

EXECUTIVE SUMMARY

137 Avenue – 215 Street Concept Planning Study

ES 1.0 Introduction

The 137 Avenue-215 Street Concept Planning study was undertaken to update the arterial roadway network in the vicinity of Big Lake. The update was required in light of changes in the transportation network in the northwest part of Edmonton and southwest part of St. Albert. In particular, the north Anthony Henday project along with development of Ray Gibbon Drive in St. Albert have resulted in changes in the arterial network that differ from those anticipated in the 1991 Big Lake Area Structure Plan (ASP). In addition to changes in the transportation network in this part of the City and region, planning has also been undertaken towards the creation of Lois Hole Centennial Provincial Park (LHCPP) along the shore of Big Lake within Edmonton and St. Albert.

Recent land development interest and activity in the Big Lake area led to amendment of the Big Lake Area Structure Plan (Bylaw 14802) on January 14, 2008 and approval of Neighbourhood 1 in the northwest part of the ASP area. City Council's approval of the Area Structure Plan Amendment acknowledged this Concept Planning Study as pending and having effect on the final alignment of 215 Street and 137 Avenue.

ES 2.0 Study Scope and Objectives

The main purpose of this concept planning study was to establish the final alignment of and right of way for 137 Avenue / 215 Street to enable detailed subdivision planning and design by landowners and developers. Important considerations during the course of the study included:

- Impact to development plans in the study area,
- Implementation and staging of roadway development,
- Environmental impacts and mitigation related to large animal corridors, the ecology of Big Lake and the City of Edmonton's River Valley Bylaw,
- Development costs associated with land acquisition for LHCPP, and
- Public feedback concerning development in the Big Lake area.

ES 3.0 Traffic Forecasts and Analysis

Traffic volumes for the study area are based on the City of Edmonton's Long-Term Regional Travel Model (RTM) run as well a traffic forecasts and related analysis carried out by area developers in support of Neighbourhood 1. Traffic analysis undertaken for this study was used to determine roadway lane requirements, intersection configurations and channelization requirements which were then reflected in the concept plans.

The analysis undertaken for the project indicated a requirement for a section of six-lane urban roadway immediately north of Yellowhead Trail to the first neighbourhood collector roadway. North of the first collector roadway, 215 Street transitions to a four-lane urban arterial cross-section that continues to the north end of 215 Street. The roadway then reduces down to a two-

lane rural arterial cross-section and curves toward the east along a gentle curvilinear alignment as 137 Avenue. 137 Avenue continues as a two-lane rural roadway paralleling the east shoreline of Big Lake and into the City of St. Albert. Both 215 Street and 137 Avenue are expected to operate at a satisfactory level of service for the long term.

ES 4.0 Geometric Design Criteria

The concept plans were developed in accordance with City of Edmonton arterial roadway design standards and the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads. Design speeds appropriate for a posted speed of 60 km/h (215 Street) and 50 km/h (137 Avenue) were utilized for the corridor. The lower design speed for 137 Avenue was selected in recognition of the park setting adjoining 137 Avenue and the likelihood of pedestrians wishing to access the LHCPP north of 137 Avenue.

In addition to a different design speed, the concept plans reflected different cross-section standards for each of 215 Street and 137 Avenue respectively. In light of the highly urbanized environment that will evolve along both sides of 215 Street, a standard urban cross-section was chosen. For 137 Avenue, however, a rural cross-section was chosen to reflect the more park-like setting and the fact that the roadway is flanked by urban development on only one side (south side).

ES 5.0 Recommended Concept Plans

ES 5.1 215 Street

The plans for 215 Street follow the concept originally envisioned in the 1991 Big Lake ASP. (Office Consolidation, November 2005). One modification to the 1991 plan consists of reorienting the intersection immediately south of 123 Avenue from a typical all directional intersection in place of the off-set intersections previously identified. This change was made in order to eliminate overlapping, conflicting left turn maneuvers and to optimally locate the intersection to reduce earthwork requirements. A similar modification was made to Collector 1, east and west of 215 Street.

The rolling topography that characterizes the study area imposed unique challenges to roadway planning when compared with much of the Edmonton region. The recommended concept plan for 215 Street focused on developing a vertical alignment that would assure acceptable sight distances that would provide for safe traffic operation, particularly at intersections, while minimizing grading requirements to the fullest extent feasible. This was accomplished by designing moderately flat grades in combination with crest vertical curves that result in desirable sight distances. The proximity of 215 Street to Big Lake also introduced the need to provide a wildlife crossing. The location of an existing major wildlife corridor was coordinated with the profile design of the roadway to create a wildlife underpass approximately 1300m north of Yellowhead Trail.

ES 5.2 137 Avenue

The concept plans for the 137 Avenue portion of the study were influenced by a proposal to

develop LHCPP adjacent to the study area. Planning criteria included:

- The road location is to be situated in a manner that forms a south boundary line of the proposed park,
- Consider a list of Valued Environmental Components to assist with locating the road, and
- Engage stakeholders and the public to provide input to the selection process.

Numerous locations for the 137 Avenue were assessed. The chosen route provides for a 100 m setback from top of bank on the westerly portion of the alignment. Near the center of this alignment, a wetland area is impacted by the road location. The impact has been minimized through deliberate horizontal and vertical choices to avoid the boundary of the wet area as much as feasible. As the route approaches the Edmonton/St. Albert boundary, it matches the location selected by the City of St. Albert. The City of Edmonton and the City of St. Albert worked collaboratively to arrive at a mutually agreeable alignment at the boundary of both jurisdictions.

ES 6.0 Stormwater Management plan

Stormwater roadway runoff was estimated and an appropriate stormwater management plan was developed to inform future planning and design activities as well as costing of the roadway construction.

ES 6.1 215 Street

Along 215 Street, an urban cross-section with storm sewer is proposed. An urban cross-section is consistent with the urban land use plan proposed in the Big Lake ASP. The roadway storm sewers would discharge into a future local storm system west of 215 Street, and runoff would be managed by two proposed storm ponds prior to controlled discharge into Big Lake.

ES 6.2 137 Avenue Relocation from 215 Street to City Boundary

137 Avenue will be adjacent to LHCPP, and bordered on the south and east by future development that will likely be residential. As such, it is proposed to have a rural cross-section, with swales carrying runoff to several storm ponds. A portion of the road may utilize the West Pond from the Big Lake Neighbourhood One NDR. Other storm pond locations were determined based on road vertical alignment and existing topography, while taking into account existing natural drainage courses and low areas. Where topographically feasible, Storm Water Management Facilities (SWMF's) will be located on the opposite side of the road from Big Lake, to provide as much quality treatment as possible prior to discharge towards the lake. Where possible, existing drainage courses will be used to convey stormwater at a controlled rate from the storm ponds into Big Lake. At the time of detail design, drainage course conditions will need to be assessed to determine if any upgrading or erosion protection will be required.

ES 7.0 Geotechnical Study

A desktop geotechnical study was carried out as part of the concept planning study. A review of

available geologic mapping for the study area was supplemented with field reconnaissance.

215 Street is presently a two lane, paved rural road. The terrain is rolling with low lying, poorly drained areas. The original road construction appears to have consisted of relatively minor cuts and fills.

The planned location of 137 Avenue crosses generally well drained rolling terrain immediately south of Big Lake. Much of this terrain drains directly to Big Lake. A significant portion of this land has previously been cleared for agricultural and recreational purposes. The area includes a few small sparsely placed dugouts and several stands of trees left after clearing.

Terrain and other geotechnical factors expected to influence road design include:

- Soft soil conditions or peat deposits in low lying areas;
- Fill materials and disturbed surfaces;
- Drainage effects on Big Lake slope stability;
- Highly frost susceptible soils;
- Backslope stability;
- Erosion and sediment control; and
- Local availability of fill material.

The desktop geotechnical study was used to inform the planning and future detailed design of both 215 Street and 137 Avenue.

ES 8.0 Environmental Investigation

A detailed environmental investigation was carried out for this concept planning study. The study included extensive review of historical records, as well as field reconnaissance to aid in the identification of environmentally valuable features and conditions. The environmental investigation allowed the roadway planning to be adjusted to reflect and protect wildlife movements and to mitigate impacts to wetlands and to guide stormwater management plans.

ES 9.0 Public Consultation

A public involvement and stakeholder consultation program was undertaken to establish two-way communications, identify issues and concerns, and assist stakeholders to resolve issues. These consultation activities included both individual meetings and a public open house.

Individual meetings were scheduled with land owners or their representatives. Plans that were current at the time of the meetings were made available to the land owners. Through the course of discussions, comments and concerns were received and documented. Individual meetings included:

- Alberta Tourism, Parks, Recreation and Culture
- Rohit Group of Companies
- United Communities

The 1991 ASP alignment and an updated plan were presented to the public for comparison and comment. Public feedback was supportive of the Updated Plan by a wide margin. Many of the

issues discussed related to environmental concerns that needed to be addressed with either option. However, the proposed location of the Updated Plan was perceived as being more compatible with park development. Environmental issues that were discussed included: proposed land use; stormwater quality management; wildlife movement corridors, historic resource preservation, traffic volumes and recreational opportunities in the area.

ES 10.0 Implementation Costs

A concept level cost estimate (+/- 50%) was prepared for the construction of 137 Avenue and 215 Street. Based on current unit costs, the concept level estimate for the construction of 137 Avenue – 215 Street is approximately \$51.5 million. This estimate includes the cost of:

- Road construction and paving;
- Concrete work (i.e. curb and gutter, sidewalk, islands);
- Landscaping
- Drainage (urban, rural, and stormwater management facilities);
- Signage and pavement marking;
- Earthwork;
- Street lighting and traffic signals; and
- Engineering and contingencies.

The cost estimate includes road work required for the construction of the new 137 Avenue alignment, as well as improvements/upgrades to 215 Street. For 215 Street, estimates include the both the initial two lanes of paving, in addition to the future widening to four lanes. The cost estimate does not include the cost of any land acquisition that may be required for the proposed road alignment.

The following is a breakdown of costs for the construction of 137 Avenue – 215 Street:

➤ 215 Street: Stage 1 (2-lane paving)	\$	22,083,000
➤ 215 Street: Stage 2 (Widen to 4-lanes)	\$	9,334,000
➤ 137 Avenue	\$	20,099,000