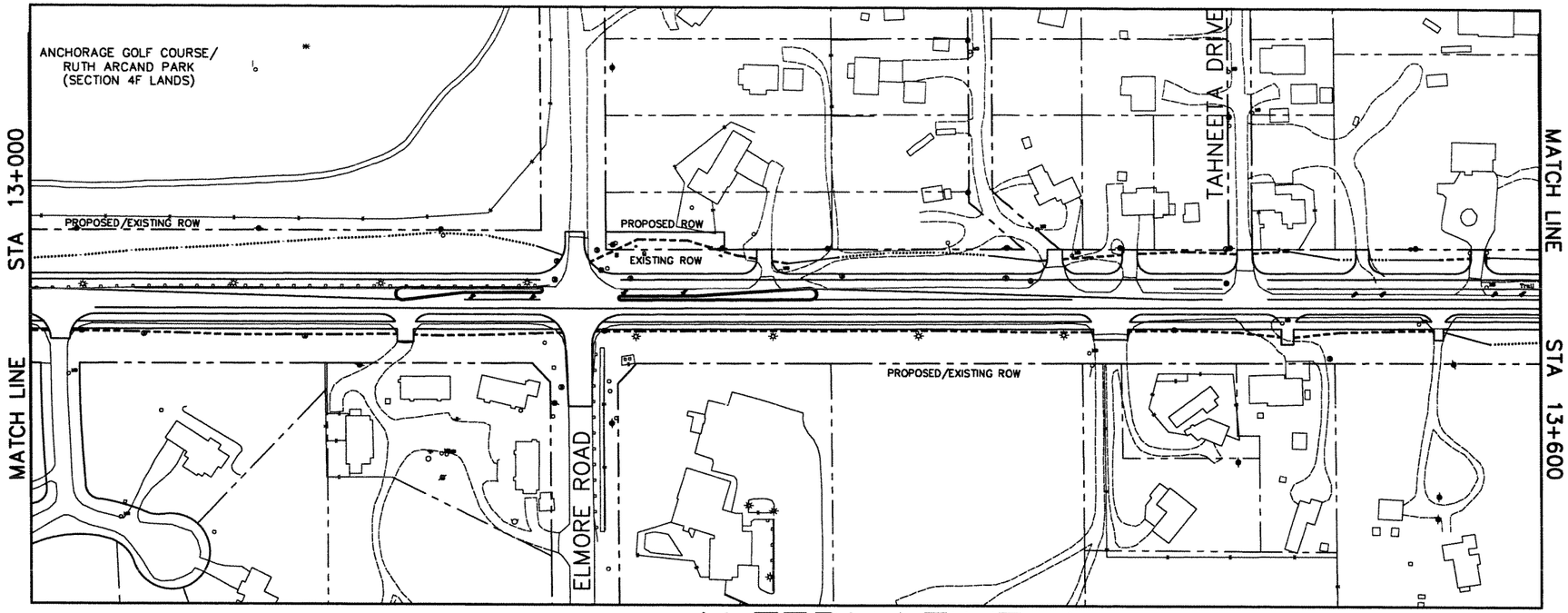


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 11+800 TO STA 12+400



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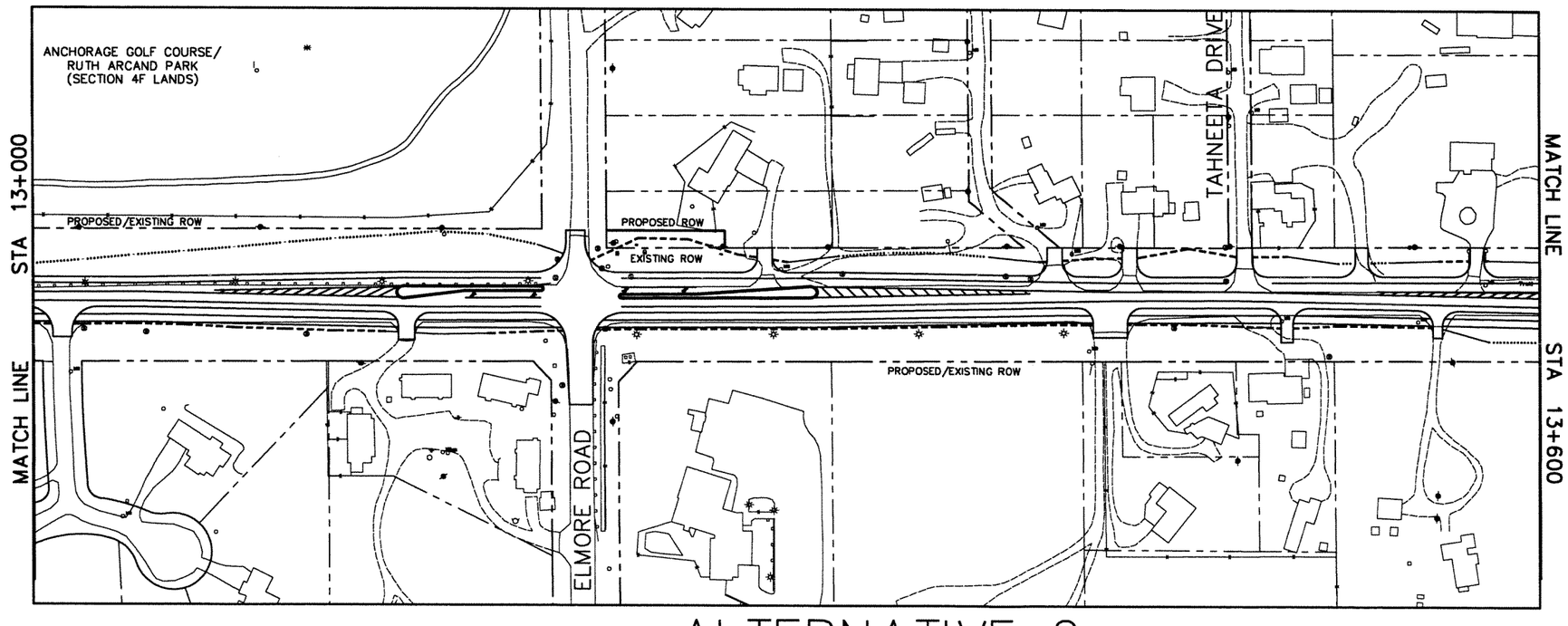


ALTERNATIVE 2

FIGURE 13

STATE	YEAR
ALASKA	2002

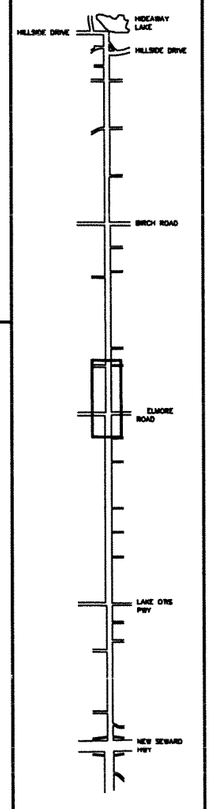
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

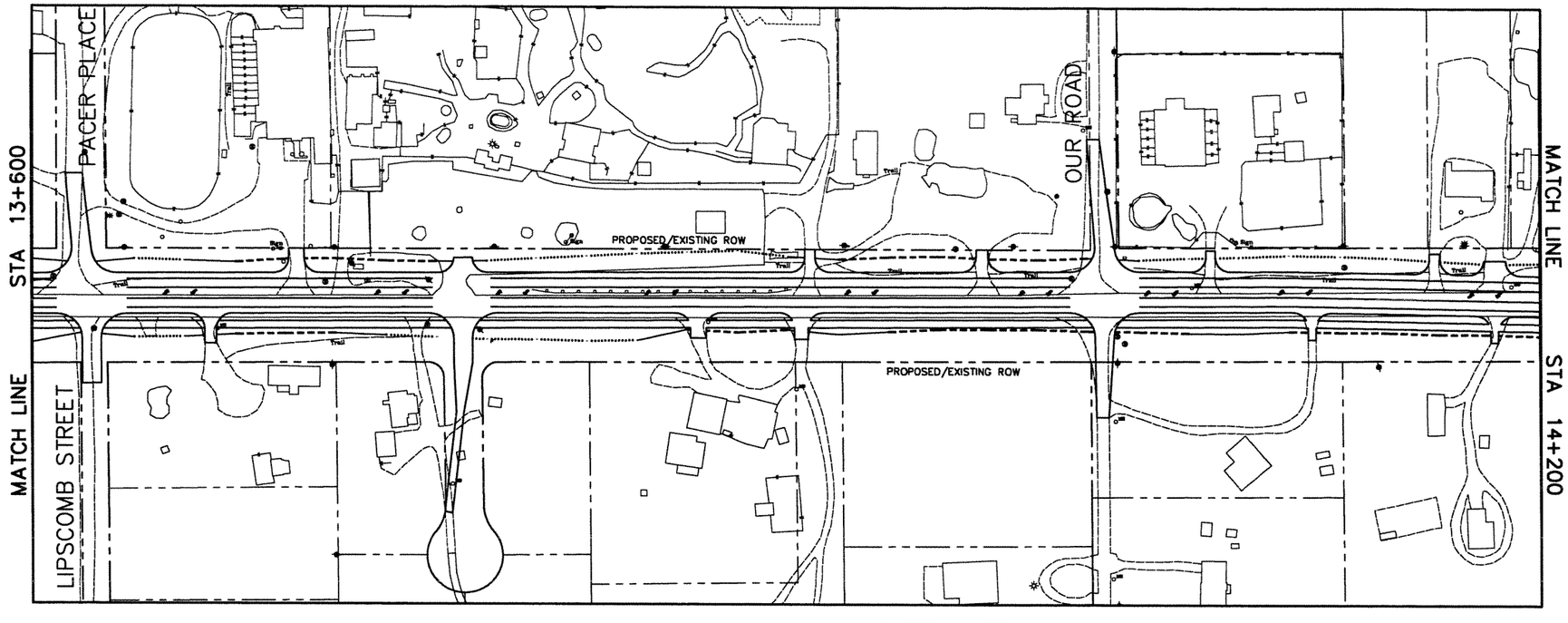


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 13+000 TO STA 13+600



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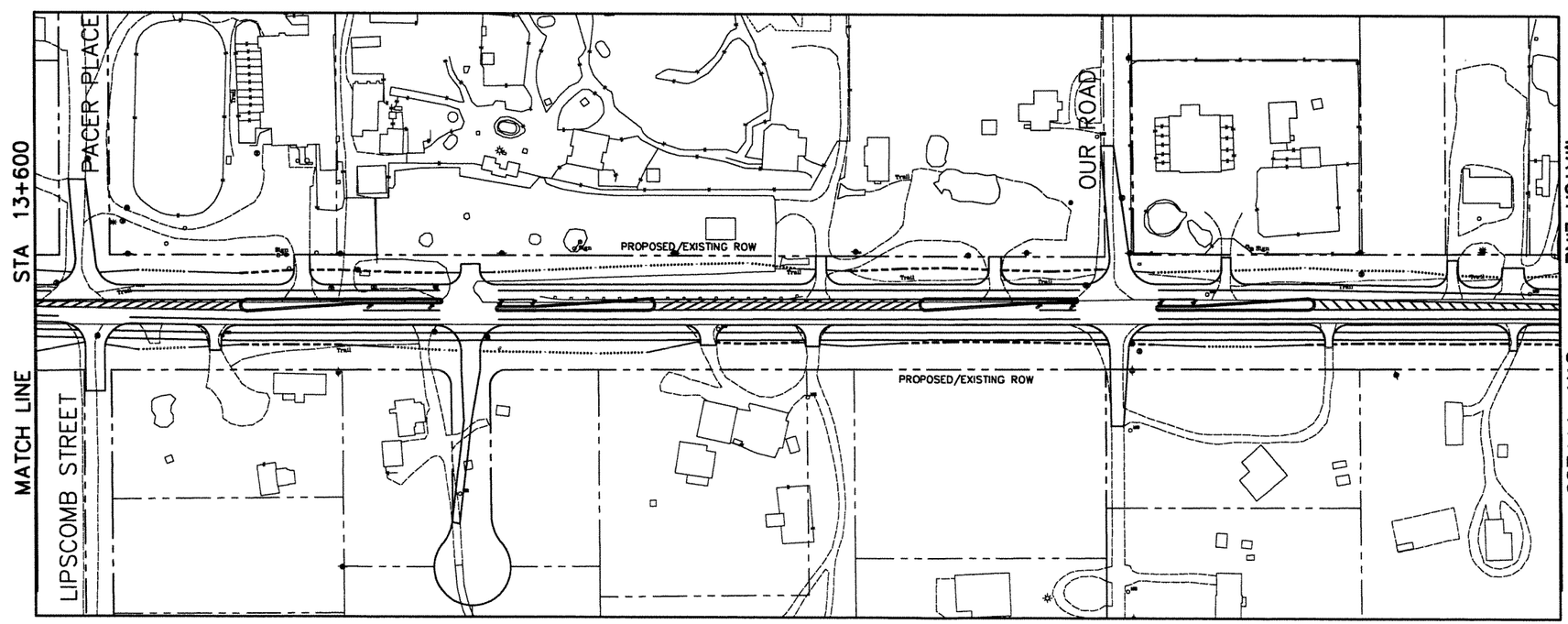


ALTERNATIVE 2

N

FIGURE 14

STATE	YEAR
ALASKA	2002

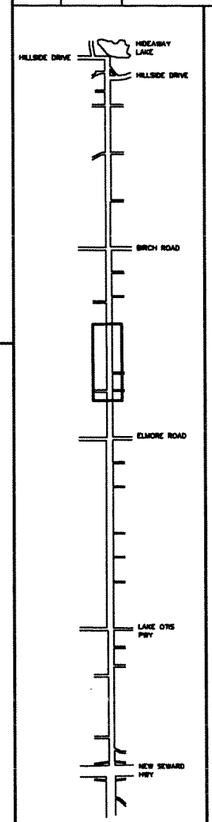
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

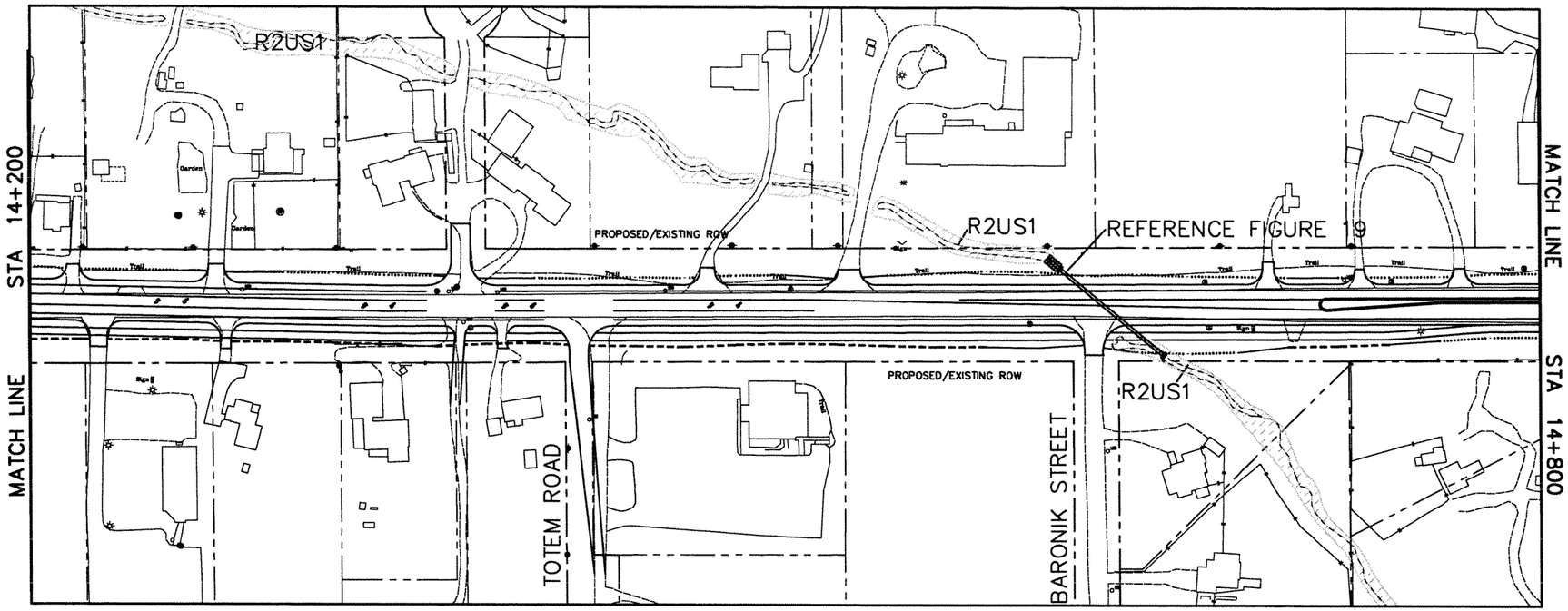


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 13+600 TO STA 14+200



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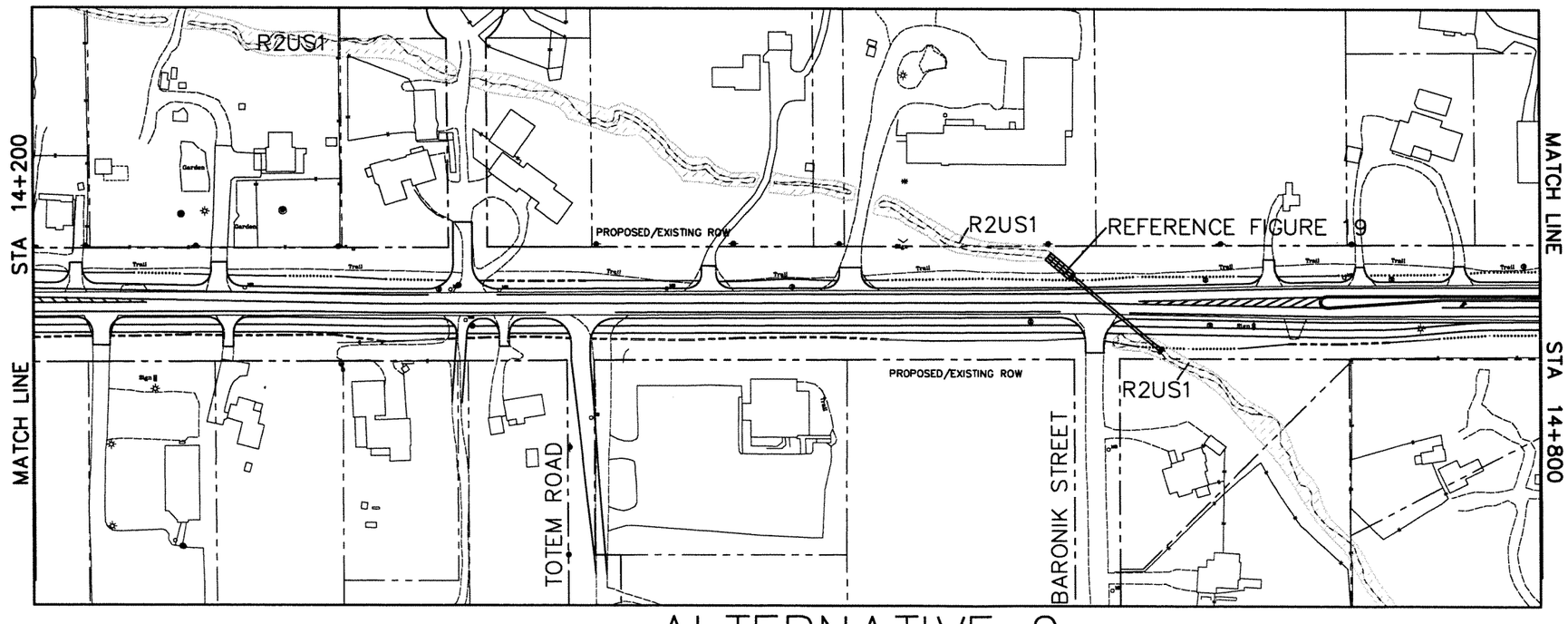


ALTERNATIVE 2

N

FIGURE 15

STATE	YEAR
ALASKA	2002

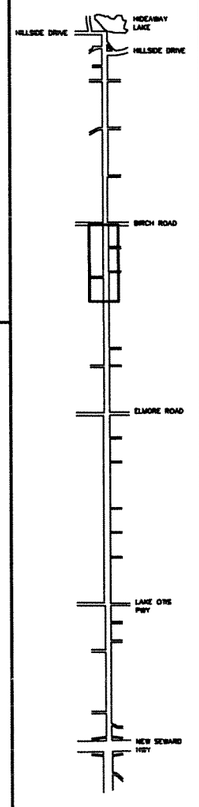
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

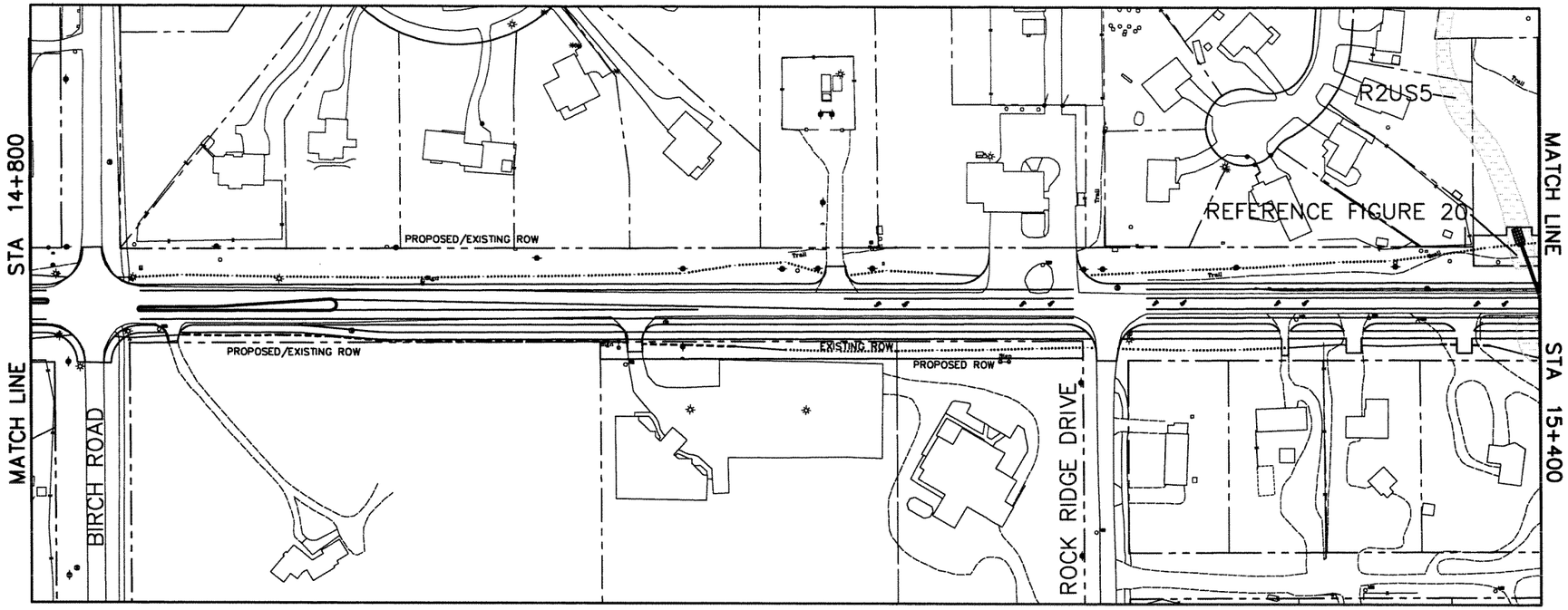


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

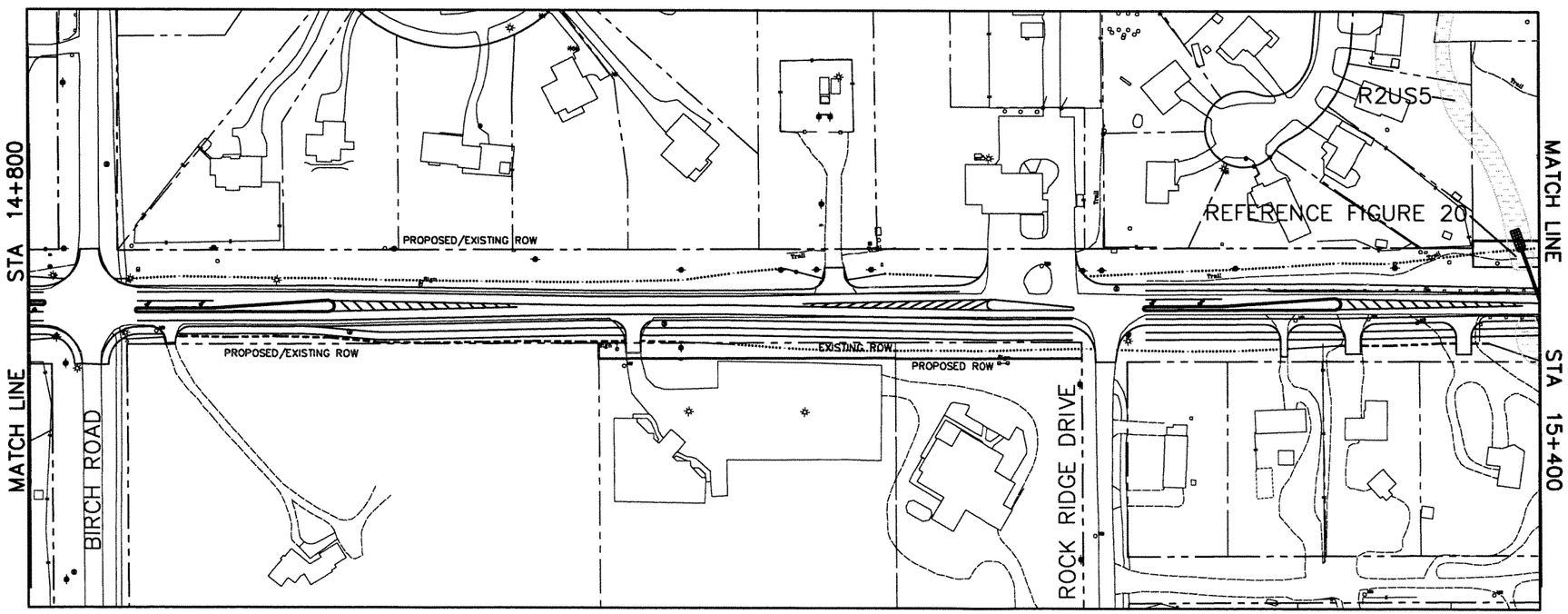
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 14+200 TO STA 14+800



ALTERNATIVE 1



ALTERNATIVE 2

N

FIGURE 16

STATE	YEAR
ALASKA	2002

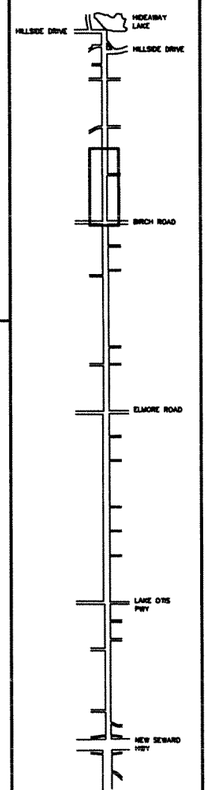
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

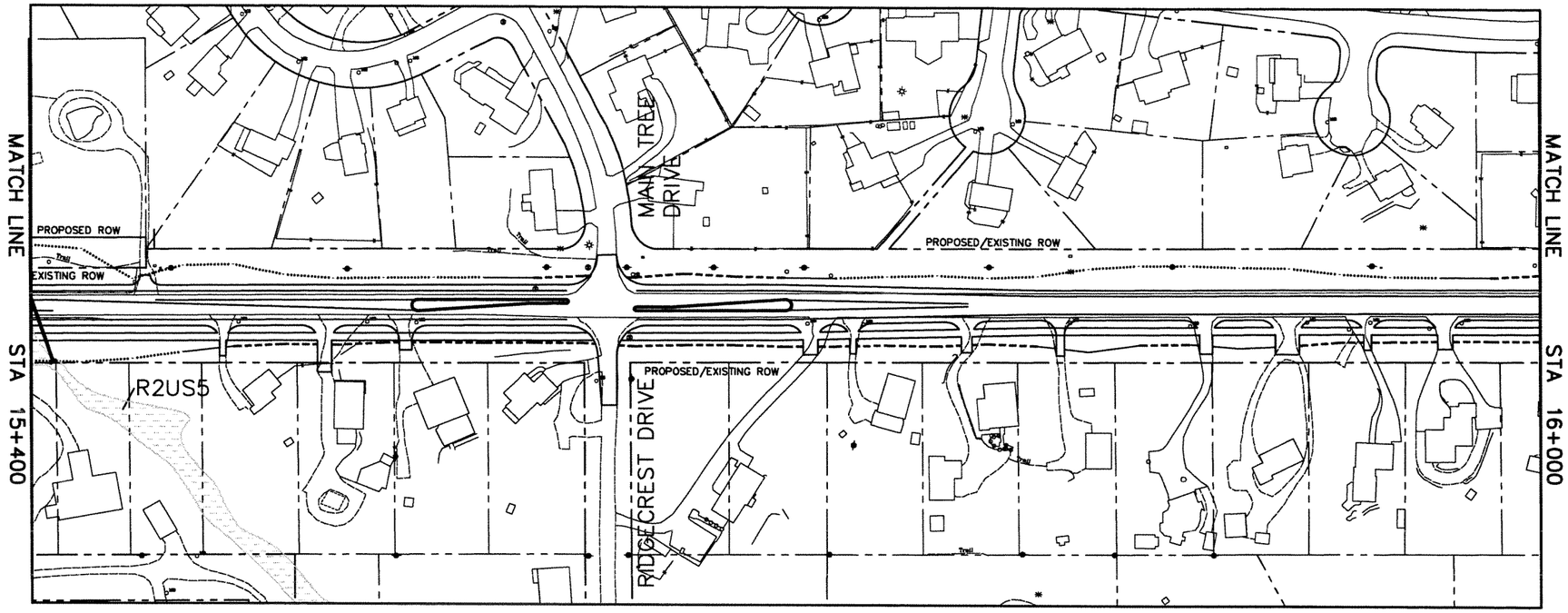


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

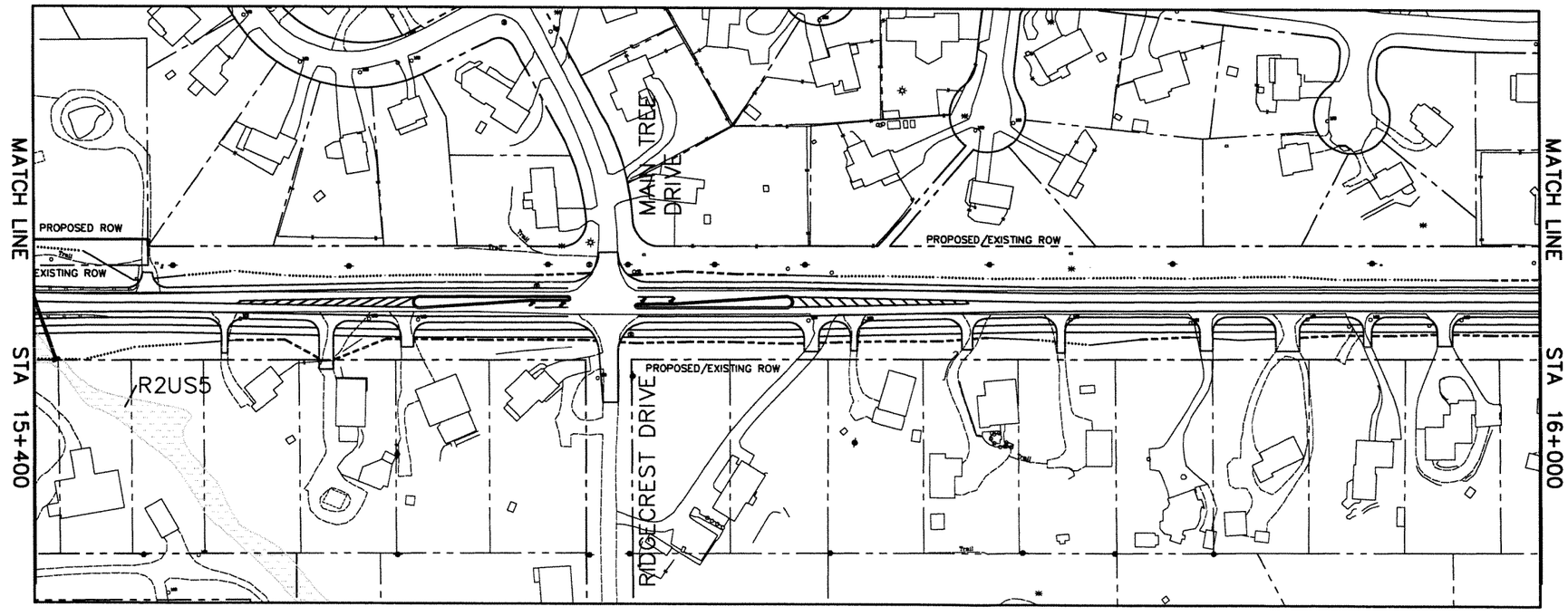
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA14+800 TO STA 15+400



ALTERNATIVE 1



ALTERNATIVE 2

N

FIGURE 17

STATE	YEAR
ALASKA	2002

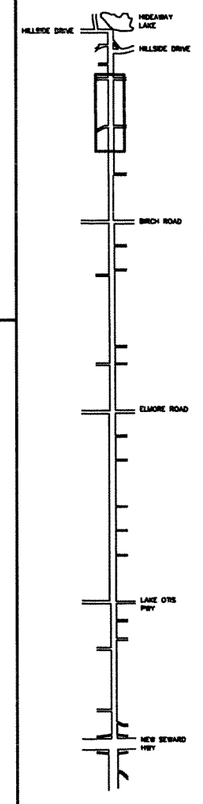
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

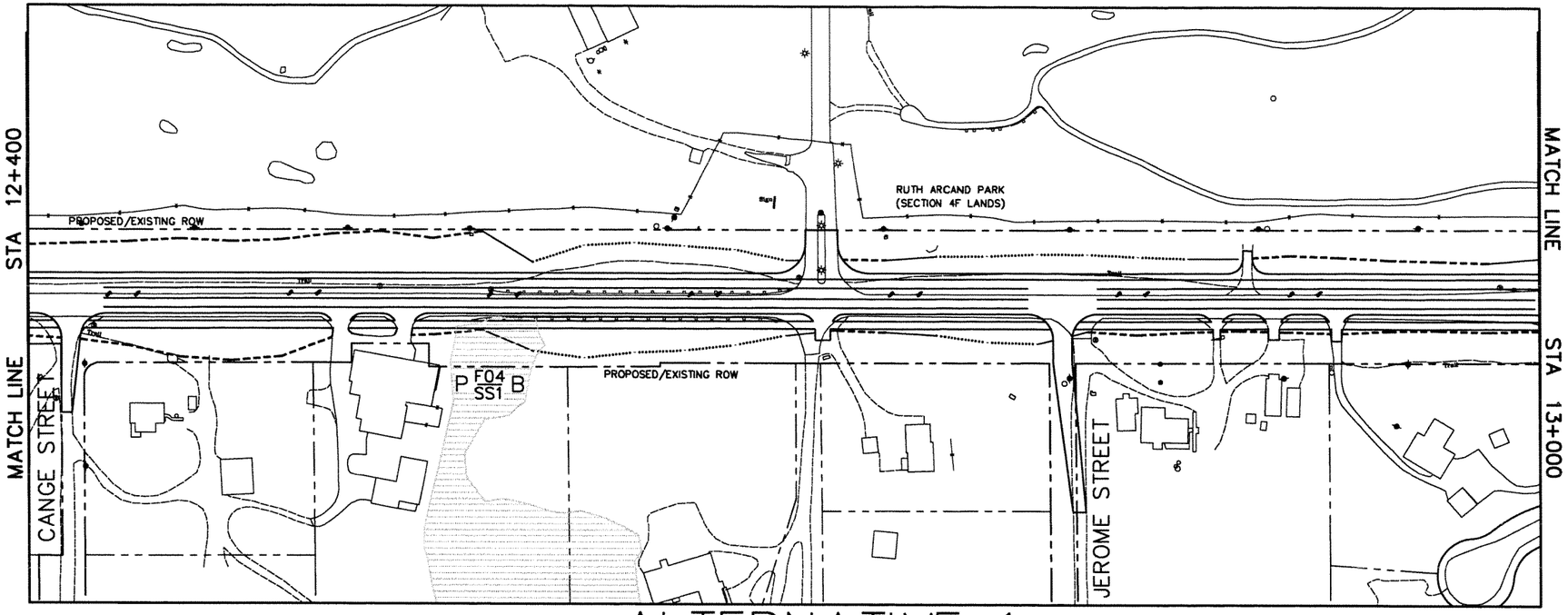


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

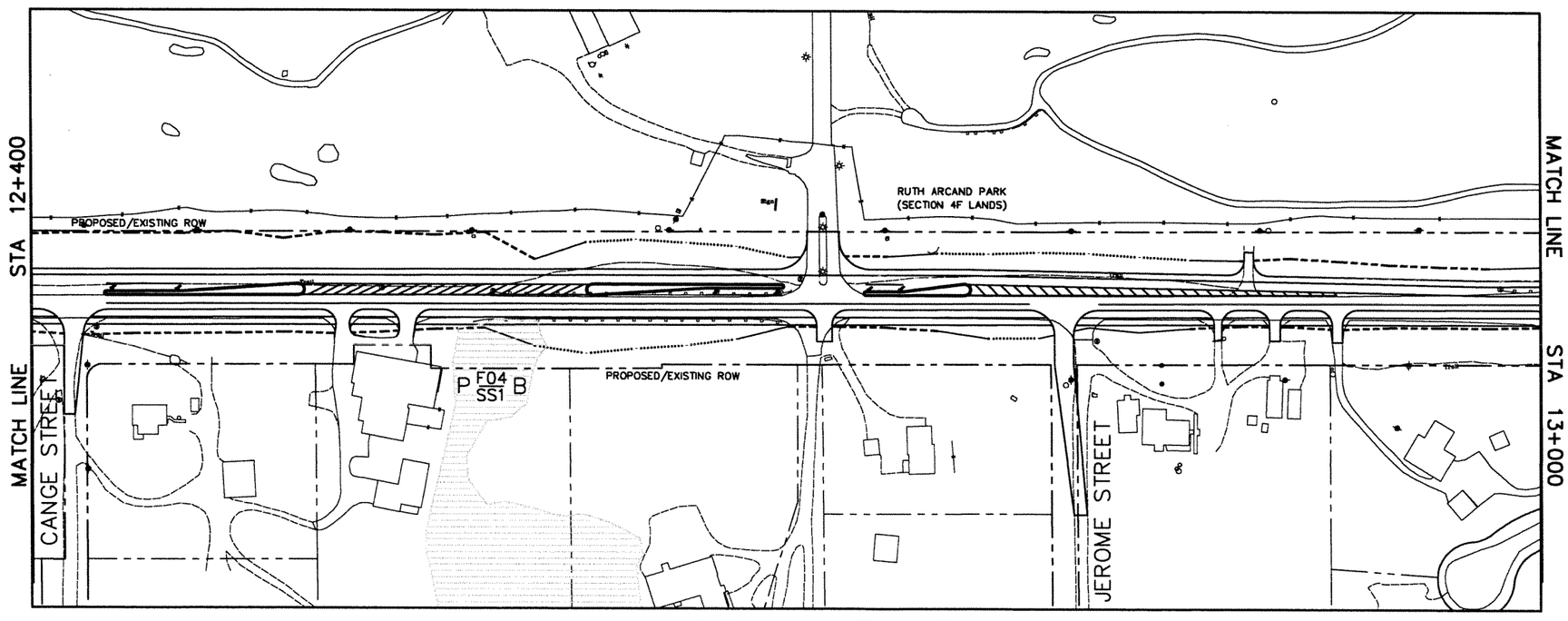
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 15+400 TO STA 16+000



ALTERNATIVE 1



ALTERNATIVE 2

N

FIGURE 12

STATE	YEAR
ALASKA	2002

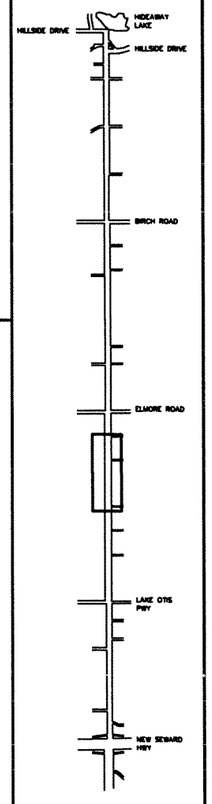
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

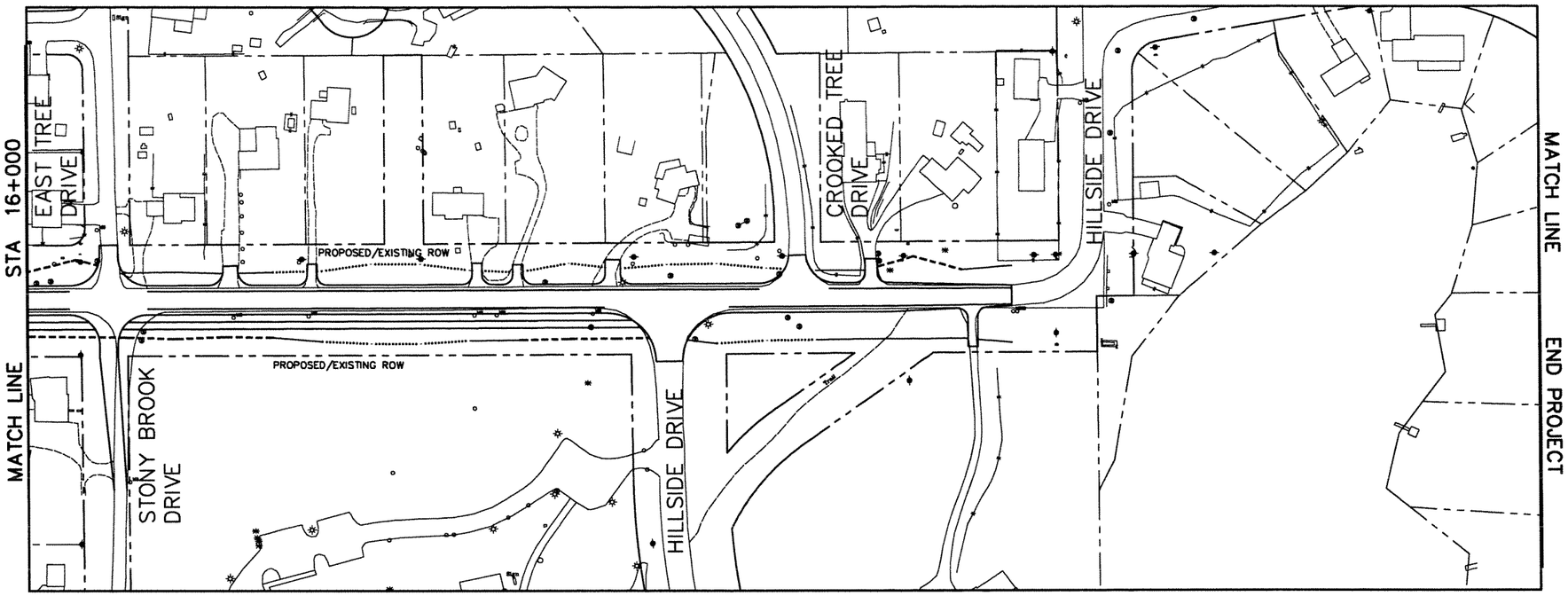


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

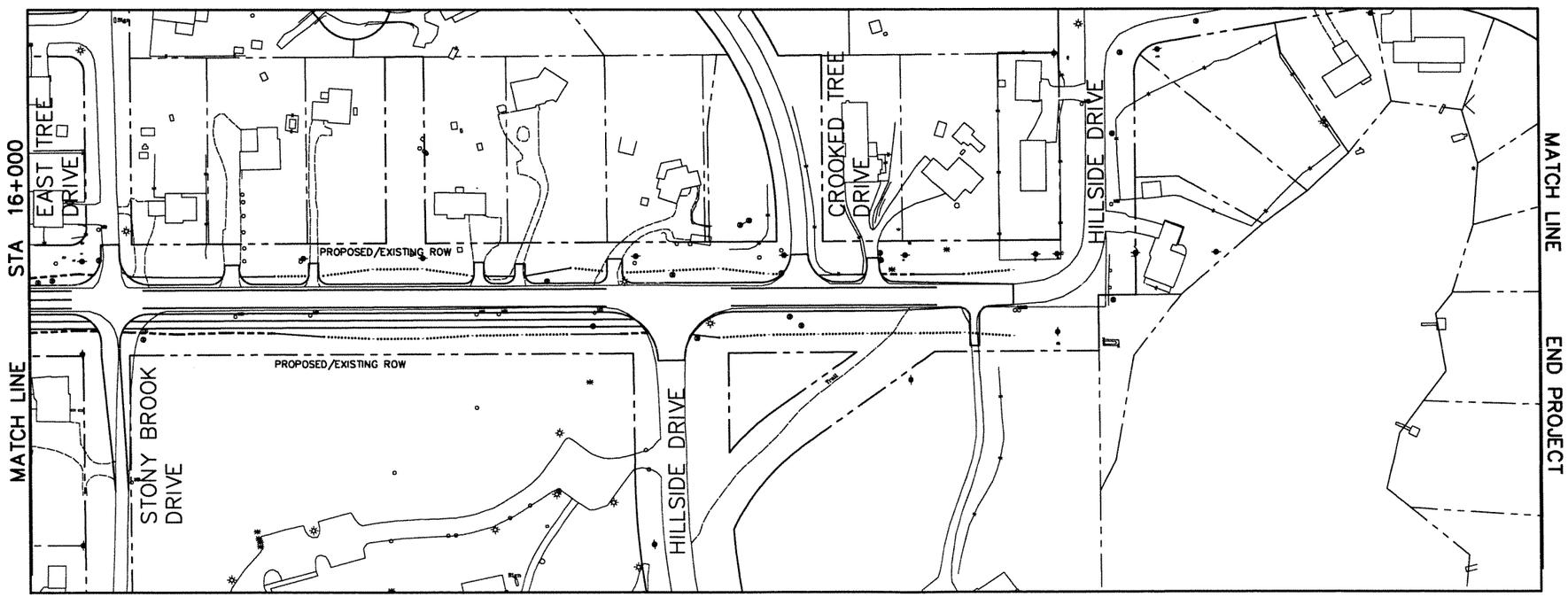
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 12+400 TO STA 13+600



ALTERNATIVE 1



ALTERNATIVE 2

N

FIGURE 18

STATE	YEAR
ALASKA	2002

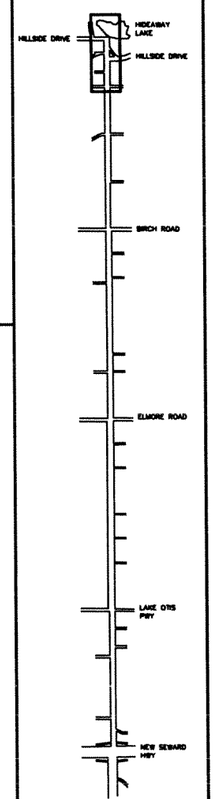
PROJECT DESIGNATION
STP-0512(5)/53935

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

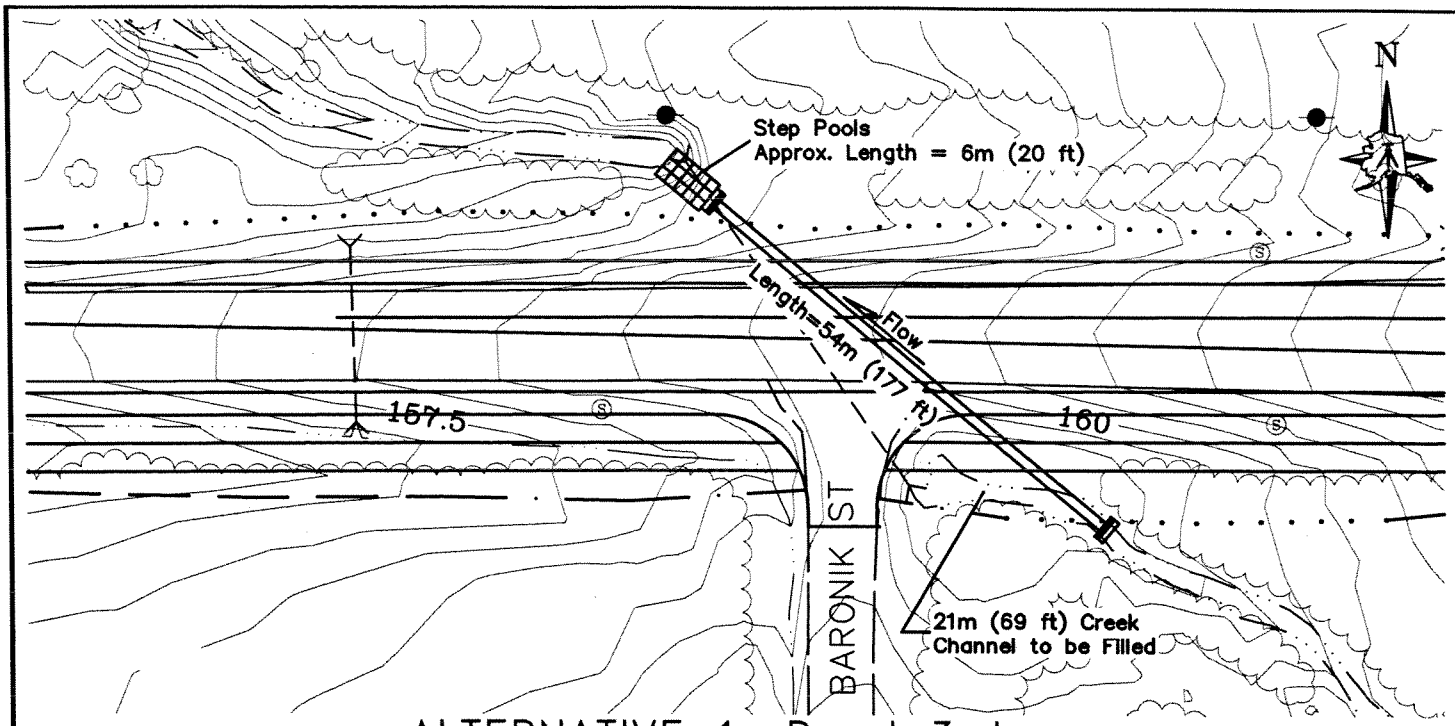


O'MALLEY ROAD
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

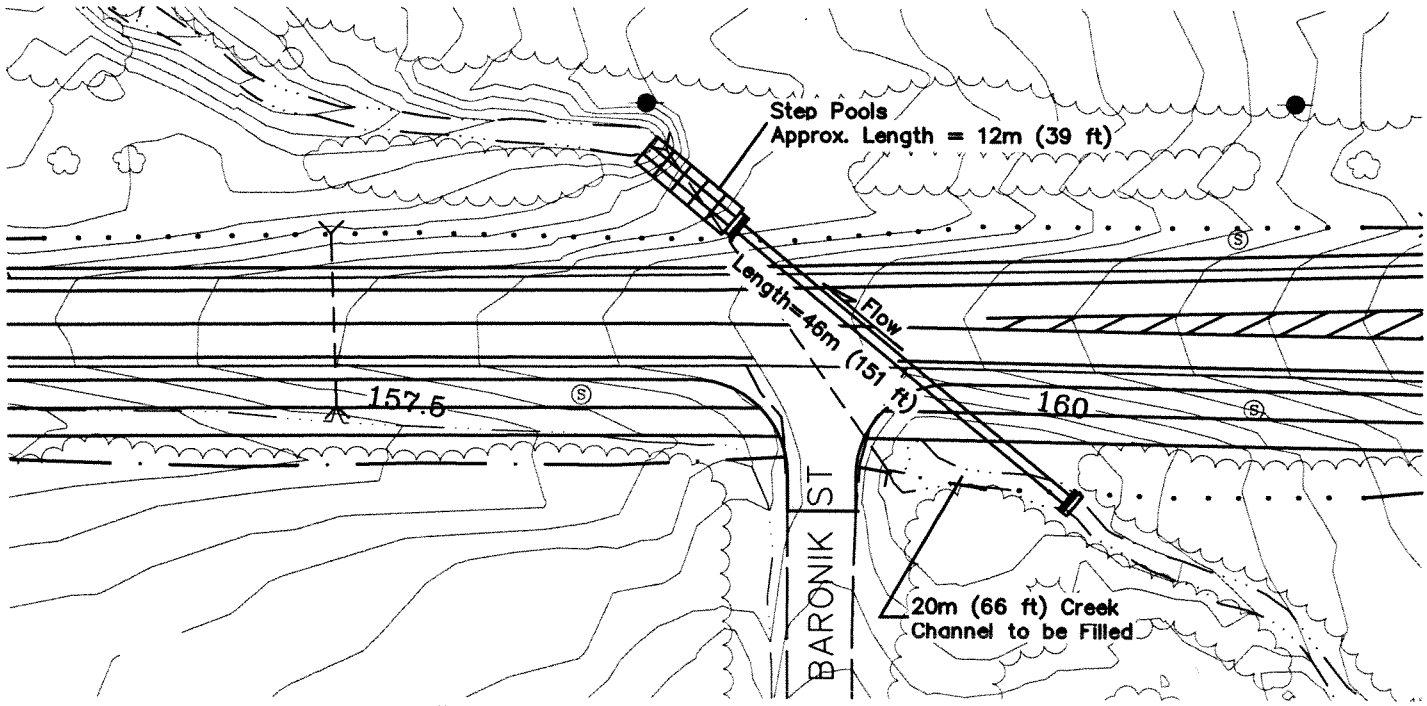
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

ALTERNATIVE ROW
PLAN SHEET

STA 16+000 TO EOP



ALTERNATIVE 1: Rural 3-Lane
Lake Otis to Hillside (Preferred Alternative)



ALTERNATIVE 2: Rural 2-Lane
Lake Otis to Hillside

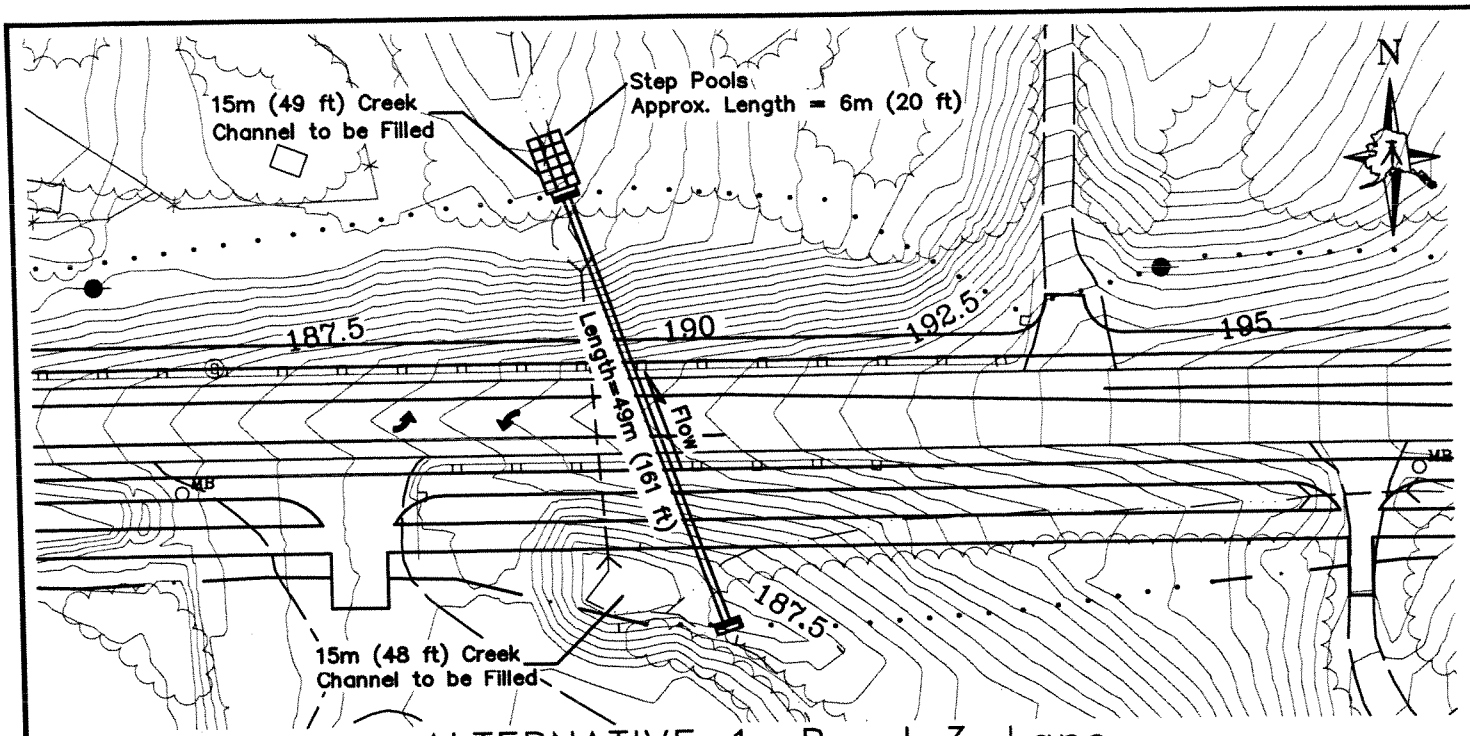
Legend

- Cut Limits
- Fill Limits
- Transition Limits
- Proposed Culvert
- Proposed Headwall
- Existing Culvert

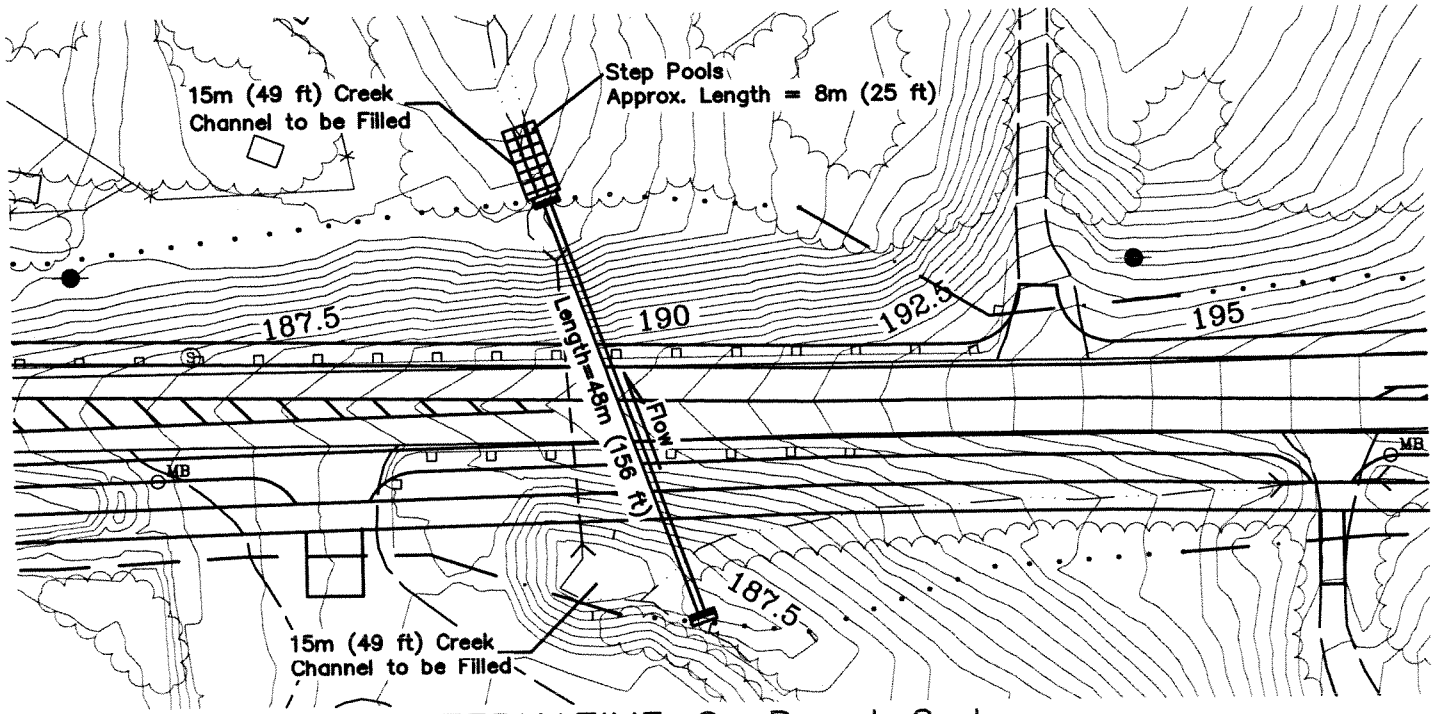
O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

PROPOSED CULVERT INSTALLATION
LITTLE CAMPBELL CREEK

FIGURE 19



ALTERNATIVE 1: Rural 3-Lane
Lake Otis to Hillside (Preferred Alternative)



ALTERNATIVE 2: Rural 2-Lane
Lake Otis to Hillside

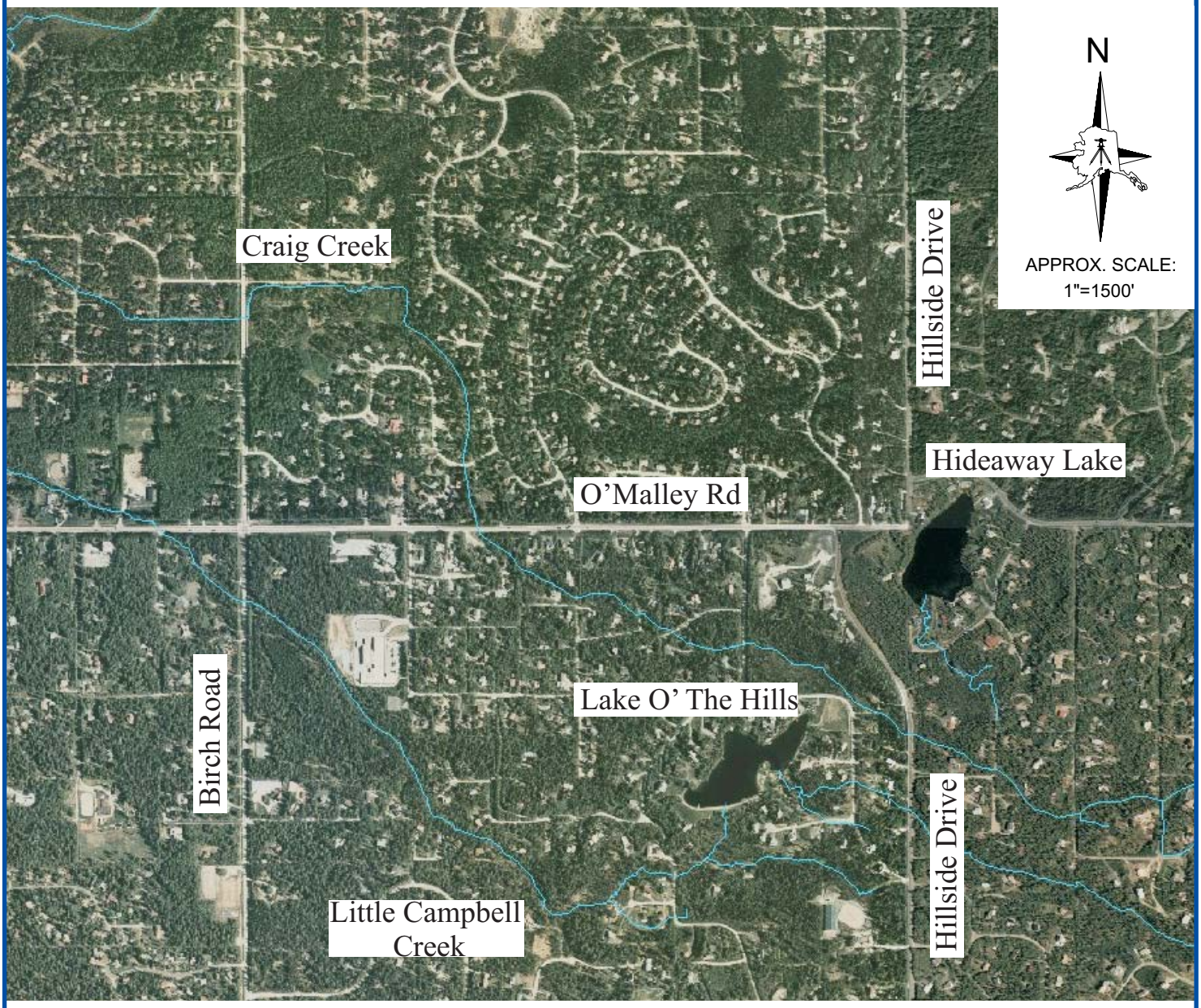
Legend

- Cut Limits
- Fill Limits
- Transition Limits
- Proposed Culvert
- Proposed Headwall
- Existing Culvert

O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE

PROPOSED CULVERT INSTALLATION
CRAIG CREEK

FIGURE 20



Source: MOA Watershed Map

Legend

Creek/Stream

Lake

O'MALLEY ROAD RECONSTRUCTION
NEW SEWARD HIGHWAY TO HILLSIDE DRIVE
PROJECT NO. STP-512(5)/53935

LITTLE CAMPBELL CREEK/ CRAIG CREEK DRAINAGE

FIGURE 21