EXECUTIVE SUMMARY

The purpose of this report is to document the results of traffic impact analyses conducted for a proposed library expansion or relocation at three locations in Grand Forks, ND. All three locations are on or adjacent to South Washington Street, a local principal arterial. The location of the three sites is as follows:

Site A: Existing library location (proposed remodel and expansion).
Site B: Proposed library location on east side of South Washington Street between 7th and 8th Avenues S formerly the home of Leevers County Market.
Site C: Proposed library location east of S 11th Street and north of planned wellness center development.

As directed by the City of Grand Forks Engineering Department, all relevant intersections adjacent to each study site as well as each driveway associated with the new or expanded library site were evaluated for LOS (Level of Service). LOS was determined for each study intersection to provide insight as to how the intersections are currently operating in terms of capacity. Capacity analysis was based on the 2000 Highway Capacity Manual (HCM) using Synchro traffic simulation models. As standard to the City of Grand Forks Engineering Department, a LOS of "C" or better is required at all study intersections during all analysis periods.

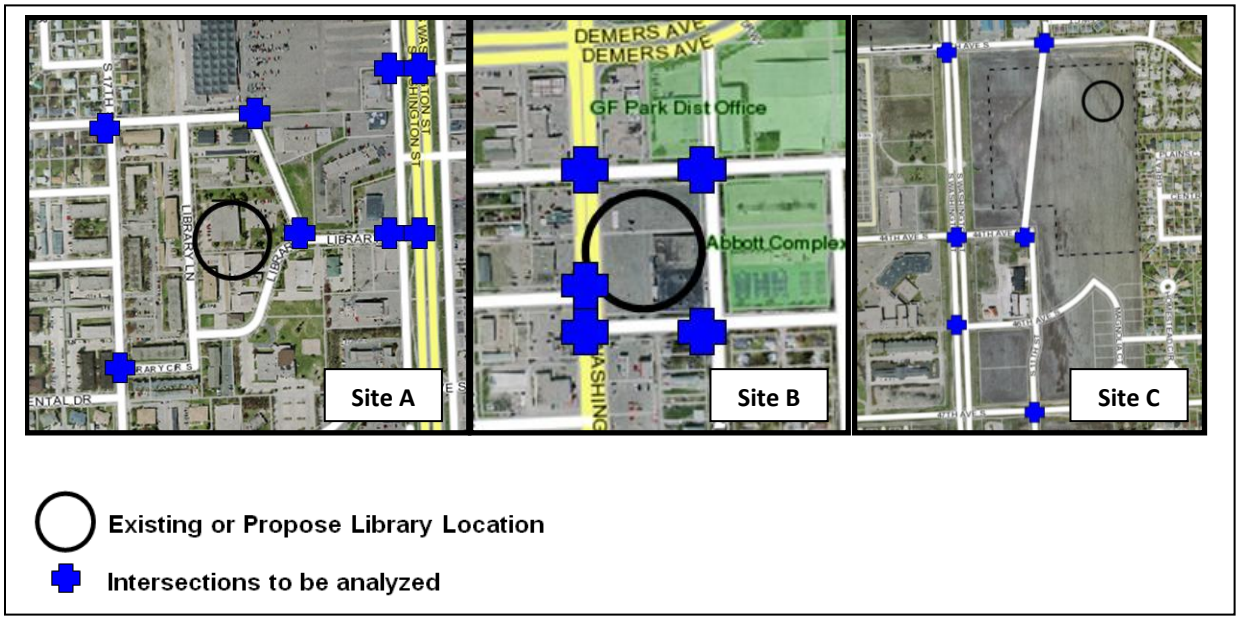

FIGURE 1 – Study Limits and Intersections

First, LOS was determined at each study intersection under existing conditions. To determine the existing conditions, an inventory of the transportation network was conducted where number of lanes, facility type, area type, transit service data, and traffic control data was collected. It is important to note that all driveways were analyzed as stop control due to the inherent nature of these approaches. Additionally, stop control was assumed on the southbound approach of the T-Intersection of Library Circle for analysis purposes. These baseline data provided the basis for assessing the roadway facilities. Existing traffic volume data was provided by the Grand Forks-East Grand Forks Metropolitan Planning Organization or estimated by the City of Grand Forks. This data included traffic volumes and turning movement counts. The peak-hour turning movements were normalized into average peak hour movements by applying conversions factors derived from the North Dakota 2008 Traffic Report prepared by the NDDOT.

The overall objective of this study was to show what effect the expanded or proposed library will have on the transportation system. In general, the critical traffic time period for any new development is directly associated with the peaking characteristics of both the site-generated trips and commuter travel patterns. Due to the inherent nature of library traffic volumes, the time period correlating with the highest cumulative directional traffic demands was determined to be the P.M. peak hour of adjacent street traffic and was thus selected for analysis.

Next, background traffic conditions were analyzed for the anticipated year of full Library build-out without the library-generated trips (year 2013). First impacts of committed transportation improvements during the forecast period were considered to account for any change in travel patterns. The City of Grand Forks Engineering Department currently anticipates the extension of South 11th Street from 40th Avenue South to 44th Avenue South at Site C before 2013. As a result, trip reassignment was conducted to estimate use of this roadway by existing traffic.

The background traffic conditions forecasts include through traffic consisting of all movements through the study area, without either an origin or a destination in the study area and traffic generated by all other developments in the study area with an origin and/or destination in the study area. Next, to determine the regional traffic through the study area, the trend or growth method was utilized based on historic data. In consultation with the City of Grand Forks Engineering Department, a conservatively high 2% growth rate was applied to all arterials supporting regional travel. Finally, approved development was considered to determine if any new traffic is anticipated within the study area. The City of Grand Forks Engineering Department has approved a Wellness Center and Ice Arena to be developed adjacent to Site C. Sites A and B are located in fully developed areas and as a result, have no planned or approved developments within the study limits. It is important to note that due to the relatively low number of trips by transit, cycling and walking, the combined mode split was assumed to be zero (i.e. 100% automobile trips).

ITE Trip Generation was utilized to estimate the one-directional travel movements with either an origin or destination to the specified land uses. Next, the traffic expected to be generated by the developments was distributed and assigned to the roadway system so that the impact of the new developments on roadway links could be analyzed. To determine the trip distributions, the roadway network (via the Grand Forks/East Grand Forks MPO Functional Classification Map), surrounding land uses (via the City of Grand Forks Planning Department's Zoning Map), and location of competing developments (National Independent Health Club Association for Wellness Center competition and Grand Forks Park District for Ice Arena competition) were reviewed. Once trip distributions were estimated, trip assignment was considered to determine which routes each trip will utilize within the roadway network. Based on logical routings, available roadway capacities, left turns at critical intersections and projected and perceived relative travel times, traffic assignment was estimated. It should be noted that the purpose of this study was to perform a comparative evaluation of potential library sites. As a result, trip generation, distribution and assignment regarding the wellness center and ice area were based on data readily available for inclusion in the study. It is anticipated that detailed traffic analysis of the wellness center site may likely produce different results.

Once the background traffic conditions were estimated and analyzed, library trips were generated using ITE Trip Generation for the same future year of 2013. Trip distribution was estimated using data provided by the Grand Forks Public Library Study Needs Assessment produced by Library Consulting, P.A (November 23, 2009). It was assumed that the overall trip distribution patterns are generally the same for each of the three library sites. Once trip distributions were estimated, trip assignment was considered to determine which routes each trip will utilize in the roadway network using the technique outlined for the wellness center and ice arena.

Finally, as standard to the City of Grand Forks Engineering Department traffic impact studies, traffic conditions for a 5-year horizon were analyzed to assess future service levels. According to the city, no planned developments or system improvements are approved at any of the study sites between the year 2013 and 2018. As a result, only through traffic was "grown" to reflect increasing traffic using a 2% annual growth. A graphical representation of traffic levels of service under existing, future background (without the library), and total future (with the library) traffic conditions for each site is shown below.

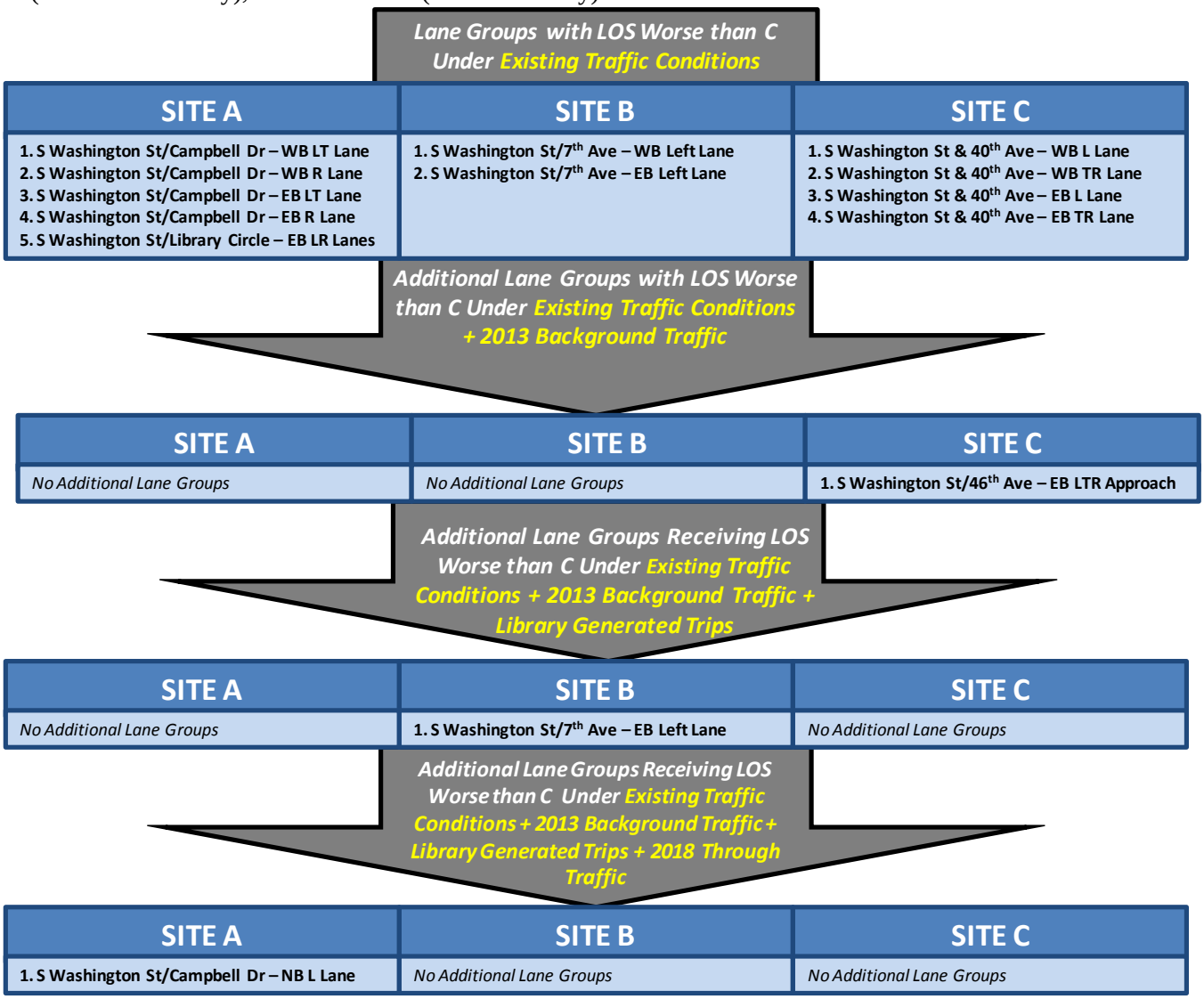

FIGURE 2 – Incremental Level of Service Results

LOS of "C" or better is required at all study intersections during all analysis periods.
NB – Northbound
SB – Southbound
WB – Westbound
EB - Eastbound
L – Left
T – Through
R – Right