During the “golden age” of building expressways, the late 1950s and early ’60s, the construction of an 18-mile-long highway over relatively flat terrain would have been business as usual. Fast-forward to today; as you do, take note of the National Environmental Policy Act (NEPA) of 1969, the Endangered Species Acts of 1966 and 1973, the “TEAS” of the 1990s (the acronym of the Intermodal Surface Transportation Efficiency Act of 1991 [ISTEA] and its successor TEA-21 in 1998) and 2005’s SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users).

At the table where engineering feasibility studies and cost analyses once sat alone, now sits environmental protection, highway safety and public opinion. Maryland’s Intercounty Connector (ICC), an expressway connecting Prince George’s and Montgomery counties, is the story of how a highway becomes a megaproject, not because there are mountains to be crossed, tunnels to be dug or rivers to be spanned, but because the golden age of building expressways is not business as usual anymore.

The one with the most
Maryland’s ICC is a megaproject because of social and environmental priorities. Under construction and located beyond the heavily congested Capital Beltway around Washington, D.C., the ICC is the largest—and at $2.446 billion the most expensive—single project undertaken by the Maryland Department of Transportation (MDOT).

The 18.8-mile ICC, a state-of-the-art, multimodal highway, will ultimately connect the I-270/I-370 corridor in Montgomery County with the I-95/U.S. 1 corridor in Prince George’s County, delivering a safer, more reliable route between these two counties, while reducing traffic congestion on local roads. The ICC will be a limited-access and tolled highway, with nine interchanges, one intersection and electronic open-road tolling at highway speeds. An important function of the ICC is to serve as an economic engine by connecting the east and west regions outside the Washington Beltway and improving the link from the southwestern portion of Maryland to the Baltimore Washington International Airport and the rest of Maryland.

The first, and westernmost, 7-mile segment of the ICC is now well under construction and is scheduled to be complete in late 2010, while the remaining segments of the ICC are slated to open in late 2011/early 2012.

The Maryland Transportation Authority (MTA) is the
owner and operator of the ICC and is responsible for its financing. The Maryland State HighwayAdministration (SHA), which is a part of MDOT, is acting on behalf of the MTA and is responsible for managing all planning, environmental approvals, design, project procurement and construction administration on the project.

While the SHA oversees the construction of the highway, the MTA will maintain and operate the ICC as a toll road. The ICC project team consists of the Federal Highway Administration (FHWA); MDOT, including the SHA; the MTA; and the general engineering consultant for the project, ICC Corridor Partners. The ICC project team also includes federal and state resource/permit agencies and local partners in both Montgomery and Prince George’s counties.

After 50 years of impassioned debate and a series of failed planning studies, the project received final NEPA approval in May 2006 and then withstood a legal challenge with a final green light in November 2007; construction finally began shortly thereafter.

Currently under way are Contract A, the westernmost segment extending from I-270/I-370 to east of Rte. 97 in Montgomery County, and Contract C, reaching from U.S. 29 to I-95 in Prince George’s County. Contract B, between contracts A and C, extends from Rte. 97 to U.S. 29 and was scheduled to begin later this summer. In mid-2009, Contract E, the easternmost segment, extending from I-95 to U.S. 1, will begin construction. Expected to be under way in 2010 is Contract D, which consists of road improvements on I-95 north of the ICC.

Value shopping

The SHA is building the ICC using innovative environmental measures, state-of-the-art technologies and one of the quickest project delivery techniques available: design-build. Increasingly, and with the support of the FHWA, states across the nation are turning to design-build to deliver projects on slimmer budgets and constrained schedules.

Design-build is well suited to meet the challenges of a megaproject. It differs from the traditional approach used for modern transportation projects, in which one engineering enterprise designs the project and another builds it. Instead, design-build brings together engineering and construction professionals in a collaborative effort to complete these tasks in a nearly simultaneous manner. For the ICC project, SHA selected design-builders based on a combination of environmental focus, technical capability and reasonably priced proposals. This “best-value” approach ensures that SHA awards ICC contracts to companies that will devote appropriate attention to the broader community and environmental issues that affect the public.

The design-build approach results in shrinking the time it takes to build a megaproject at a reasonable cost.

Pondering over ponds

Building a megaproject demands a team with specialized skill sets and a process to confront the project’s unique challenges. To assemble the ICC’s management team, the SHA relied on a model that blended staff from the public and private sectors, tapping the best and the brightest from both.

Inherent in successful megaprojects is the ability to expect and manage the unexpected. The following case study exemplifies the advantages of design-build and best-value procurement.

During the procurement phase of the second design-build request for proposal (RFP) documents, the SHA’s geotechnical investigations in a wetland area discovered some surprising news. The large wetland areas near the I-95 interchange were found to be of unusual depth. In fact, the material beneath the wetland greenery was found to be a fine, loose and silt-like sediment from a historical quarry’s gravel-washing operations; this area became known as the “wash ponds.” In some areas, the depths of the ponds were in excess of 50 ft. This finding made the roadway fill concept proposed in the draft RFP documents suddenly less realistic and the possible geotechnical solutions considered by the SHA considerably less cost-effective than the original estimated earthen fill.

To address this issue, the final RFP documents showed revised alignments for the mainline roadway and the interchange ramps. The documents also indicated numerous additional bridge structures to cross the sediment pond areas. Although this solution was recognized to be more cost-effective than the original concept, there was no time left in the advertisement schedule to make fur-
ther adjustments to the preliminary design. Therefore, the final RFP documents opened the wash pond and the I-95 interchange to the proposing design-build firms for alternative technical concepts (ATCs).

Through the proposal process, the selected firm developed multiple ATCs that radically revised the roadway alignments in the interchange and across the wash ponds. In addition, they proposed combinations of soil mixing and stone-column techniques to cross the ponds without using bridge structures. After careful consideration, many of the ATCs were approved by the SHA.

While the success or failure of the potential geotechnical solutions became the risk of the design-build company, the decreased cost compared with the RFP’s bridge solution was reflected in the bid. Thus, a key engineering challenge on the project was solved through use of the design-build and best-value procurement process.

A thick green

Environmental impacts and mitigation are at the very heart of the ICC. The ICC is as green as a highway is likely to get and leaves a large imprint for future megaprojects to follow. The SHA will invest $370 million—more than 15% of the project’s estimated cost—to protect the environment and mitigate environmental impacts. More than $100 million is earmarked for special mitigation and stewardship, and an additional $270 million covers basic enhancements to the roadway and structures themselves. Symbolizing the ICC project’s commitment to the environment are initiatives that go beyond meeting mitigation requirements; these commitments will actually correct environmental problems that are unrelated to the ICC and that otherwise would remain unaddressed. The ICC project includes more than 70 initiatives that address man-made environmental stresses caused by past development over several decades.

Moreover, preserving and enhancing cultural resources and the quality of life for Maryland’s citizens is integral to the SHA’s ICC project. The SHA is committed to leaving a legacy of an enriched human environment through comprehensive planning, design and construction of highways that are compatible with neighboring communities.

Providing support for cultural and heritage resources through renovation, relocation and other improvement projects is part of the ICC’s plan to extend its already strong commitment to communities. Benefiting are archaeological, historical and recreational sites, museums, schools and

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other civic entities.

Building architecturally attractive bridges and sound barriers that integrate with the surroundings are essential elements of the ICC’s unique design. Building longer bridges than what is customary over parks and streams provides increased protection for the diverse array of ecological functions in these sensitive areas. Lowering the ICC into the ground near existing communities is another feature used in some cases to reduce noise and visual impacts. The SHA incorporated community projects to enhance the region’s quality of life by providing pedestrian and bicycle trails, sidewalks, signage and even a dog park. These types of projects demonstrate the SHA’s commitment to being a good neighbor.

**Something you can trust**

The public has played a highly visible role in the design of the ICC, and that may be the signature feature of future highway megaprojects. The ICC has the distinction of being one of the most studied transportation projects in the nation’s history. For more than five decades, it fueled public controversy and political debate. Elected officials, homeowners, businesspeople and environmentalists repeated engaged in fierce battles for and against the highway. The most recent study began in 2003 and resulted in the successfully executed final environmental impact statement (FEIS) and the record of decision (ROD) in 2006.

At the core of the ICC’s FEIS and ROD is extensive public involvement. Today, the ICC project continues to invite participation from all project stakeholders in the design and construction phases. The public involvement and awareness goals include:

- Providing a single point of contact between the public and the ICC project team through community liaisons assigned to each segment of the ICC;
- Informing property owners adjacent to the ICC and other stakeholders of upcoming construction activities;
- Offering project stakeholders the opportunity to provide input into certain project decisions, including those that affect particular properties or communities; and
- Utilizing a variety of outreach mechanisms to disseminate the most accurate, up-to-date information available, including newsletters, a website, fact sheets, quarterly updates and other appropriate public awareness vehicles.

Additionally, the ICC project invites citizens to monthly open houses where they are encouraged to make appointments for personal consultations. This one-on-one attention builds the public trust and provides timely resolutions to citizens’ concerns. Informing the public in advance of construction activities that will likely inconvenience them means managing their expectations and is the critical link to a megaproject’s public perception.

Certainly, business as usual is changing, and as America’s aging Interstate Highway System and transportation infrastructure are renewed or replaced it is more than a prophecy to predict that megaprojects like the ICC will be the driving force of the 21st century transportation system. They will be built in partnership with the communities through which they travel, and they will be good environmental stewards. Perhaps some future generation will look back at today’s megaprojects and say they marked the beginning of the golden age of transportation.

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Pedersen is the state highway administrator for Maryland.