



Global Practice Guide



Edited by
SEI Global Activities Division



**STRUCTURAL
ENGINEERING
INSTITUTE**

Acknowledgements

Thank you to those who have inspired, supported, and produced this Guide.

Authors

Anne Ellis, P.E., F. ASCE
Chair of SEI GAD ExCom, Ex. Director of Charles Pankow Foundation, CEO Ellis Global

Mustafa Mahamid, Ph.D., P.E., S.E., F. SEI, F. ASCE
Clinical Associate Professor at University of Illinois at Chicago

Beverly Tompkins
Vice President, Corporate Counsel, Simpson Gumpertz & Hager

Martin Mullins
CFO, Simpson Gumpertz & Hager

Reviewers

Hamid Adib, Ph.D., P. E., F. SEI, F. ASCE
President and CEO Adib Group, Inc.

Peter Carrato, P.E., S.E., C.Eng, F.ASCE

Tara Hoke, Aff. M.ASCE
General Counsel American Society of Civil Engineers

Staff

Laura Champion, P.E., M.ASCE
SEI Director

Jennifer Goupil, P.E., F. SEI, M.ASCE
SEI Senior Manager

Supporters

SEI Futures Fund Board
Global Activities Division Executive Committee
SEI Board of Governors



Table of Contents

Introduction • page 1

Chapter 1: Culture • page 3

Chapter 2: Design and Construction • page 7

Chapter 3: Legal • page 11

Chapter 4: Financial • page 21

Appendix: Country Specific Information/Examples • page 27



Introduction

Why global? Advances in technology, increasingly interdependent economies, and emerging market investment in infrastructure and real estate open doors to structural engineering practice opportunities outside of the United States. These opportunities are significant and allow structural engineers to participate in projects of great scale and challenge and to share and transfer their high-value knowledge. However, successful global practice requires structural engineers to embrace skills, traits, know-how, and awareness in areas beyond their customary fields of training.

This *Global Practices Guide* (the Guide), developed by and for the structural engineering community, highlights those areas requisite for global practice that are beyond the structural engineer's domestic field of training—including culture, design and construction, and legal and financial issues. The intent of this Guide is to raise awareness of—and seed inquiry into—specific topics that can provide appropriate assistance whether you are contemplating global practice, considering go-no-go decisions on specific opportunities, and/or formulating project planning. Technical considerations are

highlighted, as well as professional and business considerations. All affect the ability to succeed.

When considering projects outside the United States, the opportunities must be balanced by the multiplicity of risks, including government instability, which may result in people and assets that are stranded for extensive periods and with little recourse.

When setting strategic global practice direction, there are a variety of market entries to consider, which include supporting the activities of the following:

- The US government entities operating in a foreign country;
- A multinational commercial entity operating in a foreign country;
- A foreign national government entity in its home country or in another country other than the United States;
- A nongovernmental organization operating in a foreign country; and
- A commercial entity operating in a foreign country.

This Guide covers many considerations, except those related to establishment of an in-country office.

For structural engineers who master global practice, the personal rewards are significant. Global practice enables you to travel, expand your knowledge base, diversify your experiences, and grow your network.

This Guide is the manifestation of the Structural Engineering Institute's (SEI) Vision for the Future. This Guide is collaboratively written by SEI members and is produced with funding provided by the SEI Futures Fund.

SEI Futures Fund (SEIFF) invests in the future of our profession by supporting a broad range of activities that advance the art, science, and practice of structural engineering. SEIFF works to strengthen SEI efforts to build a vibrant community of structural engineers by supporting projects such as the Global Practice Guide and many others. Learn more at www.asce.org/structural-engineering/sei-futures-fund/.



Chapter 1:

Culture

This chapter includes discussion on the following topics:

- Culture
 - » Cultural intelligence
 - » Cultural dynamics
 - » Communication
 - » Multicultural teams and workforce
- Business etiquette
 - » Gifts
 - » Dining
 - » Work and work hours

Culture

Culture shapes workplace behaviors and perceptions. Culture drives how we communicate, consider ideas, lead meetings, and more. Perceptions of leadership, collaboration, decision making, personal initiative, accountability, praise, criticism, and time vary greatly from country to country.

Cultural Intelligence

Structural engineers working successfully outside of the United States require cultural intelligence: the understanding of and ability to navigate the variations in work cultures in another country. Culture affects relationship development, which is key to successful business development. Culture affects inter- and intrateam dynamics, which are important to successful project planning and execution. Cultural differences can be a source of workplace conflict and barriers to successful outcomes. Work cultures are shaped by visible rules, regulations, behaviors, and the values and ethics of the context of work. Cultural intelligence includes not only awareness of the norms but also possessing the insights into what shapes the cultural dynamics of a country.

Cultural Dynamics

The cultural dynamics of a country are greatly influenced by the cultural identity of a country, region, and/or community. Cultural identity may be defined by nationality, locality, ethnicity, religion, socioeconomics, history, and/or generation. Cultural identity shapes communication and behavioral norms with significant impact on the workplace.

Communication

Structural engineers engaging the global market must understand that cultural identity is manifested through communication. Language allows people to communicate more effectively.

However, spoken and body language—facial expressions, gestures, mannerisms, and degree of eye contact—vary greatly from country to country. The physical act of nodding one's head conveys agreement in some countries and disagreement in others. Signaling with thumbs up, an indication of approval in some countries, conveys a rude, sexual signal in others. Eye contact during conversation is expected in some countries and inappropriate in others. Therefore, it is vital to possess basic concepts of communication, especially language, spoken and otherwise. Learn one or two words or phrases in the local language: “thank you” and “good morning” are a great place to start. If possible, ask your host or client with help in correct pronunciation.

Multicultural Teams and Workforce

Another layer of complexity is added as a result of developing multicultural teams and workforce. Advantages are to be realized when a firm working internationally is able to account for cultural difference in composing teams, structuring project team hierarchy, and planning communications.

Behavior from firms, and individual engineers, who lack awareness of cultural variations in communication, workplace behaviors, and perceptions can lead to failures of leadership, persuasion, evaluation, and trust that may result in profound effects on project outcomes.

Business Etiquette

Structural engineering is a relationship-based business built on trust. Key to building this trust is demonstration of technical, professional, and business competencies, which include business etiquette.

Business etiquette—which is shaped by culture—comprises written and unwritten guidelines on social interaction in a business context. Cultural differences result in different sets of business etiquette around the globe,

and every country has unique customs that affect how business is done. Understanding business etiquette in the country in which you desire to work is essential to winning, executing, and closing work in another country. Even tiny mistakes may trigger negative outcomes.

Business etiquette informs how to greet people, how to address people, business card presentation, business attire, and communications. A proper greeting in one country may be a firm handshake, a light handshake, a bow, or even a kiss. Addressing someone by first name may be inappropriate. Business cards are given using your right hand in some countries, and they are given and received with both hands in other countries. In some countries, it is expected that your card be printed in the native language of the country you are visiting. Business attire may refer to a business suit and tie or traditional country attire. Jewelry may or may not be appropriate for men and/or women. Proper face-to-face communications may preclude use of the word “no,” discussing anything of a personal nature, and/or permitting anyone other than the most senior person in the room speaking.

Gifts

Gifts are an area of caution. In the United States and many other countries, business gift giving is rare, and may even be considered bribery. But in some countries, gift giving, along with its etiquette, is an essential business practice with strict norms governing what you give, how you wrap it, how and when you present it, and whether or not gift giving should be reciprocated.

Before engaging in any gift giving and/or exchange, consult a legal professional with specific expertise in conducting global business.

Dining

Business etiquette may also necessitate knowledge of local food, dining, and entertaining

norms. Dining together is an essential part of business in some countries and taboo in others. Where dining is common, awareness of local attitudes regarding alcohol consumption, dietary restrictions, and business conversation during the meal are essential. In some countries, a shared meal or afternoon coffee break is a communal work activity, and all are expected to participate. Clarify which is the larger meal of the day, lunch or dinner, and what is typical timed served, it could be as late as 10:00 pm at night.

Work and Work Hours

Global practice requires an understanding that approach to work varies significantly around the globe. Structural engineers who engage in work outside of their home countries must understand that approaches to work and work hours are shaped by cultural dynamics.

The structure of the standard work week varies globally. In the United States and many other Western countries, the standard work week is Monday to Friday, with the weekend set aside as personal time. Several countries have adopted a standard work week from Monday morning until Friday noon. Other standard work week structures include Monday to Saturday noon, Sunday to Friday noon, Sunday to Thursday, and Saturday to Wednesday.

Work hours also vary globally. The average work week is commonly 35 to 45 hours, although project and business pressures may drive up those numbers substantially. Standard working hours also vary, with start times as early as 7:00 a.m. and end times as late as 8:00 p.m. Norms related to breaks and midday meals also vary.

Even with defined work hours and work weeks, the relationship to time can be quite different. Some cultures value punctuality and strict adherence to time standards. Other countries prioritize effectiveness or getting things right versus efficiency or getting things done on time. And some cultures prioritize personal interactions and harmony in the workplace above all else.

Time-off standards and attitudes also vary globally. The United States is the only developed country without a single legally required paid vacation day or holiday. In other countries, not only is time off provided, it is mandated that the employee take it. Developing economies often lack any work standards, let alone time-off standards.

Vital to the success of any project schedule is a good understanding of your available resources throughout the year. Awareness of local workdays, work weeks, time off, and employee attitudes toward time can positively or negatively affect the project schedule and must be considered in project planning and execution.

Be aware of local holidays, i.e. Ramadan, Golden Holiday, etc; since visiting or trying to communicate during these extended holidays may not be productive.

Global practice requires culturally intelligent skills, traits, and know-how for successful business development, project planning, and execution. Cultural intelligence is equally important to technical, professional, and business competencies, and individual acumen, or lack thereof, significantly affects success before, during, and after a project. These are vital considerations when selecting and preparing individuals for global practice.



Chapter 2:

Design and Construction

This chapter includes discussion on the following topics:

- Codes and standards
- Sustainability rating systems
- Resilience
- Construction practice, including means and methods
- Labor: Skills and languages
- Safety: Personal, liability, and responsibility
- Metric system
- Project delivery types
- Expectation of deliverables
- Infrastructure: Technology, phone, power, and transportation
- Team structure

Codes and Standards

Codes and standards vary around the world and vary within the same region, and even in different disciplines within the same field, such as building design, bridge design, railroad bridges, or other structural design. Structural engineers practicing abroad need to be aware that some countries have their own national codes, other countries developed their own standards based on foreign codes with customized amendments for local conditions such as local climate and seismic activity, and others rely entirely on foreign codes and standards. The owner or financier may require one code and local officials may require another code and beware the costs of purchasing and translating local codes could be very expensive and needs to be include in project budget. An English translation of local code would be required to ensure that local technical jargon is correctly translated and understood by all parties on the project.

Sustainability Rating Systems

Sustainability rating systems have been considered and implemented in many parts of the world. US engineers working internationally should investigate sustainability rating systems, if required or desired on their projects, as locally practiced sustainability rating systems may affect the use of certain material standards. Additionally, there are several rating systems that are used in the world; popular rating systems include the U.S. Green Building Council (USGBC) LEED system (Leadership in Energy and Environmental Design) and the U.K. Building Research Establishment Environmental Assessment Method (BREEAM). And there are other sustainability rating systems used in some countries for local projects.

Resilience

Designing for resilience requires good understanding of the project functionality, its location or locations, site conditions, climate conditions, history of natural disasters, any hazards associated with any of these, and any potential human hazards that may affect the environment. A lot of this information is not known or available when working on a project in a different country or region. Therefore, the structural engineer should engage early in the project with the international architect, local architect, local engineering partner, owner, international or local construction company, and/or a combination of the team members if resiliency aspects are to be considered.

Similar to many project goals, the engagement of the whole team at early stages of the project is important to determine what works and what does not work for site condition, climate conditions, and potential natural disasters and hazards.

Construction Practice, Including Means and Methods

Construction practices vary around the world, yet they still have many similarities. Local construction practices depend mainly on the materials of construction available in the region and on the type and origin of contractors in that region. It is important for structural engineers to investigate the construction practices, local availability of materials of construction, and means and methods at early stages of any project since it may affect the selection of material, structural systems, and much more. Partnering with local design and construction firms is recommended to avoid surprises and significant changes during the design and/or the construction process. Also, the construction means and methods are commonly driven by the adopted material standards and often comply with provisions from the source country where standards originated. Many countries still rely heavily on manual labor for tasks

that typically is performed by machines in the United States. Collusion among contractors may be considered standard practice rather than corruption. This practice ensures that all local contractors receive some portion of the available work.

Labor: Skills and Languages

For any construction project, understanding the background, culture, and skills of the construction workers is extremely important. These workers are consumers of the engineering drawings; as such, they interpret instructions in specifications and eventually use erection and shop drawings to produce and deliver the final structure. Construction workers may or may not possess basic skills needed for most projects, but for certain tasks. Additionally to perform certain tasks, certifications are required by jurisdictional authorities. Structural engineers need to consider if the local construction labor force has or can acquire the skills needed for the project.

The language used in the construction drawings and specifications is another important factor for the execution of any project by either foreign or local construction workers. For many parts of the world, English is used in construction drawings and specifications in internationally based projects designed by North American and some European firms. This situation may be challenging to construction workers in some countries where English is not commonly used, and therefore would require construction managers to work closely with workers to ensure that drawings are interpreted and executed correctly. Since most of the engineering professionals working internationally are from the West (Europe and North America) or are trained or practice in the Western tradition, they could face many challenges in all phases of construction.

Understanding the mentality of the construction workers and overcoming the language barriers are the most common concerns. Although language barriers may

disappear with time, experience, and with some help, understanding the mentality of the construction workers—including their body language, attitudes, and behaviors—remains a significant challenge and routinely requires education and training. Experience shows that engineers who are trained in understanding the culture of the construction workers succeed and produce successful projects.

Safety: Personal Safety, Liability, and Responsibility

Safety regulations in countries are sometimes not available or often not implemented in the same level of detail as in the United States.

Safety regulations and certifications are required in some countries to perform certain tasks—such as working at high altitudes, working in confined spaces, or welding—but are not required everywhere.

Because of the high number and various backgrounds of consultants and contractors, engineers need to educate themselves on safety manuals and procedures used by engineering and construction companies. This education may require taking extra precautions in the development of clear drawings and specifications and participating in project meetings frequently to identify and adjust any elements that could potentially harm the successful completion of the project.

This caution can also affect the schedule and budget when engineers estimate their scheduling and fees.

Metric System

The International System of Units (SI), or metric system, is used almost everywhere in the world, with the significant exception of the United States. Structural engineers who intend to work on international projects should be familiar with the metric system before starting on the project; they should be familiar with linear and area measurements, as well as weight and force

units. Strong knowledge of and familiarity with metric units allows American engineers to deal with clients and local firms easily.

Project Delivery Types

Project delivery types and stages are similar around the world, but variations exist. The variations depend on project locations, government policies, local jurisdiction requirements, and local practices.

In some countries, foreign companies are required to provide all deliverables, including construction documents and construction administration, whereas in other countries, foreign companies are limited in scope to deliver design development drawings and then local companies take over the project to produce construction documents.

An alliance—in the form of a joint venture, a project consortium, design-build partnerships, or any number of variations—is often created between foreign and local entities, especially when public interests are involved. The project delivery is similar in general using these stages: master plan (most commonly used for big projects), schematic design, design development, construction documents, and construction administration. One common global difference from the typical American practice is that during construction administration the consultants have their engineers on site full time for supervision and inspection versus regular periodic visits that occur on domestic projects.

Expectation of Deliverables

Deliverables typically adhere to contract terms; deliverables may be subjected to changes during the design and construction process, but typically this is done and agreed upon by all stakeholders during the contract phase.

Successful consultants are those who have strong contracts, project managers with strong and extensive knowledge of contracts and

details, and can bring the client to their level of understanding to ensure smooth execution and little delay.

Infrastructure: Technology, Phone, Power, and Transportation

Suitable infrastructure to produce engineering projects is essential to the success of any project. In some countries, the infrastructure and technology to produce work is similar to that in Europe and North America, if not even better; however, in some countries, it may not be similar. Given the complexity and the iconic nature of various projects, materials and construction methods not previously used must be researched, tested, and implemented carefully—often for the first time and in challenging environments. Still, in many countries, there are basic challenges, such as power shortages and missing or spotty communication. This situation varies by country and should be investigated ahead by consultants and construction companies.

Team Structure

In international projects, identifying the team structure, the responsibility of each team member, and the relationship between the team members is essential to the success of any project. In international projects, the team usually consists of the owner, international architectural and/or engineering firm, a local architectural and/or engineering firm, a construction company (that could be international or local depending on the location of the project), and a quantity survey firm (depending on the location of the project).



Chapter 3:

Legal

This chapter includes discussion on the following topics:

- Standard of care and other legal regimes
- Rule of law
- Registration
- Anticorruption
- Local tender rules
- Contracts
 - » Standard agreements
 - » Governing law and governing language
 - » Force majeure
 - » Payment
 - » Dispute resolution
- Insurance
 - » Professional liability insurance
 - » Workers' compensation and other coverage
 - » Commercial general liability
 - » Auto coverage
- Intellectual property and confidential information
- Export controls
- Cybersecurity
- Employment
 - » Initial analysis
 - » Employee suitability
 - » Triggering local employment and labor laws
 - » Triggering local tax obligations
 - » Secondment arrangements
 - » Safety
 - » Driving
 - » Visas and immunizations
 - » Protection of personal information and data

Standard of Care and Other Legal Regimes

One of the most significant legal issues facing engineering firms in the global marketplace is the fact that the concept of standard of care is not universal. The legal theory of professional negligence exists only in countries with common law legal regimes. The majority of countries outside the United States, however, address liability on the part of design professionals by statute. Some countries with a civil code¹ regime impose strict liability on design professionals in the event of a structural collapse. For these reasons, it is important to evaluate where your firm is working and to understand the specific legal regime under which the country is operating. Do not assume that in all cases you will be able to rely on a standard of care defense. Likewise, it is important to work with your firm's insurance broker to ensure that there are no gaps in your firm's professional liability policy and that your insurance would provide for coverage in a jurisdiction that does not recognize professional negligence. Failure to understand and get assurances at the start of a such as worker safety or even the ethics of the project may lead you into an ethical dilemma.

Rule of Law

Not only is it important to understand what type of legal framework your firm is working within, but it is also critical to understand how effective the law is within the legal framework. A country's rule of law is a key indicator of

factors such as safety and security, corruption, harmony among the country's population, and justice. The more a firm knows how an overall system operates within a foreign country, the better equipped they will be in considering whether to work there or not, and if they decide to work there, what measures they should take to control negative elements of the country.²

Registration

Whereas professional registration is an important factor to consider when delivering services within the United States and Canada, individual professional registration becomes less of an issue on the international scene. This is not to say that you do not need to research the local rules and/or consult with local counsel regarding whether you as an individual or your firm needs to be registered in a foreign country. Evaluating your services and whether they trigger a professional registration requirement is an essential step when taking on an assignment in a foreign country.

In some cases, you will be required to register. If such is the case, you should expect the process to be lengthy and should account for extra time that it will take to become registered before your work on a project is expected to start.

The best predictor to becoming registered in a foreign country is if there is an international agreement, such as the Washington Accord. The Washington Accord is an agreement between national bodies responsible for accrediting engineering degree programs. Currently,

1. Countries following a civil law system are typically those that were former French, Dutch, German, Spanish, or Portuguese colonies or protectorates, including much of Central and South America. Most of the Central and Eastern European and East Asian countries also follow a civil law structure (World Bank Group, Public-Private-Partnership Legal Resource Center, <https://ppp.worldbank.org/public-private-partnership/legislation-regulation/framework-assessment/legal-systems/common-vs-civil-law>).

2. The World Justice Project defines the rule of law as comprised of four universal principles: (1) accountability (the government as well as private actors are accountable under the law); (2) just laws (the laws are clear, publicized, stable, and just; are applied evenly; and protect fundamental rights, including the security of persons and property and certain core human rights); (3) open government; and (4) accessible and impartial dispute resolution (<https://worldjusticeproject.org/about-us/overview/what-rule-law>).

the United States and 19 other countries are signatories.³ The Washington Accord recognizes the education of engineers educated in each signatory's country. However, even if there is an international agreement in place for the location for your firm's project, you may have to overcome other hurdles in criteria for registration developed by a registering body in a foreign country. If no such agreement between the United States and the foreign country where the project is located exists, it is virtually impossible to become licensed. This situation does not necessarily mean outright that you cannot work in some capacity in a foreign country. In other cases, temporary or project-specific registration may be required. Whether registration is required, aligning with a local registrant to oversee your services is often required.

Aligning with a local registrant to oversee your work can have advantages beyond meeting a local registration requirement. Having a partner knowledgeable about your firm's services can be a potential market access entry enabler. This person can be on the lookout for other similar opportunities in the region. This individual can also serve as boots on the ground to assist should project needs arise and your US-based personnel are unavailable.

Firm registration, akin to obtaining a certificate of authorization, may also be required where you intend to deliver services. Again, it is important to research the rules and/or consult with local counsel so that your firm does not run afoul of a firm registration requirement in a foreign country. Evaluate whether a general business license to conduct business in the foreign country is required or not. Consulting with local counsel can help in this area as well.

Anticorruption

When performing international engineering services, avoiding corruption should be at the top of your mind. Learn the key elements of the US Foreign Corrupt Practices Act (FCPA) and put in place related compliance measures. The FCPA, enacted in 1977, generally prohibits the payment of bribes to foreign officials to assist in obtaining or retaining business. It can apply to a US-based firm and its officers, directors, employees, stockholders, and agents acting anywhere in the world.⁴

Consulting with an attorney who specializes in the FCPA and other countries' laws prohibiting corruption that are applicable to the project is money well spent, considering that the penalties for violating such laws can include large fines, imprisonment, and debarment from doing work for the US government.

Familiarize yourself with the corruption climate of the country your firm will be working in by relying on sources such as Transparency International.⁵ Transparency International is an organization that has assigned indexes to countries around the world based on corruption activity, and its website contains a wealth of related information.

Corruption can present itself in a variety of ways. Aligning with a local partner can overcome hurdles and open doors. However, such an arrangement can pose a corruption risk if your firm is not careful. Moreover, if your firm already has a foothold in a particular region and you have local agents and representatives to develop business, these can be some of the riskiest relationships you will need to manage on your foreign projects.

Other relationships, such as those with your firm's client or your subconsultants, can

3. Originally signed in 1989, the Washington Accord is a multilateral agreement between bodies responsible for accreditation or recognition of tertiary-level engineering qualifications within their jurisdictions who have chosen to work collectively to assist the mobility of professional engineers (International Engineering Alliance, <http://www.ieagrements.org/accords/washington/>).

4. US Securities and Exchange Commission (<https://www.sec.gov/spotlight/foreign-corrupt-practices-act.shtml>).

5. <https://www.transparency.org/>.

also pose corruption risk. Doing your due diligence on individuals and/or firms involved in your foreign projects can alleviate some of this risk. Check them against the various lists published by the US government to confirm that they are not already the subject of US sanctions. Such lists are primarily published by the US Commerce, US Treasury, and State Departments, and they include the Denied Parties List, Unverified List, Entity List, Specially Designated Nationals List, Embargoed Countries List, Arms Export Control Act Debarred List, and Nonproliferation Sanctions.⁶

Other sources for performing due diligence on third parties include information published in news media, the commercial sections of US embassies, and reputational information obtained from colleagues and partners with experience working with such parties.

Contracts with your firm's clients, subconsultants, and local partners should contain language confirming their agreement to comply with applicable anticorruption laws. Independent contractors and agents should be trained on your firm's policies and should be required to certify regularly their continued compliance. Your firm should also incorporate into its management of these relationships the review of any expenses for red flags or other indicators of possible corruption.

Local Tender Rules

Requests for proposals (RFPs) for foreign public projects can be subject to an entire body of law that requires careful examination and consultation with local counsel so as not to run afoul of the rules. Whereas some countries post their tender rules and procedures on line (countries such as Saudi Arabia, New Zealand, Kenya, China, and the U.K.), consulting with local counsel improves your firm's understanding of

such rules and helps to prevent your firm from running afoul of such rules.

Contracts

Standard Agreements

If your firm has the ability to propose the form of contract to use for a foreign project, select a form that has international terms already worked into it. The International Federation of Consulting Engineers (FIDIC) publishes a suite of standard contracts referred to as FIDIC forms. FIDIC is the equivalent of documents from the American Institute of Architects (AIA) for international projects and has gained widespread acceptability from the international engineering community.⁷ The FIDIC forms include agreements between owner and engineer, engineer and subconsultant, and representative and agent, in which FIDIC includes good coverage of business ethics and anticorruption.

Governing Law and Governing Language

A firm should never enter a contract for a foreign project lightly. Foreign contracts are often governed by the laws of the foreign country, and they may have dispute resolution processes that, if agreed to, could put your firm at a serious disadvantage in the event of a dispute. For these reasons alone, it is imperative that you consult with local counsel so that your firm understands the implications of a contract that is governed by foreign law as opposed to the more familiar US laws and what the dispute resolution process identified in the contract, if it plays out, looks like. Key among your firm's interest in this regard is whether provisions such as standard of care, indemnification, and limitation of liability are recognized in the foreign jurisdiction.

6. A consolidated list published by all three departments can be found at <https://www.export.gov/article?id=Consolidated-Screening-List>.

7. <http://fidic.org/>.

Moreover, your firm as a potential claimant needs to understand the degree of enforceability of a judgment in the foreign country and any other hurdles that may exist as a result of the language of the contract.

A US-based firm operating in a foreign country should make sure that the contract is written in English and that English is the governing language of the contract. If you are not able to do this, investing in a translation by a reputable translator who will certify the accuracy of the translation is well worth the cost.

Force Majeure

Take the time at contract drafting to anticipate events or circumstances that could occur during a foreign project that could have a significant effect on your firm's ability to perform its obligations under the contract. If you are working in a politically unstable environment, or one prone to natural disasters, make sure that a force majeure clause exists in the contract and that its scope is broad enough. Consider also the importance of the availability of resources or materials for your project. If such resources or materials become scarce, the cost of completing your project could differ greatly from what your firm originally anticipated. In such cases, you want to be able to back out of the contract without a penalty. However, you will only be able to do so if the cause for your backing out is expressly contained within a contract's force majeure clause.

Payment

Payment is discussed in more depth in Chapter 4 of this Guide; however, payment must be addressed in the language of a contract for a foreign project, as well. US-based firms should ensure that the company is paid in US dollars unless some other overriding reason exists warranting payment in a foreign currency. If your firm is working for a client for the first time, it is not unreasonable to ask for a retainer

up front before commencing services, and the contract should state that receipt of the retainer is a condition precedent to your firm's commencement of services on the project.

As discussed in more depth in Chapter 4, it is important to consult with a local tax advisor to understand in advance what your firm's tax obligation is, if any, in the foreign country. Some foreign clients require that there be retainage on a US firm's fee to cover foreign tax obligations associated with the services being provided in the foreign country. This is an important consideration during fee development. At a minimum, the contract should specify what the position is between the parties regarding retainage for tax purposes.

As further explained in Chapter 4, which discusses financial considerations, foreign clients may also require letters of credit and performance bonds, or other guarantees, and such requirements are typically set forth in the agreement.

Dispute Resolution

Dispute resolution is an important issue to cover in a foreign contract because of the unpredictability of foreign legal processes and outcomes. Unlike in the United States where engineering firms often prefer mediation and litigation to arbitration, some foreign arbitration bodies—such as the International Chamber of Commerce—are much more predictable and effective than trying to resolve a dispute in foreign litigation. In addition to governing law, another important consideration regarding dispute resolution is venue. The place where the dispute resolution process takes place should be reasonably accessible by all parties to the dispute, and, in some cases, may require proximity to the project.

Insurance

Professional Liability Insurance

Working in jurisdictions that do not operate under common law can present insurance issues if your firm's professional liability insurance policy is not adequately supplemented. If your firm is working in jurisdictions with decennial liability,⁸ for example (as in the case of many countries within the Middle East), you will require insurance that covers statutory liability in connection with the delivery of professional engineering services. Decennial liability is strict liability and requires no breach of any standard of care or negligence on the part of an engineer in order for the engineer to be found liable.

Even if your firm has a worldwide policy, some jurisdictions require that every firm purchase a separate local policy to cover your firm's services within the jurisdiction. There is a cost associated with doing so that should be factored into the overall cost of your firm's foreign project(s) in the jurisdiction. Your firm's professional liability insurance broker should have relationships with foreign brokers who are able to determine whether a particular jurisdiction requires a local policy.

Workers' Compensation and Other Coverage

Before sending employees to work on foreign projects, it is important that you confirm with your firm's insurance broker that your firm has adequate foreign coverage to protect your employees, such as foreign workers' compensation and employer's liability to cover injuries or illnesses sustained by your employees traveling and working overseas. In addition, your firm should carry coverage for repatriation and accidental death and dismemberment. For those employees traveling

to countries prone to such risk, you should have sufficient coverage for kidnap and ransom and business travel to assist in getting your employees home to safety.

It is possible that your insurance coverage for your employees is not sufficient in a foreign country; therefore, consider using a third-party vendor for worldwide insurance coverage for employees. In a secondment arrangement (as discussed in a later section of this chapter), a local party may be able to cover your employee's local health coverage. If no secondment arrangement is possible and there remains a gap in coverage between what your firm offers and what is required in the foreign country, your employee can also purchase his or her own insurance, and your firm can reimburse him or her for the cost of such insurance.

Commercial General Liability

Your firm's commercial general liability policy should apply to foreign projects so that personal injury or property damage caused by your firm's personnel working overseas is covered.

Auto Coverage

If your employees rent vehicles as part of their travel to foreign project sites or meetings, ensure that your auto and general liability insurance coverages and any corporate arrangement you have with a rental company apply to international auto rentals. If employees are comfortable driving in a foreign country and plan to rent a vehicle to get around during their stay, they should obtain the extra coverage offered by rental companies. Some brokers advise that doing so fills any gaps in coverage between existing coverage and coverage required by law in the foreign jurisdiction. See

8. As the name implies, [decennial] liability typically lasts for at least 10 years (in some cases up to 13 years) after project completion and approval by or delivery to the owner. Decennial liability applies to any party considered a "builder of the work," which includes contractors, architects, engineers, and other professionals who contract with the building owner to work on the project (Cavignac & Associates Insurance Brokers, <http://www.cavignac.com/publications/professional-liability-update-decennial-liability/>).

additional information on driving internationally later in this chapter.

Intellectual Property and Confidential Information

Contracts for foreign projects should contain language to preserve your firm's intellectual property rights, including copyright in instruments of service, patents, trade secrets, and trademarks so that nothing is inadvertently transferred to a client or subconsultant.

Beyond the language of the contract, and depending on the nature of your firm's intellectual property, it may be necessary to register your firm's intellectual property in a foreign country. You should work with local counsel familiar with the intellectual property laws of the foreign country or countries to seek the best protection.

Export Controls

The applicable export control laws are the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations, and, if your firm provides engineering services to the nuclear industry, 10 CFR Part 810, promulgated by the Department of Energy. The purpose of these laws is to protect national security. Violations of these laws can result in fines, and your company may be barred from doing future work for the US government.

At the outset of a foreign project, it is critical to understand the type of information your firm will receive from your client and other project participants, and the information your firm will be expected to generate and transmit during the course of the project. The US government

restricts the export of certain items, technology, and information to a foreign person (as defined under the law) without prior authorization from the US government.⁹ Granting access to controlled information to a foreign person within the United States, including a firm's foreign person employees, is deemed an export. Keep in mind that traveling with certain information on laptops, or bringing certain equipment abroad can also be an export and violates US export control laws.

Obtaining prior authorization from the US government for a foreign person employee to grant access to controlled information is possible. However, certain countries are not authorized to receive controlled information and, accordingly, obtaining authorization from the US government for a foreign person employee whose country of citizenship is one of these countries can be problematic. If your firm's expectations are that foreign person employees from such countries will be able to work on controlled projects, your firm will have an uphill battle trying to obtain the necessary licenses for them to do so.

Engage an attorney who specializes in US export control laws and walk him or her through the services your firm will provide and the information, products, or technology your firm will receive or transmit during the course of a project. Doing so confirms that the laws either do not apply to the project, but, if they do, informs your firm what the project team must do to comply with them. To the extent applicable, your firm's contract with its client and any subconsultants should also address compliance with export control laws. Your firm should also provide awareness training and maintain policies and procedures to ensure compliance with export control laws.

9. §120.16 of ITAR defines a foreign person as "any natural person who is not a lawful permanent resident as defined by 8 U.S.C. 1101(a)(20) or who is not a protected individual as defined by 8 U.S.C. 1324b(a)(3). It also means any foreign corporation, business association, partnership, trust, society or any other entity or group that is not incorporated or organized to do business in the United States, as well as international organizations, foreign governments and any agency or subdivision of foreign governments (e.g., diplomatic missions)." A foreign person is a non-US citizen or nonpermanent resident.

Cybersecurity

Traveling internationally can present the risk of loss of intellectual property and disclosure of confidential information or personal information, so it is imperative that employees traveling to foreign countries protect company and client intellectual property and secrets. This protection can be achieved through training and equipping mobile devices with protective technologies, such as encryption. Two-factor authentication for access can also cut down on the risk of unwanted access to confidential and proprietary information and your firm's network.

Employees should be warned against using open public Wi-Fi when working in a foreign country. Firms should not overlook basic protective steps, such as not allowing company mobile devices to travel or limiting the amount of information one stores on a laptop (or the amount of information one can access from a laptop) because these limitations, too, can help to reduce the risk of unauthorized third-party access to company, client, and employee personal information and data.

Employment¹⁰

The information in this section assumes that your firm does not have a local office in a foreign jurisdiction and that you are staffing foreign projects on an as-needed basis.

Initial Analysis

Before sending employees overseas to work on a foreign project, it is important for a firm to evaluate what its obligations as an employer are toward its employees on foreign assignments. A firm's obligations generally fall under three main categories: (1) legal and compliance, (2) duty of care (Is the employee getting what he or she

needs so that he or she can hit the ground running?), and (3) compensation and benefits (What resources is the firm providing as an incentive? Additional remuneration? Housing? A car?).

Other important issues to explore when considering sending employees overseas include the following: (1) What is the project and what kind of an assignment is it? (2) How long will the employee remain in the foreign country? and (3) What are the conditions in the foreign country?

Employee Suitability

Determine the human needs of your firm's foreign project and look for volunteers. Determine whether the skills and experience of individual volunteers are appropriate for the project.

Interview interested employees and ensure that they understand the role and expectations of the foreign assignment. Ask those with experience working with an employee on domestic projects whether they believe the employee has the experience, qualifications, independence, maturity, cultural awareness, and trustworthiness to go on a foreign assignment. Ask those with experience working in the foreign country who have experience working with an employee candidate for a foreign project whether they believe him or her to be a good choice. Have a plan in place so that performance, growth, and development are still happening while the employee is overseas and so that you can address poor performance and bring the employee back, if necessary.

Triggering Local Employment and Labor Laws

If sending US-based employees into foreign countries so that they can support projects over a long term, consider the local employment

10. The information under this section has been graciously provided by Paul Balfourt, ARUP's Americas regional mobility lead.

laws to be triggered. The United States is unique in the concept of employment at will, so before you send employees overseas for extended periods of time, consult with local counsel on employment agreements, working hours, time off, and other legal matters associated with the employer/employee relationship in the foreign country.

Triggering Local Tax Obligations

If a firm is not attentive to how long an employee remains in a foreign country, the firm can risk the need to pay local taxes. The term *permanent establishment* (PE) refers to activity by a multinational that creates a sufficient presence in a foreign country to make it liable for local corporate taxes or value-added tax (VAT). This law reflects the rights of countries to tax businesses that are generating revenue through local operations, even if they maintain their principal headquarters in their home country. The reason this becomes important for planning purposes is that a company could be subject to double taxation on profits, since the home country could tax those amounts as well. There may be tax treaties and foreign tax credits available that could lessen this burden, but it depends on the country of business activity and home country tax policies.¹¹

Secondment Arrangements

A secondment arrangement can be a means of arranging for an employee (or multiple employees) to work on a foreign project. In such an arrangement, a US-based firm wishing to staff a foreign project partners up with a local entity that permits the US-based firm's employee to work out of its offices. While the US-based firm continues to pay the employee's salary, the local company can assume responsibility for the employee's health and safety and provide her or him with equipment needed for the project and benefits, such as

paid time off, health insurance, dental, vision, short-term disability, and/or accident or sickness insurance. The foreign party with whom the American firm makes this arrangement for its employee can be the foreign client on the project or another party, but in most cases, they are associated with the project.

Safety

It is important to alert employees about travel safety and possible health risks associated with traveling to certain parts of the world. Providing written resources in this area is helpful, and sometimes in-person briefings with a senior member of the firm may be warranted, if the employee is traveling to a high-risk area. A decision to send employees to known dangerous locations should receive serious scrutiny and should require approval from the highest levels of your organization.

Consider using a tracking system for employees so that you can monitor their general whereabouts. This system can be an important tool if you have multiple employees worldwide. The system alerts you whether you have employees in areas where there is a natural disaster or terrorist activity, as examples. This same system can provide assistance in the case of a medical emergency that results in a fatality or life-changing injury for your employees. The vendor of this system can also oversee local health care and work with the employee's family, as necessary.

Driving

Driving in certain parts of the world is not a wise choice, so your firm should consider hiring a car and driver for the project team or arranging local transportation with your firm's client.

11. <https://shieldgeo.com/permanent-establishment-and-tax-a-guide-to-avoiding-unexpected-taxation-in-foreign-countries/>.

Visas and Immunizations

Know travel visa requirements before you make commitments to your foreign client so as not to delay your project. Obtaining a visa in some foreign countries can be a lengthy process.

For employee safety and for the safety of the host country, ensure that you are aware of any immunization requirements before your employees travel. In addition to warnings and alerts regarding US citizens traveling to foreign countries, the US State Department posts country-specific information on its site regarding both visa requirements and required immunizations.¹²

Protection of Personal Information and Data

When your employees work internationally, it is critical to understand the importance of safeguarding their personal information or personal data. Just as most US states have enacted laws protecting against the misuse of individuals' personal information, the European Union (EU) and the European Economic Area (EEA) have enacted the General Data Protection Regulation (GDPR) for all individuals within the EU and the EEA. GDPR is broad and requires a US-based firm to determine whether it is a *data controller* or *data processor*, as defined under the law.¹³ If your firm is doing work in the EU or the EEA, you should consult with counsel who specializes in GDPR compliance to ensure that you do not run afoul of the rules.

12. <https://travel.state.gov/content/travel/en/international-travel/International-Travel-Country-Information-Pages.html>.

13. <https://eugdpr.org/>.



Chapter 4:

Financial

This chapter includes discussion on the following topics:

- Cost and pricing
- Currency considerations
- Taxation
 - » Personal income taxes
 - » Corporate income taxes
 - » Foreign withholding taxes
 - » Value-added tax
 - » Goods and sales tax
- Local accounting rules
- Banking

Cost and Pricing

International projects can often be exciting and technically challenging, providing engineers with opportunities to develop new disciplines and practices in new geographies. However, US-based engineers often do not realize how their cost structures can increase when performing work outside the United States. It is critical that the engineer have a full understanding of incremental costs associated with working in a foreign country before entering into agreements for international projects.

Often the best source of information on additional costs are from clients, foreign business partners, other engineering firms, mobility consultants, accountants, attorneys, and tax advisors. The key point is that a sound understanding of these costs allows the engineer to negotiate a contract that allows for full recovery of costs, as well as a reasonable profit.

Examples of incremental costs stemming from overseas assignments include, but are not limited to, the following:

- Cost of living and hardship adjustments for staff on long-term assignments;
- Benefits in kind (e.g., lodging, meals, periodic home visits, language training, and child care);
- Relocation (e.g., shipping and moving);
- Increased personal income taxes. This increase often results from taxation of wages earned in the host country, and taxation for payments of benefits in kind and relocation;
- Tax advice provided to employees;
- Potential double taxation in cases where overseas earnings create tax obligations for engineers;

- Increased corporate tax cost (e.g., corporate income tax, withholding tax, value-added tax, goods and services tax, and other local taxes);
- Translation expenses;
- Costs for visas, work permits, inoculations, and other travel-related costs;
- Local vehicle and transportation allowances;
- Additional health insurance costs; and
- Security and international assistance (SOS).

Good research is the key to pricing the international contract. The engineer should identify all incremental costs and decide how to incorporate these costs into the price of the contract. Pricing tactics, such as lump sum allowances (e.g., for relocation), direct pay by client (such as local vehicle costs), and grossing up hourly billable rates (paying for hours without withholding and other tax costs), are just some of the ways the engineer can ensure that costs on international contracts are recovered and tax exposure is minimized.

Currency Considerations

Determining the currency of payment is extremely important on international projects. US engineers bidding on international projects should always seek payment in US dollars to eliminate currency risk.

Currency risk, commonly referred to as *exchange-rate risk*, arises from the change in price of one currency¹⁴ in relation to another. Investors or companies that have assets or business operations across national borders are exposed to currency risk that may create unpredictable profits and losses. For US-based firms performing projects and not establishing long-term operations, the issue is usually simple. For firms considering long-term operations and a permanent establishment

14. <https://www.investopedia.com/terms/c/currency.asp>.

in another country, the issues are much more complex and outside the scope of this discussion.

A US firm's functional currency is usually the US dollar. A functional currency represents the primary economic environment in which an entity generates cash and expends cash. The typical American engineering firm working overseas is expending cash based in US dollars. As work is performed on projects, revenues are earned, and assets (accounts receivable) are generated, also valued in US dollars. If payment on these accounts receivable is to be received in any currency other than the US dollar, the American firm is exposed to exchange-rate risk on its accounts receivable.

There are several basic ways that the engineer can manage currency risk, including but not limited to, the following:

- Negotiating with the client and/or owner to share in any currency gains or losses realized;
- Offering a discount to receive payment in US dollars;
- Hedging with a forward contract in the amount of the foreign currency anticipated to be collected. A forward contract is an agreement between two parties to buy or sell a specific asset on a specific future date at a specific price. As an example, if a client promises to pay to a US firm 1 million euros in two months, the US firm could enter into a forward contract with its bank to deliver 1 million euros and receive the US dollar equivalent based on an agreed-upon exchange rate. Forward contracts have no cost and are often effective when the timing of payments can be reasonably estimated; or
- Hedging with exchange-traded funds. These funds have returns based on the performance of currencies and can be used to offset exchange-rate exposures on assets.

Repatriation refers to converting any foreign currency investment into one's own local currency. This term most frequently relates to repatriation of capital investments made in a host country.

Investments and profits held in a host country are often taxed when they are repatriated to the United States. If your firm is required to open a local bank account or make significant local investments, it is important to consult with knowledgeable advisors before making investments in a host country.

Some currencies are known as *nonconvertible*, which means that a currency is not available to trade on the foreign exchange markets, and therefore cannot be exchanged for any other currency. In most cases, the reason that the currency is not convertible is because of restrictions placed on the currency by national governments. To accept payment in a nonconvertible currency essentially means that the funds cannot be exchanged for US dollars and received into a bank account in the United States. The American engineer should not accept contract terms that specify a nonconvertible currency as a form of payment.

Taxation

One of the greatest financial exposures when doing business outside of the United States is taxation. Not understanding the local tax laws and compliance can lead to drastically reduced profits, fines, penalties, and even disqualification from performing further work in the host country. Additionally, the United States is one of the few countries that taxes based on worldwide income. This notion means that corporate earnings and individual earnings taxed in a foreign country are not automatically excluded from taxation in the United States. It also means that payments to employees for items such as in-country wages, relocation, benefits in kind, and other costs associated with overseas assignments could be taxed in both the host country and at home. The United States has tax treaties with many countries to

alleviate double taxation, but there are many countries that do not have a tax treaty with the United States. It is important for the engineer to understand that taxation of international earnings is extremely complicated.

Expert guidance before issuing proposals or bids is critical to assessing exposure from taxation on international projects. Types of taxes commonly encountered on international projects include personal income tax, corporate income tax, foreign withholding tax, value-added tax, and goods and sales tax.

Personal Income Tax

Many countries aggressively tax nonresidents on wages and other payments earned in their countries. This situation can lead to increased cost for payroll reporting in the host country and often requires remittance of payroll taxes on behalf of the employee working overseas. When considering an overseas project, it is important to understand how employees are taxed in the host country and in the United States. Allocation of tax cost-benefit should be agreed upon in advance with the employee. Typical approaches are tax protection (i.e., the employee does not bear any additional tax cost but retains any tax benefit) and tax equalization (i.e., the employee pays an equivalent tax as they would in the United States and retains no tax cost or benefit).

Corporate Income Tax

Most countries have criteria to determine if the US firm has a tax presence in the host country. Once a tax presence is established, the American company must file income tax returns in the host country. Depending on the country, the United States may have tax treaties that would allow relief from taxes in the host country.

Foreign Withholding Tax

Some countries levy a withholding tax on payments made to nonresidents. These taxes

effectively reduce the amount firms are paid for their services, so a clear understanding of this tax is necessary in the proposal and contract pricing stages. To recover withholding taxes, US firms often *gross up* their labor rates to recover their intended fee and remain whole. Note that some countries also require nonresident firms to impose withholding taxes on nonresident subcontractors as well.

Value-Added Tax

A value-added tax (VAT) is a consumption tax placed on a product whenever value is added at each stage of the supply chain, from production to the point of sale. The amount of VAT that the user pays is on the cost of the product, less the costs of materials used in the product that have already been taxed. It is important to understand when registration for VAT is required and, if required, how the VAT is collected and remitted to the host country's tax authorities. Often a local accounting firm can be used to ensure VAT compliance.

Goods and Sales Tax

The goods and services tax (GST) is a value-added tax levied on most goods and services sold for domestic consumption. The GST is paid by consumers, but it is remitted to the government by the businesses selling the goods and services. In effect, GST provides revenue for the government. It is important to understand when registration for GST is required and what engineering services are subject to GST. As with VAT, if GST registration is required, it is important to understand how the GST is collected and remitted to the host country's tax authorities. In some instances, the client of a US firm can remit the GST on behalf of the nonresident US firm. If GST registration is required, it is usually easiest to engage a local accounting firm to assist with GST compliance.

When a US engineering firm is executing an international project, one goal is to minimize corporate and personal income tax exposure in the host country. Exposure to these taxes

generally increases as the amount of work performed in the host country increases. When performing projects over long periods, some engineering firms may inadvertently create a permanent establishment (PE), which immediately creates taxation issues. A PE is defined as a fixed place of business that generally gives rise to income or value-added tax liability in a host country, but the PE can also be created through prolonged performance of work in the host country. PE rules are often spelled out in tax treaties and vary from country to country; they can be complicated. Tax advice on PE creation should be sought before accepting any international engagement. Once a PE is triggered, costs for tax, accounting, legal, and reporting can significantly increase.

When US-based engineers perform work in a host country for an extended period, the risk of personal income tax exposure increases. Rules vary by country, but at some point, the US engineer is deemed to have a tax presence in the host country. When this occurs, payroll and tax reporting are usually required in the host country. Because the US employee is still paid in the United States, the host country taxes are often paid directly by the employer to the host country government, which often generates US income tax credits for the employee. Careful planning with tax and accounting advisors is necessary to ensure that employees and employers are treated equitably and that incremental tax costs can be estimated for cost and pricing of the project.

When considering an overseas project assignment, engineers need to ask themselves a few basic questions related to taxation. Once answered, the engineer should seek qualified tax advice from their accountants or attorneys.

Taxation questions to consider include, but are not limited to, the following:

- Does the client require me to have a physical presence in the host country? If so, this could lead to creation of a permanent establishment and could expose the engineer to host country corporate taxes.

- Where is the work to be performed? How much of the project scope is to be executed in the host country? If significant hours are spent in the host country, this often leads to creation of a permanent establishment and exposes employees to host country income taxes.
- Do I have the staff necessary to execute the scope in country? Lack of staff can lead to extended individual host country assignments, increasing risk of personal tax exposure.
- Is the scope well defined? What are the chances for *scope creep* for work performed in the host country? International projects often expand in scope over time, leading to increased risk of corporate and personal tax exposure.
- Can I estimate how much time in any 365-day period each of my staff will spend in the host country? If this can be estimated, personal and corporate tax exposure can be managed and decisions can be made on how employees will be treated for personal income tax.
- Do I need to use subcontractors to perform the work in country? If a US-based company uses subcontractors, there may be local reporting and tax withholding considerations.

Local Accounting Rules

Engineers performing work on international projects from within the United States usually have minimal local accounting requirements until a PE is established. As mentioned before, advice on PE creation is extremely important before commencing work in a foreign country. Once a PE is established, significant costs arise from statutory reporting and tax cost and compliance.

Banking

The American engineer providing engineering services from within the United States typically does not need a local bank account. Whenever possible, the engineer should not open a local bank account unless necessary. A local currency bank account is subject to exchange-rate risk and may create host country and domestic reporting requirements. If it is necessary to open a local account, appropriate internal controls should be established to safeguard the account.



Appendix

Country-Specific Information and Examples

This section contains specific information and examples that cover many of the topics in Chapter 2, which deals with design and construction.

Codes and Standards

In the Middle East, there are no national codes, with the exception of Turkey and Israel. Most countries rely on foreign codes and standards, such as British, American, Australian, and French. In the Gulf region of the Middle East, the infrastructure projects are driven by the standards of the American Association of State Highway and Transportation Officials (AASHTO) and tailored for local practices. Small infrastructure engineering manuals, based on AASHTO, have been developed for local use by local engineers; for details and more specific provisions, they refer to AASHTO. In bridge design, currently the AASHTO load and resistance factor design (LRFD) method is used;

it replaced the British standards that were previously used in the Gulf region.

In building projects, British standards are officially used, although in day-to-day practice, other codes and standards are used, and that depends mainly on the background and experience of the design engineer. Construction material specifications refer to British Standards because they were historically developed by British engineers and contractors.

In railroad projects, French standards are primarily used since, historically, most of the engineering, construction, and fabrication work is done by French engineering and construction firms.

In summary, for design and drawing production, American standards are used for infrastructure projects, British standards are used for building projects, and French standards are used for railroad projects.

For contracts, bills of quantities, and pricing, the British standards are used. The known

British contract reference from the International Federation of Consulting Engineers (FIDIC) is the standard in the Middle East. Historically, many of the clauses in contracts were taken from British standards by British companies, and therefore much arbitration was handled in British courts.

Another example of code and standard variations is in Latin America. The codes and standards in Latin American countries are influenced by various countries and regions. The US engineer should investigate and research codes and standards in this region because they vary from one country to another. Many countries in Latin America have their own national codes, but they are customized for local conditions. Colombia, Peru, Ecuador, Panama, Mexico, and Venezuela are influenced by US codes, such as ASCE 7, American Concrete Institute (ACI), American Institute of Steel Construction (AISC), American Society for Testing and Materials (ASTM), and AASHTO. Other countries, such as Bolivia, are influenced by Spain; therefore, the Eurocode is followed. US engineers working on projects outside the United States should investigate and research codes and standards used in the country or region where they are working and familiarize themselves with these codes and standards.

Sustainability Rating Systems

The Leadership in Energy and Environmental Design (LEED) system of the U.S. Green Building Council (USGBC) is adopted in the Gulf region of the Middle East. Sustainable structures are encouraged in the region. The emirate of Dubai is leading in this area and is in competition with Doha, Qatar, and Jeddah, Saudi Arabia, at the first level. Kuwait comes in at the second level of implementing sustainability standards, and Oman is at the third level. The LEED system is implemented selectively by design firms and certain international-based projects in Turkey, Lebanon, and to a far lesser extent Egypt. In Latin America, on the other hand, sustainability is usually implemented by international firms on international-based projects.

Construction Practice, Including Means and Methods

In the Middle East, construction contractors in the past have been primarily from Cyprus, Greece, South Africa, and Great Britain. These contractors brought their experiences and technologies with them to the region. The experience and the technologies they brought proved themselves, became accepted, and remain established in the region. Few opportunities have been given to other practices and technologies since the authorities are comfortable with the current practices.

The construction means and methods were driven by the material standards and had to comply with provisions from the source country where the standards originated. So for building design, the means and methods are mainly British, whereas for bridge and transportation design, they are mainly American.

In Latin America, the contractors are mainly local, and local construction practices are followed, except for international-based projects, where foreign design and construction companies may be involved.

Labor: Skills and Languages

In parts of the world other than the United States, such as Latin America, drawings and specifications are required to be in Spanish, except for Brazil, where the drawings must be in Portuguese. This requirement minimizes the challenges with labor because the labor force is usually local and knows the language. However, this requirement may be challenging to US firms that have to prepare drawings in languages other than English.

The Middle East region can be divided into two main parts. First is the Gulf region, and second is the rest of the Middle East. The Gulf region depends entirely on foreign labor, mostly from Asia (the Indian subcontinent and southeast Asia) and to a much smaller extent from North Africa. The Indian subcontinent

includes India, Pakistan, and Bangladesh. The laborers from these countries come with basic skills and experience, and they are typically trained on construction sites to perform their tasks. The rest of the Middle East uses primarily the local labor force in most construction projects. Larger or more important projects, such as large bridge and tunnel projects or iconic buildings and structures, typically include support from international and specialty construction managers to advise and direct projects of larger scale or complex scope.

In Middle East countries dependent mainly on the local population for labor, the challenges mentioned can be minimized. However, management regularly faces serious concerns about the construction workers' attitudes toward quality, construction standards, proper inspection, and adherence to drawings and specifications.

Safety: Personal Safety, Liability, and Responsibility

In the Middle East, safety regulations are not fully implemented when compared to Western safety regulations and standards. In general, the implementation of safety regulations in the Middle East when compared with the United States, is approximately 50%. It is worth mentioning that many injury and death accidents have been reported on and near construction sites. This trend is exacerbated by tight schedules and ambitious plans for accelerated construction and completion targets, which are often encountered culturally.

Recently, local authorities in the Gulf region have started to look at implementing safety rules; they have been considering US Occupational Safety and Health Administration (OSHA) safety standards for building and transportation projects. The rules for liability and responsibility follow the policies in Western countries.

In Latin America in general, safety regulations are also available but not at the same level of detail as in the United States.

Certifications are required to perform certain tasks, and training is provided to workers, especially on large-scale and important projects.

Project Delivery Types

In the Middle East, local engineering firms have their own architects, structural engineers, and mechanical, electrical, and plumbing engineers. These companies typically work on small to medium-sized projects. For bigger projects with more complex scope or an iconic nature, architects and consultants, mostly from Europe, the United States, and Australia, are recruited and hired.

Expectation of Deliverables

One of the main challenges in some countries, for example, in the Middle Eastern countries, is that the client and the consultant are not at the same level of understanding when it comes to the project deliverables. The client often tries to request and achieve additional items or to make changes past the terms agreed to before signing the contract. When consultants try to adhere to the contract terms and scope, they encounter resistance and sometimes face trouble in maintaining a healthy and cooperative relationship with the client. Consultants should be aware of the contract details and should take their time in reviewing any additional change orders (or *variation orders*, as they are called in the Middle East region).

Infrastructure: Technology, Phone, Power, and Transportation

In the Gulf region of the Middle East, and in Turkey and Israel, the infrastructure and technology used to produce work is similar to that in Europe and North America, if not better. In some other parts of the Middle East, however, and in potential project sites far from major cities in Latin America, there are

challenges, such as power shortages and a lack of communication.

Team Structure

In projects in the Middle East, usually the international firm leads the entire technical team, and the local firm helps with the local practices and requirements and with coordination with the construction company.