

**Project Controls Expo – 22<sup>nd</sup> November 2018**  
**Melbourne Cricket Ground**

**International Application:  
Estimating Differences Russian and  
International Projects**

# Sean T Regan, Ph.D., FAACE, CCP, CEP, EVP, PSP, MRICS, FPCG



Dr. Sean T. Regan  
AAACE FAACE, CCP, CEP, EVP, MRICS  
Fellow Project Controls Guild

## *Certifications / Affiliations*

- Association Advancement of Cost Engineers – Fellow AAACE; Full Member; Certified Cost Professional, Certified Estimating Professional; Earned Value Professional; OT Zimmerman Award, Director Region 9 AAACE, AAACE Educational Board for Chairman International Marketing Committee Co-Chair International Annual Meetings Committee, Co-Chair International Government, Co-Chair Eastern European Committee, 2016/17 Outstanding Regional Director
- American Conference Construction Educators – member - Industry Advisory Board
- ICEC – Region 2 Co-Marketing Director
- College of Performance Management
- MRICS Chartered Surveyor
- Fellow Project Controls – Project Controls Guild

# Dr. Sean T Regan - Biography

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- Education:
  - BS Construction Management - Long Beach State
  - MS Management & Administration – Central Michigan University
  - Ph.D. Engineering Management – Columbus University
- Employment: 35 Years Experience in Project Controls and Management
  - President International Operations OnTrack Engineering Nov 2016 to Current
  - Lead Manager Project Controls RAOS OY – Aug 2018 to Current
  - Sr. Project Controls Manager and Project Manager AECOM KZ – Jul 2015 to Nov 2016
  - Business Manager Jacobs Feb 2013 to Jul 2015
- Professional Certifications:
  - Fellow, Certified Cost Professional, Estimating Professional, Earned Value Professional, Planning & Scheduling Professional – AACE
  - Fellow Project Controls Guild
  - Chartered Surveyor MRICS – Royal Institute Charter Surveyors

# Dr. Sean T Regan - Biography

Years	Employer	Position
2016 – Present	OnTrack Engineering	President International Operations
2010 – Present	LGM International	President
1990-2016  (28 Years Experience in Project Controls and Management)	Employers including:  AECOM, Jacobs Engineering, USM School of Construction, IHI E&C International, Kvaerner, IMTC-MEI, ConocoPhillips Russia Caspian, Parsons Iraq, KBR PCO Oil Iraq, Krump Construction, KDG, Bechtel International	Positions including:  Sr. Project Controls Engineer, Project Controls Manager, Business Manager Visiting Professor, Technical Manager, Vice President International Operations, Project Services Manager, EVMS Manager, Project Manager

# Estimating Differences Russian and International Projects

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International Projects and Russian projects are coming to a point where the differences in standards between Russia and International projects has become not just a viable talking point, but a critical need due to the current geopolitical and economic positions of programs.

- Estimator Career Development
- Work Breakdown Structure (WBS)
- Estimating Methodological Differences
- Estimate Development
- Estimate Direct Rate Development
- Estimate Indirect Development
- Estimate Contingency

# Differences Explained

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## International Estimator – Career Development

# Educational Development

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Degree: BS in Construction Management or Engineering Accredited Program (American Conference Construction Educators-ACCE) has following course outlines if a Candidate is Estimating or Management:

- Est 1 Principals of Estimating– 48 Hours – 3 Credit Units – Prerequisite Construction Practices
- Est 2 Intermediate Estimating– 48 Hours – 3 Credit Units – Prerequisite Planning & Scheduling
- Est 3 Advanced Estimating – 48 Hours – 3 Credit Units – Prerequisite Cost Control, BIM, Construction Law
- Total Hours in Estimating 144 Hours – 9 Credit Units + 90 days experience or a Certified Cost or Schedule Technician

# Alignment to International Certification

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## AACE Certifications

Technician Certifications – 4 Years Education or Experience – No renewal

Certified Cost Technician (CCT)

Certified Scheduling Technician (CST)

Expert Certifications – 4 years Education and/or 4 years Experience = 8 Years –  
Renewal Every 3 years by exam or professionalism

Certified Cost Professional (CCP)

Planning and Scheduling Professional (PSP)

Earned Value Professional (EVP)

Certified Estimating Professional (CEP)

**Key – there is no Technician for Estimating – Professionally Estimators require experience in International. Company Programs normally provide experience**



# Alignment to International Certification

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Traditional Rotation Programs – Hire a Graduate or Transfer a Engineer into Project Controls:

For Estimating Career 4 Years:	Planning or Cost Career– 3 Years
1 Year in Planning and Scheduling	1 Year Estimating
1 Year in Cost Control	1 year Planning
Years 3 & 4 are in Estimating	1 Cost Control

Jr. Estimators – 1 to 5 Years Experience

Estimator – 5 to 10 Years Experience

Principal or Sr. Estimator – 10 Years + Experience

Director Estimating – 15 to 20 Years of Experience

# System Development - Procedures

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## **Estimating Procedures are summary level for items:**

In International, we do not have step by step – based on the education and experience.

Why?

As estimators are controlled by companies in different ways and each project is different, the procedures state what is expected. The Plan then states the original assumptions.

Basis of Estimate is the detail in which they do the work. There are no Norms, laws, regulatory and each project is different, they are aligned, in some cases maybe dropped if not enough information and allowances are done.

# Work Breakdown Structure (WBS)

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The Work Breakdown Structure (WBS) is the hierarchical decomposition of the scope of work into a parent to child relationship that roles up and down. It is a deliverable based decomposition of the scope of work into manageable sections.

The Cost Breakdown Structure (CBS) is a cost allocation to the lowest level of the Work Breakdown Structure (WBS). The CBS is a breakdown of the costs of the various components of the structure including all works or services done by the subcontractors. The CBS is used to continuously compare the actual costs with the budget, and integrate to the cost control system.

# Russian Work Breakdown Structure (WBS)

In many Russian Systems the WBS has been assigned such as – 6 Levels of the WBS and then a Separate 5 Levels of CBS

1	2	3	4	5	6
<b>Project</b>	Class of Estimate	Set of facilities	Groups of facilities	Facilities	Discipline

# Russian Cost Breakdown Structure (CBS)

## CBS – called a Level 2 Structure

5	6	7	8	9
<b>Category of costs</b>	Group of costs	Subgroup of costs	Cost items	Subitems of costs

Issue – this structure is not a WBS by International Associations such as AACE, ACostE, DACE, APM, RICS, ICEC – they also attempted to use the ICMS as a Separate Structure

# Issue Russian WBS/CBS

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Issue – this structure is not a WBS by International Associations such as AACE, ACostE, DACE, APM, RICS, ICEC – they also attempted to use the ICMS as a Separate Structure.

- 1) WBS is one relationship process – not two
- 2) CBS is lowest level of WBS, cost collection of elements, not a separate
- 3) Estimate Classification is not a Deliverable but a benchmark or level of review

# International WBS

21				BUILDINGS AND STRUCTURES AT THE PLANT SITE	
				CODE 21 CUMULATIVE COSTS	
21	.01			Site Preparation Facilities, Infrastructures	
21	.01	.01		Land reclamation (biological reclamation excluded), clearing and grading	
21	.01	.06		Landscaping	
21	.01	.07		Gateways, security installations, gatehouses, ect.	
21	.01	.08		Fencing (permanent, excluding gas mitigation system)	
21	.01	.09		Modifications and demolitions (if applicable) to existing facilities at the Construction Site, including its permitting	
21	.01	.11		Other infrastructures	
21	.02			Reactor building (including containment)	
21	.02	.01		Excavation, Backfilling and all related work	
21	.02	.02		Foundation, such as plates, piles, caissons, substructure concrete and other materials	
21	.02	.03		Superstructure, including inner and outer concrete structures, other inner structures, structural steel and other materials.	
21	.02	.04		Special shielding inside reactor building isolated from normal concrete walls and not an integral part of components	
21	.02	.05		Building service systems, insofar as they form an integral part of civil works	
21	.02	.06		Cable and pipe ducts connecting the reactor building with other buildings	
21	.02	.07		Containment, i.e. free standing steel containment, concrete containment including steel liner, caissons; airlocks for personnel, materials or emergency; piping and electrical penetrations are included	
21	.02	.08		Severe accident core catcher structures	

# International WBS

ОТРАСЛЕВЫЕ СМЕТНЫЕ НОРМАТИВЫ

ОТРАСЛЕВЫЕ ЕДИНИЧНЫЕ РАСЦЕНКИ НА СТРОИТЕЛЬНЫЕ И  
СПЕЦИАЛЬНЫЕ СТРОИТЕЛЬНЫЕ РАБОТЫ НА ОБЪЕКТАХ АТОМНОЙ  
ЭНЕРГЕТИКИ

ОЕР-2001

Часть 6  
БЕТОННЫЕ И ЖЕЛЕЗОБЕТОННЫЕ КОНСТРУКЦИИ МОНОЛИТНЫЕ

Часть 7  
БЕТОННЫЕ И ЖЕЛЕЗОБЕТОННЫЕ КОНСТРУКЦИИ СБОРНЫЕ

Часть 9  
СТРОИТЕЛЬНЫЕ МЕТАЛЛИЧЕСКИЕ КОНСТРУКЦИИ

Москва 2009

3

INDUSTRY ESTIMATED  
STANDARDS INDUSTRIAL ONLY PRICES  
FOR CONSTRUCTION AND SPECIAL  
CONSTRUCTION WORKS ON ATOMIC  
ENERGY SITES

OEP-2001

Part 6 - CONCRETE AND CONCRETE  
STRUCTURES MONOLITHIC

Part 7 - CONCRETE AND CONCRETE  
STRUCTURES CONSTRUCTION

Part 9 - BUILDING METAL  
CONSTRUCTIONS

<http://www.minstroyrf.ru/trades/view.industry.php>



# Estimating Methodological Differences: Russian Calculations

Rates and Normative are developed based on the GOST (Russian Government Standards)

Измеритель: **100 м3 железобетона в деле**  
Meter: 100 m3 of reinforced concrete in the case

**Укладка бетона В 15 (М 200) в сборные блок-ячейки при возведении сборно-монолитных железобетонных стен:**

Concrete laying in 15 (M 200) in prefabricated block-cells at erection of precast-monolithic reinforced concrete walls:

реакторного отделения автобетононасосом и кранами СКР  
Reactor compartment of the autopump and the cranes of the SKr

Измеритель: **100 м<sup>3</sup> железобетона в деле**

**Укладка бетона В 15 (М 200) в сборные блок-ячейки при возведении сборно-монолитных железобетонных стен:**

06-01-141-05	реакторного отделения автобетононасосом и кранами СКР						
	(зона: 1)	132236,35	5101,95	63644,78	3237,86	63489,62	565
	(зона: 2)	189872,00	5785,60	79823,21	3665,90	104263,19	565
	(зона: 3)	159790,75	10316,90	68046,43	6543,99	81427,42	565
	(зона: 4)	144763,05	5440,95	66433,79	3450,56	72888,31	565
	(зона: 5)	152504,25	5260,15	65419,64	3337,65	81824,46	565

# Estimating Methodological Differences: International Calculations

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**Method #1: Factor**

**Method #2: Bill of Quantity**

**Method #3: Material Take Off (MTO)**

**Method #4: Unit Price**

**Method #5: Productivity Estimate**

**Method #6: Take Off Estimate**

**NOTE: Estimator is responsible for the choosing to appropriate method to make the estimation on his discipline**

# Estimating Methodological Differences: Russian Rate Development

Rates and Normative are developed based on the GOST (Russian Government Standards)

Закреть [1000\\_OEP Росатом без разбивки \(с исправ на 10.12.09\)\\_](#)



PDF - 825 КБ

МОНОЛИТНЫЕ

Номера расценок	Наименование и характеристика строительных работ и конструкций	Прямые затраты, руб.	В том числе, руб.			Затраты труда рабочих, чел.-ч.	
			оплата труда рабочих	эксплуатация машин			материалы
Коды неучтенных материалов	Наименование и характеристика неучтенных расценками материалов, единица измерения			всего	в т.ч. оплата труда машинистов	расход неучтенных материалов	
1	2	3	4	5	6	7	8
<b>Подраздел 1.22 КОНСТРУКЦИИ ЗДАНИЙ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ</b>							
<b>Таблица 06-01-140. Устройство фундаментной плиты под здания реакторного отделения АЭС с реактором ВВЭР 1000</b>							
Измеритель: 100 м <sup>3</sup> бетона							
06-01-140-01	Устройство бетонной подготовки под фундаментную плиту здания реакторного отделения из бетона В 7,5 (М 100) автобетононасосом						
	(зона: 1)	60402,44	1544,13	5649,00	386,40	53209,31	171
	(зона: 2)	96331,61	1751,04	7073,64	437,60	87506,93	171
	(зона: 3)	77560,55	3122,46	6139,88	780,85	68298,21	171
	(зона: 4)	68663,28	1646,73	5900,06	411,84	61116,49	171
					8,31	68632,71	171
Измеритель:  Электронная почта  Сохранить							
06-01-140-02	Установка ар. фундаментную плиту под здание реакторного отделения краном						

Zones:

- 1) voronezh region
- 2) kaliningrad region
- 3) leningrad region
- 4) rostov region
- 5) tverskaya region

# Estimating Methodological Differences: International Rate Development

## Rate Development

Carpenter	TL	ΓΓ
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Labourer	TL	ΓΓ
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Millworker	TL	ΓΓ
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Foreman	TL	ΓΓ
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Crew	<input type="text" value="TL"/>	<input type="text" value="ΓΓ"/>
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	<input type="text" value="TL"/>	<input type="text" value="ΓΓ"/>
--	---------------------------------	---------------------------------

## Material

<input type="text" value="HIST"/>	<input type="text" value="WEB"/>	<input type="text" value="PCT"/>
-----------------------------------	----------------------------------	----------------------------------

<input type="text" value="ΓΓ"/>
---------------------------------

<input type="text" value="ΓΓ"/>
---------------------------------

<input type="text" value="ΓΓ"/>
---------------------------------

<input type="text" value="ΓΓ"/>
---------------------------------

## Operating Equipment

<input type="text" value="HIST"/>	<input type="text" value="WEB"/>	<input type="text" value="PCT"/>
-----------------------------------	----------------------------------	----------------------------------

<input type="text" value="ΓΓ"/>
---------------------------------

<input type="text" value="ΓΓ"/>
---------------------------------

<input type="text" value="ΓΓ"/>
---------------------------------

<input type="text" value="ΓΓ"/>
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# Estimating Methodological Differences: International Rate Development

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## Labour Rates:

Craft Types  
Country Rate  
TL/RR/USD

Example  
Labourer: TL  
111 Hour–  
RR 1300 hour  
USD 20 hour

## Development Rates:

Material Rates:  
Historical – Web – Percentage  
Database Check % of Cost

Operating  
Equipment Rates:  
Equipment Type  
Monthly/Hourly  
Production  
Examples:  
Caterpillar or  
Case

# Estimating Methodological Differences: International Rate Development

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## Crew 1 - Concrete

2 Labourers - \$13 \* 2 = \$26 – 16 Hours  
 1 Carpenter - \$20 - 8 Hours  
 1 Ironworker - \$24 - 8 Hours  
 1 Foreman - \$31 - 8 Hours

Crew is 40 Hours a Day - \$101

## Crew 2 – Piping

1 Labourer - \$13 - 8 Hours  
 3 Pipefitters - \$25 \* 3 = \$75 - 24 Hours  
 1 Welder - \$30 - 8 Hours  
 1 Foreman - \$31 - 8 Hours

Crew is 48 Hours a Day - \$149

## Composite:

Labourer	\$13
Carpenter	\$20
Millworker	\$27
Pipefitter	\$25
Welder	\$30
Cement Mason	\$22
Brick Layer	\$22
Operating Engineer	\$28
Electrician	\$25
Ironworker	\$24
<u>Foreman</u>	<u>\$31</u>

Step 1 Add all Rates Together

$13+20+27+25+30+22+22+28+25+31 = 267$

Step 2 – Divide by Number of Rates

$267/11 = \$24.27$  Composite Rate

# Estimating Methodological Differences: Differences Issues

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- Norms are so far out of date (2001)
- Factoring has been compounded for 17 Years
- Locations (5) are Utilized for the normative
- Calculation Methods Norms vs Calculations
- Indirect Calculations Russian Formula vs International of % of Cost or Schedule \* Rate
- Contingency Russian 3% to 0 versus 10 to 25%
- Accuracy of Documentation
- Estimator Independence

# Recommended Associations

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- <http://www.planningplanet.com/guild>
- [www.projectcontrolsinstitute.com](http://www.projectcontrolsinstitute.com)
- [www.acoste.org.uk/](http://www.acoste.org.uk/)
- [www.rics.org](http://www.rics.org)
- [www.aace.pro](http://www.aace.pro)



# Thank You!!!

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Dr. Sean T Regan, FAACE, CCP, CEP, EVP, PSP, MRICS,  
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