ANNEX C – ENVISION METHODOLOGY FOR SUSTAINABILITY IMPACTS POTENTIAL

Envision is a sustainability rating system and planning guide for introducing sustainability considerations into infrastructure projects. Recognizing the serious need for infrastructure to incorporate issues of sustainability, Envision evaluates, grades, and gives recognition to infrastructure projects that make exemplary progress and contribute to a more sustainable future.
In this regard Envision assesses not only individual project performance, but how well projects contribute to the efficiency and long-term sustainability of the communities they serve. Envision takes a holistic view of infrastructure development, evaluating projects in terms of their value to communities, effective use of funds, and contributions to conditions of sustainability.

PURPOSE

The purpose of Envision® is to foster a dramatic and necessary improvement in the sustainability performance and resiliency of physical infrastructure. Envision provides the framework and incentives needed to initiate this systemic change. Envision is a decision making guide, not a set of prescriptive measures. As a planning and design guidance tool, Envision provides industrywide sustainability metrics for all infrastructure types to help users assess and measure the extent to which their project contributes to conditions of sustainability across the triple bottom line.

Fundamentally, Envision is about supporting more sustainable choices in infrastructure development. The system provides a flexible framework of criteria and performance objectives to aid local decision makers and help project teams identify sustainable approaches during planning, design, construction, and operation. It then further guides owners, communities, and designers in collaborating to make more informed decisions about the sustainability of infrastructure.

RATING SYSTEM

Envision is a system for rating infrastructure projects based on their overall contribution to the economic, environmental, and social aspects of sustainability. It establishes a unique holistic framework for sustainable project design, not only creating meaningful sustainable performance objectives but expanding opportunities for performance improvement. The Envision rating system incorporates the following elements:

• Social wellbeing is comprehensively addressed. Envision poses two questions: "Are we doing the project right?" and, more critically, "Are we doing the right project?" For instance, under Envision, a new highway might be designed with features that contribute to sustainable performance (e.g., preserving wildlife corridors, treating and infiltrating stormwater runoff, and incorporating recycled materials to construction). However, if that highway contributes to significantly greater traffic congestion and urban sprawl, its rating will be lower in terms of its overall contribution to sustainability.

• Changing conditions are accounted for. A consequence of working in a nonsustainable operating environment is that many of the standard project design assumptions and variables can and will change. Such changes include the cost and availability of critical materials and supplies such as fresh water and fuels. Also included are the evolving conditions under which the constructed works must operate. Climate change is creating a "new normal" in operating conditions. Envision creates incentives for identifying and incorporating these changing conditions and associated risks that may affect desired outcomes.

• Restoration of natural resources and ecosystems is an explicit level of achievement. While improving sustainable performance is an essential and immediate goal, long-term goals should be directed toward restoration where practical. Envision makes restoration an explicit goal as well as

the highest category in its five levels of achievement. This is intended to reinforce the point that, to really contribute to sustainability, projects must do more than just make incremental improvements. These incremental improvements may have diminished negative impacts, but they do not contribute to the restoration of economic, environmental, and social conditions to sustainable levels.

• Long-term costs and risks are reduced. One of the Envision rating system credits covers the extent to which the infrastructure project avoids or eliminates traps and vulnerabilities that create higher legacy costs and risks. Infrastructure projects that commit the community to high fixed costs or create a heavy reliance on resources that could become scarce and/or very expensive score low in this credit. Likewise, projects that create or increase vulnerability to extreme weather events, natural disasters, and/or economic conditions not only score low, but are viewed as being conceptually deficient.

• Life cycle considerations are addressed. Envision considers impacts over the entire project life. Several Envision credits require calculating impacts like energy, water, materials, or emissions consumed or produced by the project in all phases. This calculation is referred to as a life cycle assessment (LCA). While LCAs can take many forms Envision recognizes 'streamlined' or simplified LCAs that focus specifically on the calculations required for each credit. LCAs do not need to be prohibitively time consuming or expensive, rather they indicate that all phases of the project are considered in the calculations.

• Significant and relevant innovation is recognized and rewarded. "Innovation" is defined as exceptional performance in one or more credits. In this context, the term also refers to breaking recognized barriers to performance improvement and solutions that are scalable and/or transferrable to other infrastructure sectors. The Envision rating system recognizes that making real progress toward conditions of sustainability requires an overhaul of existing infrastructure, replacing old components with those that improve sustainable performance. Improvements are derived from the application of new and innovative approaches, methods, and technologies that raise the performance bar in one or more dimensions of sustainability.

CREDITS and LEVELS OF ACHIEVEMENT

The Envision rating system is comprised of 60 performance objectives, called credits, that cover the full dimensions of infrastructure sustainability.
Each credit in the Envision system includes an intent statement and metric, levels of achievement, a description, ways to advance to higher achievement levels, evaluation criteria and documentation, sources, and related Envision credits. The credits are organized into five categories and 14 subcategories by subject matter.
Each Envision credit contains one or more levels of achievement: Improved, Enhanced, Superior, Conserving, and Restorative. Improved, Enhanced, and Superior signify increasing sustainability performance.

The Conserving level is defined as having no negative impacts. The Restorative level signifies significant restoration of social systems and/or natural resources and ecosystems.

Each of the 60 credits contains a set of evaluation criteria that are necessary for developing sustainable infrastructure and, in some cases, for restoring already depleted resources or damaged environment.

Scoring performance for an infrastructure project is done using a point system. Each of the credits and their associated levels of achievement are assigned points weighted in accordance with their estimated contribution to sustainability.

In each credit description, guidance is provided on how to determine the level of achievement for a given project. Envision recognizes that some credits may not be applicable to every project. Credits can be omitted if it can be shown that they are not applicable to the project

Envision recognizes innovation and exceptional performance is necessary in order to attain a sustainable society. Additional bonus points are therefore available for projects that exceed credit requirements or that pilot innovative methods, applications, or technologies.

CATEGORIES AND SUBCATEGORIES
- Quality of Life: Purpose, Community, Wellbeing
- Leadership: Collaboration, Management, Planning
- Resource Allocation: Materials, Energy, Water
- Natural World: Siting, Land and Water, Biodiversity
- Climate and Risk: Emissions, Resilience

QUALITY OF LIFE
13 Credits

1 PURPOSE
QL1.1 Improve Community Quality of Life
QL1.2 Stimulate Sustainable Growth & Development
QL1.3 Develop Local Skills and Capabilities

2 WELLBEING
QL2.1 Enhance Public Health and Safety
QL2.2 Minimize Noise and Vibration
QL2.3 Minimize Light Pollution
QL2.4 Improve Community Mobility and Access
QL2.5 Encourage Alternative Modes of Transportation
QL2.6 Improve Site Accessibility, Safety & Wayfinding

3 COMMUNITY
QL3.1 Preserve Historic and Cultural Resources
QL3.2 Preserve Views and Local Character
QL3.3 Enhance Public Space

QL0.0 Innovate or Exceed Credit Requirements

LEADERSHIP
10 Credits

1 COLLABORATION
LD1.1 Provide Effective Leadership & Commitment
LD1.2 Establish a Sustainability Management System
LD1.3 Foster Collaboration and Teamwork
LD1.4 Provide for Stakeholder Involvement

2 MANAGEMENT
LD2.1 Pursue By-Product Synergy Opportunities
LD2.2 Improve Infrastructure Integration

3 PLANNING
LD3.1 Plan for Long-Term Monitoring & Maintenance
LD3.2 Address Conflicting Regulations and Policies
LD3.3 Extend Useful Life

LD0.0 Innovate or Exceed Credit Requirements

RESOURCE ALLOCATION
14 Credits

1 MATERIALS
RA1.1 Reduce Net Embodied Energy
RA1.2 Support Sustainable Procurement Practices
RA1.3 Use Recycled Materials
RA1.4 Use Regional Materials
RA1.5 Divert Waste from Landfills
RA1.6 Reduce Excavated Materials Taken Off Site
RA1.7 Provide for Deconstruction and Recycling

2 ENERGY
RA2.1 Reduce Energy Consumption
RA2.2 Use Renewable Energy
RA2.3 Commission and Monitor Energy Systems

3 WATER
RA3.1 Protect Fresh Water Availability
RA3.2 Reduce Potable Water Consumption
RA3.3 Monitor Water Systems

RA0.0 Innovate or Exceed Credit Requirements

NATURAL WORLD
15 Credits

1 SITING
NW1.1 Preserve Prime Habitat
NW1.2 Protect Wetlands and Surface Water
NW1.3 Preserve Prime Farmland
NW1.4 Avoid Adverse Geology
NW1.5 Preserve Floodplain Functions
NW1.6 Avoid Unsuitable Development on Steep Slopes
NW1.7 Preserve Greenfields

2 LAND + WATER
NW2.1 Manage Stormwater
NW2.2 Reduce Pesticides and Fertilizer Impacts
NW2.3 Prevent Surface and Groundwater Contamination

3 BIODIVERSITY
NW3.1 Preserve Species Biodiversity
NW3.2 Control Invasive Species
NW3.3 Restore Disturbed Soils
NW3.4 Maintain Wetland and Surface Water Functions

NW0.0 Innovate or Exceed Credit Requirements

CLIMATE AND RISK
8 Credits

1 EMISSIONS
CR1.1 Reduce Greenhouse Gas Emissions
CR1.2 Reduce Air Pollutant Emissions

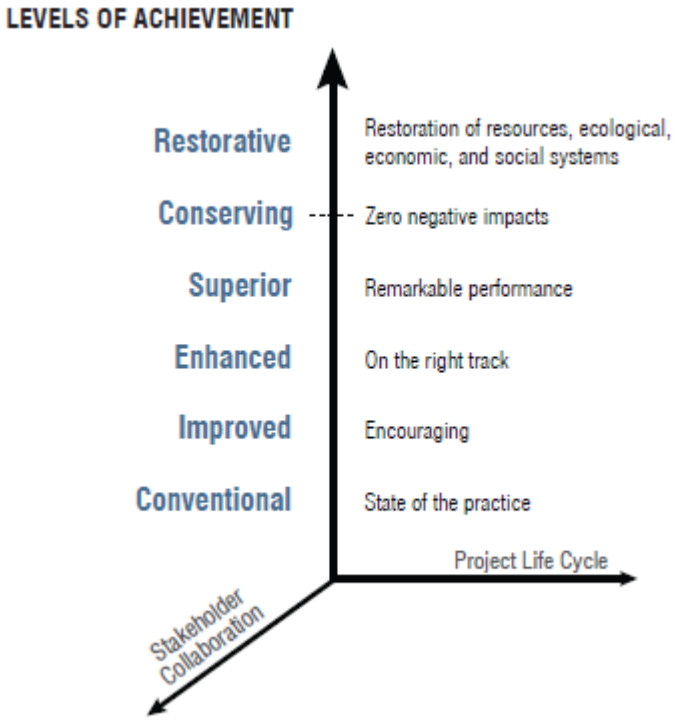
2 RESILIENCE
CR2.1 Assess Climate Threat
CR2.2 Avoid Traps and Vulnerabilities
CR2.3 Prepare for Long-Term Adaptability
CR2.4 Prepare for Short-Term Hazards
CR2.5 Manage Heat Island Effects

CR0.0 Innovate or Exceed Credit Requirements

LEVELS OF ACHIEVEMENT

The Envision levels of achievement define the level and quality of project performance in each credit as follows:
• Improved—Performance that is above conventional. Slightly exceeds regulatory requirements;
• Enhanced—Sustainable performance that is on the right track. There are indications that superior performance is within reach;
• Superior—Sustainable performance that is noteworthy, but not conserving. Point scores are designed to provide incentives for achieving sustainable or restorative performance;

• Conserving—Performance that has achieved essentially zero negative impact;
• Restorative—Performance that restores natural or social systems. Such performance receives the highest award possible, and is celebrated as such. The Restorative level is not applicable to all objectives.



In most credits the lower levels of achievement must first be satisfied in order for the higher levels to be achieved. For instance, to meet the requirements for Conserving, a project must also meet the requirements for Improved, Enhanced, and Superior. Levels of achievement have an associated point value that varies between credits. Not all credits have five levels of achievement. The levels are determined by the nature of the credit and the ability to make meaningful distinctions between levels.

ENVISION SELF-ASSESSMENT SCORING TABLE

Each of the credits and their associated levels of achievement are assigned points weighted in accordance with their estimated contribution to sustainability. Guidance is provided in each credit description on how to determine the level of achievement for a given project. Scores for each applicable credit are added together to give the total Envision score. For projects seeking Verification, users should provide the documentation described in the evaluation criteria to support the level of achievement they selected.

Credits can be omitted if it can be shown that they are not applicable to the project. For projects that will be submitted for Verification, this requires an explanation of why the credit is not applicable to the project.

QUALITY OF LIFE	PURPOSE	QL1.1 Improve community quality of life	2	5	10	20	25
		QL1.2 Stimulate sustainable growth and development	1	2	5	13	16
		QL1.3 Develop local skills and capabilities	1	2	5	12	15
	WELLBEING	QL2.1 Enhance public health and safety	2	—	—	16	
		QL2.2 Minimize noise and vibration	1	—	—	8	11
		QL2.3 Minimize light pollution	1	2	4	8	11
		QL2.4 Improve community mobility and access	1	4	7	14	
		QL2.5 Encourage alternative modes of transportation	1	3	6	12	15
		QL2.6 Improve site accessibility, safety and wayfinding	—	3	6	12	15
	COMMUNITY	QL3.1 Preserve historic and cultural resources	1	—	7	13	16
		QL3.2 Preserve views and local character	1	3	6	11	14
		QL3.3 Enhance public space	1	3	6	11	13
					Maximum QL Points:	181*	
LEADERSHIP	COLLABORATION	LD1.1 Provide effective leadership and commitment	2	4	9	17	
		LD1.2 Establish a sustainability management system	1	4	7	14	
		LD1.3 Foster collaboration and teamwork	1	4	8	15	
		LD1.4 Provide for stakeholder involvement	1	5	9	14	
	MANAGEMENT	LD2.1 Pursue by-product synergy opportunities	1	3	6	12	15
		LD2.2 Improve infrastructure integration	1	3	7	13	16
	PLANNING	LD3.1 Plan for long-term monitoring and maintenance	1	3	—	10	
		LD3.2 Address conflicting regulations and policies	1	2	4	8	
		LD3.3 Extend useful life	1	3	6	12	
					Maximum LD Points:	121*	
RESOURCE ALLOCATION	MATERIALS	RA1.1 Reduce net embodied energy	2	6	12	18	
		RA1.2 Support sustainable procurement practices	2	3	6	9	
		RA1.3 Use recycled materials	2	5	11	14	
		RA1.4 Use regional materials	3	6	9	10	
		RA1.5 Divert waste from landfills	3	6	8	11	
		RA1.6 Reduce excavated materials taken off site	2	4	5	6	
		RA1.7 Provide for deconstruction and recycling	1	4	8	12	
	ENERGY	RA2.1 Reduce energy consumption	3	7	12	18	
		RA2.2 Use renewable energy	4	6	13	16	20
		RA2.3 Commission and monitor energy systems	—	3	—	11	
	WATER	RA3.1 Protect fresh water availability	2	4	9	17	21
		RA3.2 Reduce potable water consumption	4	9	13	17	21
		RA3.3 Monitor water systems	1	3	6	11	
					Maximum RA Points:	182*	
NATURAL WORLD	SITING	NW1.1 Preserve prime habitat	—	—	9	14	18
		NW1.2 Protect wetlands and surface water	1	4	9	14	18
		NW1.3 Preserve prime farmland	—	—	6	12	15
		NW1.4 Avoid adverse geology	1	2	3	5	
		NW1.5 Preserve floodplain functions	2	5	8	14	
		NW1.6 Avoid unsuitable development on steep slopes	1	—	4	6	
		NW1.7 Preserve greenfields	3	6	10	15	23
	LAND & WATER	NW2.1 Manage stormwater	—	4	9	17	21
		NW2.2 Reduce pesticide and fertilizer impacts	1	2	5	9	
		NW2.3 Prevent surface and groundwater contamination	1	4	9	14	18
	BIODIVERSITY	NW3.1 Preserve species biodiversity	2	—	—	13	16
		NW3.2 Control invasive species	—	—	5	9	11
		NW3.3 Restore disturbed soils	—	—	—	8	10
		NW3.4 Maintain wetland and surface water functions	3	6	9	15	19
					Maximum NW Points:	203*	
CLIMATE & RISK	EMISSIONS	CR1.1 Reduce greenhouse gas emissions	4	7	13	18	25
		CR1.2 Reduce air pollutant emissions	2	6	—	12	15
	RESILIENCE	CR2.1 Assess climate threat	—	—	—	15	
		CR2.2 Avoid traps and vulnerabilities	2	6	12	16	20
		CR2.3 Prepare for long-term adaptability	—	—	—	16	20
		CR2.4 Prepare for short-term hazards	3	—	10	17	21
		CR2.5 Manage heat islands effects	1	2	4	6	
					Maximum CR Points:	122*	
					Maximum TOTAL Points:	809*	

* Not every credit has a restorative level. Therefore totals include the maximum possible points for each credit whether conserving or restorative.

ONLINE FREE MODULE

The scoring module is an online interactive tool that guides users by assigning levels of achievement for each credit. Scores are tallied by credit category and for the whole project. The scoring module is available on ISI's website (www.sustainableinfrastructure.org).

EVALUATION CRITERIA

The evaluation criteria contain explanations of what documentation is necessary to demonstrate that a level of achievement has been met. Evaluation criteria include both qualitative and quantitative requirements.

Examples of evaluation criteria are:

• Yes/No—An action taken or an outcome achieved
°° Is the project located on a site with no adverse geologic features such as earthquake faults or karst topography?
°° Does the project have a net positive impact on ground and surface water quality and quantity?

• Target—A specified outcome with discrete or variable levels
°° Has the project team diverted at least 75% of significant waste streams away from landfills?
°° Was the project designed to obtain 41 to 80% of its energy from renewable energy sources?

• Execution—A process conducted, or a commitment made to accomplish a stated objective
°° Has the project team conducted an overall assessment of lighting needs?
°° Has the project team made a specific commitment to hire local workers?

• Accomplishment—A process conducted with a general or non-specified result °° Has the team assessed street lighting needs and specified the removal of unneeded street lighting?
°° Has the project team reduced the amount of lighting required through the use of nonlighting alternatives?

The Envision rating system strongly encourages innovative methods that advance sustainable infrastructure practices or show exceptional performance beyond the expectations of the credit requirements. Each category includes an "Innovate or Exceed Credit Requirements" credit, indicated by a "0.0".

Projects may achieve all or part of the points in these credits. The 0.0 credits are not required and these points act as bonus points that are added to the category or total score. Envision identifies and awards bonus points on three types of innovation. The project team may offer one type or bundle two or more types in a single category. The types of innovation are as follows:

• Achieving exceptional levels of performance. Exceptional performance is performance in one or more key credits that achieves new and remarkable levels of efficiency or effectiveness.

• Overcoming significant problems, barriers, or limitations. Demonstration of having reduced or eliminated significant issues that previously hampered the use or implementation of certain resources, technologies, processes, or methodologies that improve the efficiency or sustainability of a project.

• Creating scalable and/or transferable solutions. Demonstration that the improved performance achieved or the problems, barriers, or limitations overcome are scalable across a wide range of project sizes and/or are applicable and transferable across multiple kinds of infrastructure projects in multiple sectors.