ITEM	02
MANAGER'S REPORT #	48
COUNCIL MEETING	95/10/16

TO: CITY MANAGER **DATE:** 1995 10 10

FROM: DIRECTOR ENGINEERING **FILE:** 50-06-08

SUBJECT: ROYAL OAK AVENUE REALIGNMENT - PHASE II CONSTRUCTION

PURPOSE: To advise Council of the environmental design criteria and construction guidelines relating to silt control on the Royal Oak Realignment project.

RECOMMENDATION:

1. THAT Council receive this report for information purposes.

REPORT

1.0 BACKGROUND

At its meeting of 1995 September 25, Council requested information related to silt control on the Royal Oak Realignment project.

The realignment and upgrading of Royal Oak Avenue is a priority project in the City's Major Roads Program and is currently under a phased construction program. The City has retained an engineering consulting team on this project led by N.D. Lea & Associates who in turn have several sub-consultants specializing in various specific aspects of the work. Norecol, Dames and Moore Inc. have been retained as an environmental sub-consultant to N.D. Lea. This firm also provided the environmental consulting services on the recently completed Deer Lake Parkway project in the same vicinity thus assuring consistency of environmental measures.

The existing and the proposed alignments of Royal Oak Avenue pass over Creek No. 3 which is a tributary to Deer Lake. The widened cross-section of the new Royal Oak Avenue, requires that the present culvert carrying Creek No. 3 under Royal Oak Avenue be extended and enlarged. Our consultants initially contacted the Department of Fisheries & Oceans and were advised that the existing culvert did not allow adequate passage of fish at all levels of flow. It was therefore requested that a new structure be designed. The Department of Fisheries & Oceans concurred with the consultant's choice of a bottomless culvert arch to be located just north of the existing creek crossing. The new culvert will allow fish passage at all levels of flow. The new location has the advantage of allowing construction of the new culvert "in the dry" thereby minimizing siltation and also facilitating the pre-loading of the future culvert alignment. To accomplish this, a portion of the existing creek needed to be temporarily relocated out of the work area. This relocation has been undertaken.

2.0 DEPARTMENT OF FISHERIES OF OCEANS

As stated earlier, the City's design team contacted the Department of Fisheries & Oceans in early 1994 when it first became evident that the proposed Royal Oak Avenue cross-section would require either an extension or an upgrade of the Creek No. 3 crossing. The consultants have utilized the Department of Fisheries & Oceans' 'Land Development Guidelines for the Protection of Aquatic Habitat' for designing the bottomless culvert, the temporary creek diversion, the habitat compensation works, and the silt control fences. The designs have been submitted to the appropriate regulatory agencies (B.C. Environment and Department of Fisheries & Oceans) and have been approved by those agencies.

3.0 EROSION AND SEDIMENT CONTROL

Many land development activities such as clearing land, grading slopes, road building, and excavation of materials can lead to the erosion of soils into nearby watercourses. These watercourses may contain fish and fish habitat or flow into other streams that do. Erosion and sediment control is extremely important because sediment can have severe negative impacts on all life stages of fish and their habitat. In their 'Land Development Guidelines for the Protection of Aquatic Habitat', the Department of Fisheries & Oceans describe a number of general principles of erosion and sediment control and their application to land development activities. They also describe a number of techniques which may be employed to prevent the initiation of surface soil erosion and movement of sediments from slopes. One of these techniques is the application of silt fences.

For the scope of the Royal Oak project, our consultant chose to use silt fences in accordance with Fisheries guidelines. Our consultant advises that the silt fences were in place before the new stream channel was put into operation. All of this construction work took place during dry weather and with low flows in Creek No. 3. All silt fencing installation is in accordance with the Department of Fisheries & Oceans' 'Land Development Guidelines for the Protection of Aquatic Habitat'. In addition, fish salvage took place in the area of the abandoned existing creek. Both the temporary and permanent Creek No. 3 channels and banks have been seeded and the grass is currently germinating. Subsequent discussions were held with Department of Fisheries & Oceans to review additional siltation control measures that may be warranted to further safeguard against any potential silt problems. Any additional works would only proceed with the Department of Fisheries & Oceans' approval and monitoring.

4.0 MITIGATION MEASURES

The next item of work in the Phase II construction schedule is to relocate a portion of the sanitary sewer which currently bisects the cleared area. This would be followed by pre-loading in a manner similar to the existing pre-load on the east side. This pre-load could be in place for as long as 9 to 12 months.

This will require that the interim channel remain functional for at least one year before the stream can be diverted back into the final alignment. The consultant has therefore recommended that a lock-block wall be constructed adjacent to the banks of the temporary channel in order to contain the pre-load fill which will be placed in the vicinity of the temporary channel. The consultant has also installed a water quality monitoring program to measure total suspended solids upstream and downstream of the site. This will provide an indication of the effectiveness of the silt control measures. The first significant storm event has now occurred since the installation of the temporary channel and the monitoring results indicate that the total suspended solids were well within the Department of Fisheries & Oceans requirement criteria. If any concern is evidenced in the future by the monitoring program then additional protective measures would be considered in consultation with the Department of Fisheries & Oceans.

5.0 CONCLUSION

In conclusion, the design and construction of the works has been coordinated through our environmental sub-consultant and reviewed by the Department of Fisheries & Oceans. In addition, we are still actively working with the environmental sub-consultant and the Department of Fisheries & Oceans to improve the siltation control measures as we approach the pre-load stage of our contract and the wet winter months. The engineering consultant has been instructed to work closely with the Department of Fisheries & Oceans during the construction phase and to comply with the Fisheries' regulations to ensure the quality of run-off from the construction site is not compromised.

W.C. S...

DIRECTOR ENGINEERING

VNW:jb

cc: Director Planning & Building
Chief Environmental Health Officer